

THE WEALTH OF INDIA.

A Monthly Magazine of Practical Information and Useful Discussions

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The Wealth of India.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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Current Topics

BY ECONOMICUS.

The last session of the Industrial Conference, which was held at Mr. Lalubhai's Karachi, was presided over by the Hon'ble Mr. Lalubhai Samaldas, member of the Bombay Legislative Council, well known to the public of Bombay for his manifold activities, his level-headedness, his moderation and his association with finance and industry. Mr. Lalubhai is a man of refined intellect, progressive views and catholic sympathies and is, above all, intensely practical. His address to the Karachi Conference was marked by all these characteristics. It was severely business like and overflowed with unshaking optimism. Having moved in and breathed the atmosphere of the banking crisis through which Bombay had just passed, Mr. Lalubhai felt impelled to deal at length with that question. He described the difficulties which Swadeshi joint stock banks have had to encounter and compared their development with the growth of banking in England. Such a comparison constitutes a strong refutation of the suggestion coming from certain quarters that there are inherent defects in the Indians' character which render them unfit for carrying on joint stock banking with success. Mr. Lalubhai, however, pertinently added that it is no use "deriving consolation from the fact that the same mistakes were made by people in other countries and remaining inactive in the face of our present difficulties." We ought

to find out how they met their difficulties and adopt their methods as far as practicable. While thinking that there are some matters in which the Legislature might be better able to protect the interests of the investing public than at present, Mr. Lalubhai expressed the view that, however the existing law might be amended, the millenium in banking would not be reached and that there were no panaceas to replace prudent management. As long as there are shareholders indifferent to their real interest and clamouring for larger dividends, he remarked, as long as there are depositors who will not make inquiries into the stability of a concern provided they get a larger percentage of interest, and Bank managers either weak enough to submit to the siren of ambition and invest their funds in second or third class securities, or entirely careless of the shareholders, banks will continue to fail and spread misery all round. What is required is, according to him, not merely the training of men as Directors and Managers, but educating the general investing public as to their rights and responsibilities. Having dealt with the question of banking, Mr. Lalubhai proceeded to review the situation of indigenous industries, agriculture and manufactures. As to 'large' industries, he cited the example of the Tata Iron and Steel Company to drive home the lesson 'that it is no use starting large industries, unless it is seen, after making rigorous preliminary tests that it is possible to manufacture a particular article of as good a quality as the imported one, and at no higher price.' Several Swadeshi joint stock concerns have failed during the last few years owing chiefly to a lack of preliminary inquiry and expert knowledge. Such inquiries, however, can only be undertaken, Mr. Lalubhai added, by men having capital and possessing sound knowledge of the economic and commercial side of a proposition. But unfortunately the "number of persons having all these qualifications and the further essential one of capacity to control a business when it is started, is so small that it is no wonder that only a few of the new 'large' industries started in this country are success-

ful." This led Mr. Lalubhai to inquire into the general causes of these failures and he stated that the indigenous concerns do not turn out successful owing mainly to the want of expert preliminary inquiries, inept or inefficient internal management, want of control by the agents, want of commercial or economic knowledge as regards the particular industry and the difficulties in the way of getting the required working capital at a profitable rate of interest. Mr. Lalubhai then took a hurried review of the present situation of the indigenous industries and pointed with satisfaction to certain new concerns that have been or are being started. He had then a word or two to say about the provision of technical education in this country and the college of commerce recently started in Bombay. With a reference to the aims and scope of the proposed Commercial Congress, Mr. Lalubhai brought his interesting address to a close which was couched in most optimistic language. No body can indeed say that the industrial outlook in India is bright and it is no use sitting with folded hands and brooding hopelessly over our difficulties. We do not know if the present position of our indigenous industries justifies Mr. Lalubhai's concluding observations that 'the flowing tide is with us and though the line of progress is not soon marked, every wavelet assists to push the boundary line forward,' and that 'it is entirely in our hands as to when and to what extent we are able to realise our expectations.' The remarks are, of course, in conformity with the truth contained in the saying that 'a people are what they deserve to be.'

In our last number we commented at some length upon the scheme of a Commercial Congress placed before the public by Sir Fazulbhoy Currimbhoy. People could not naturally understand what purpose this new organisation was intended to serve when there was already in existence a similar body working almost along selfsame lines and requiring a larger measure of public support for its proper conduct and work. The President of the Karachi

Sir Fazulbhoy on the Commercial Congress.

Industrial Conference alluded, in his address, to the misunderstanding aroused in the popular mind with regard to the proposal about the congress and briefly attempted to remove the misconceptions. Fortunately, the originator of the idea, Sir Fazulbhoy Currimbhoy himself, was present at the meeting of the Industrial Conference at Karachi and explained his position clearly. He made it clear that when the idea of the Indian Commercial Congress suggested itself to him, or at any time afterwards, no thought of rivalry with or antagonism to the Industrial Conference ever crossed his mind. He stated that he yielded to none in his appreciation of the service which the conference had rendered and was rendering in creating, encouraging and promoting the industrial and commercial aspiration in the public mind and in representing to the Government the necessity of adopting measures to promote the economic well-being of the country. The question here arises what then is the object of starting a new organization? Sir Fazulbhoy explained that the Commercial Congress is to be more in the nature of such bodies as Associated Chambers of Commerce, having for their object the presentation of the collective views of the commercial community of India. The peculiarity of the Congress is going to be that in it will be represented Chambers of Commerce, leagues, associations and so forth actively interested in Indian commerce and industry in a way they cannot be directly or indirectly represented in the existing Industrial Conference. It is true that, in such a Conference, the details of intricate commercial questions which arise from time to time and in which the trading and commercial classes are vitally interested cannot be satisfactorily discussed, and that an institution specially designed to be the mouth-piece of the commercial community has its work cut out for it. Though Mr. Lalubhai had referred to the possibility of an amalgamation of the proposed Congress and the existing Conference, Sir Fazulbhoy personally thought that though this combination might become possible in the course of time, 'there is ample room and work at present for

two such bodies.' One can very well understand this position and believe in the sincerity and reasonableness of Sir Fazulbhoy's statement. Our only fear is that the older body which is admittedly doing so much good work may be prejudicially affected by the birth of the new organisation. We have already expressed our views on this subject, and need not reiterate them here. To put them briefly, the scheme of the proposed Commercial Congress has our full sympathy, but we want also an organization whose business it will be to discuss the prospects of and take active measures for the industrial revival of the country. Our industrial backwardness is owing to a lack of expert knowledge, organization, enterprise and capital and it is essential that there should be in existence an active body that will earnestly address itself to the task of tackling this difficult problem.

Sir Fazulbhoy also availed himself of the opportunity to remove a misconception on another point we alluded to in our last number, viz., that revealed in the comments of 'Capital' which discerned in the draft rules of the Commercial Congress a deliberate though indirect intention to exclude European organizations 'probably on the ground that the interests of the two communities are irreconcilable.' Though a clash between these interests is undeniable, Sir Fazulbhoy gave the assurance that 'as the commercial interests of Europeans and Indians are interwoven, we will do our best to secure co-operation of the European organizations', and he appealed to the leaders of the different Chambers to offer their help in the movement. The Karachi Conference passed a resolution welcoming the scheme of the proposed All-India Commercial Congress formulated by Sir Fazulbhoy and appointed a committee to consider and report how the existing Conference can best co-operate with the proposed Commercial Congress in advancing the objects which it is intended to promote.

A very important resolution was moved in the Supreme Legislative Council by the Hon'ble Raja Kshatriya

Land Revenue Policy in the Viceroy's Council.

Pal Singh, recommending that 'in all future settlements of land revenue any increase of assets, due to the construction (otherwise than at the expense of the State) of wells, tanks or other artificial sources of irrigation be permanently exempted from assessment to revenue.' We have called this resolution important because it involves the policy of Government in this country with regard to assessment of land revenue as also its attitude in the matter of agricultural improvement. As the mover of the resolution observed, the important means of safe-guarding and increasing agricultural products in India is by providing an adequate water-supply. Attention was pointedly directed to this question by Lord Curzon's Irrigation Commission who recommended a variety of schemes of irrigation in the different provinces. Irrigation projects have now been undertaken by Government on an extensive scale which are calculated to supply water to large areas. Notwithstanding this improvement, however, there are extensive tracts in the country which irrigation can never reach and which have consequently to depend upon the whims of the god of rains. The only remedy to supply the defect left by nature is to encourage the construction of wells and tanks on private fields. Government can give this encouragement effectively by promising landlords and cultivators that they would not enhance their revenue demand in proportion to the increase in the produce of land on account of improvements made by the landlord. Raja Kushal Pal Singh quoted the authority of the Famine Commissions of 1880 and 1901 to the effect that in all future settlements any increase of assets due to the construction, otherwise than at the expense of the State, of wells or tanks or other artificial sources of irrigation should be permanently exempted from assessment to revenue. The position of the Raja was perfectly sound. He contended that the capacity of the soil should not be taken into consideration as Government derived no benefit therefrom unless a landlord built a well. Apart from the theory of land tenure and land revenue and putting it on the lowest ground,

we may state that the State in India which is evincing so much anxiety for the amelioration of the condition of the cultivating class and the improvement of agriculture, the premier industry of India, is bound to consider sympathetically any representation made to it for the attainment of this object. Government admittedly wants that agriculture should be improved, and one of the most essential conditions of improvement is an adequate supply of water in a country like India where over extensive areas rains are precarious and famines and droughts are frequent. One of the obvious ways of ensuring a water-supply is to induce the landlords to dig wells and construct tanks in their fields and this inducement can be effectively offered by the assurance that any increase of assets due to improvements in the shape of the construction of wells and tanks at private expense would be permanently exempted from assessment to revenue. Replying on behalf of Government, Sir Robert Carlyle, Revenue Member, maintained that if the resolution of Raja Kushal Pal Singh were accepted, the loss of revenue to the State would be very large. It may be admitted that considerations of revenue ought to carry considerable weight with Government, but we maintain that other considerations are equally important if not more so. Improvement of agriculture and of the economic condition of the people has an equal claim upon the attention of the Government. Even supposing that the loss of revenue to Government would be large, we may point out that in this case the State would only be giving with one hand what it would certainly receive with the other. The general improvement that would take place owing to the concession prayed for, would in the long run benefit the Government in other ways by allowing more money to fructify in the pockets of the people. The arguments with which Raja Kushal Pal fortified his position were strong. He submitted that owing to the frequency of famines in Northern India, the expenditure and loss of revenue were great and that if this resolution were accepted,

famines would become things of the past and would cease to be dreaded by the people. He further observed that the incentives which the Government supplied to agricultural improvements should be a matter of as much concern to the Government as the amount of revenue which was brought into the exchequer of the State. The increase in produce, he added, in consequence of improvements would result in an expansion of trade and if the concession prayed for was granted, it would strike popular imagination as an act of great liberality. Another point that may be noticed in this connection is that any loss of revenue that may result from the acceptance of the policy recommended in the resolution moved by the Raja, might well be regarded as a sort of insurance against famine. It is well known that annually a sum of Rs. 1½ crores is regularly appropriated for the purpose of famine relief and insurance. Whenever there is famine in the land, direct relief is the first charge on that sum and the balance is used for the construction or maintenance of protective railway and irrigation works and for the construction of productive public works, which would otherwise require additional borrowing. Looked at from this point of view, the plea of the apprehended loss of revenue appears anything but strong.

The question whether land revenue in India is of the nature of a tax upon the income of the landlord or is a share due to Government in its capacity of universal proprietor of land throughout the country has been the subject of much lively discussion for many years past. It has been contended on behalf of Government that the State in India is a landlord and its claim to enhancements in land revenue has been based upon this theory of state landlordism. Government have not cared to State the theory so very clearly, but their policy has been guided by it. In provinces like the Punjab and Bombay, a new system of land tenure has been created in accordance with which the ryot has been divested of his right

to alienate his lands. It may be the motive of Government to protect the cultivator from the clutches of the money-lender by making lands inalienable; but the tendency of this kind of legislation is to reduce the ryot to the condition of a mere tenant having no proprietary right in his lands. In replying to the remarks of Raja Kushal Pal Singh, Sir Robert Carlyle said that he refused to follow the Honourable mover in his discussion on the theory of land revenue but stated that it had been the immemorial custom of every Government in India to take a share of the profits arising out of land improvement and that the resolution was inconsistent with the practice of other countries, and with the immemorial practice of this country. The idea underlying such a presentation of the subject is that the State in India being the proprietor of the land, is entitled to claim all the surplus that remains after the normal expenses of cultivation are paid off. This is precisely the point on which the critics of Government join issue with them. The discussion of this point is not merely academical and wasteful as is supposed by certain people; it has an important bearing upon the status of the Indian ryot and the land revenue policy of the Government. Baden Powell, the recognized authority on the system of land revenue in India, observes that the British Government has everywhere conferred or recognized a private right in land, and in large areas of the country, it has expressly declared the proprietary rights of the landlords and the village owners. These landlords are not tenants of the State and the revenue they pay is not 'rent.' Government cannot and does not claim to take the unearned increment or the whole of what remains after the wages of labour or cost of cultivation and profits of capital have been accounted for, and 'even in the temporarily settled lands, the land revenue charge is more of the nature of a tax on agricultural incomes.' The theory of State-landlordism has, besides, been authoritatively repudiated. In a despatch of 1856, the Court of Directors

emphatically declared that the land assessment in India is revenue pure and simple and not rent and similarly in 1880, Lord Lytton's Government refused to accept the accuracy of the description that the tenure of land in India was that of cultivating tenants. If the theory of State landlordism were accepted, the result would be that the Government should be entitled to receive all that remains of the produce of the soil after the wages and profits are paid and there would be a tendency to force up the assessments higher. Even as matters stand at present, at every re-assessment in temporarily settled districts, the demand of Government is enhanced on

one ground or another, and the claim of the State to a share in the profits of land arising out of improvement is bound to prove detrimental to the economic progress of the country which the Government have obviously at heart. Under the circumstances, Sir Robert's statement of the land revenue policy of the Government ran counter to authoritative declarations made in that behalf, as it argued a lack of insight into the present situation and needs of the people of this country. The Revenue Members' argument that the view he advanced was in consonance with the practice of Governments in other countries was as pointless as the tenour of his whole speech was unconvincing.

Special Articles.

THE CO-OPERATIVE MOVEMENT IN INDIA.

By H. W. WOLFF.

With the report of the proceedings at the last Simla Conference and the Annual statement of the progress of the co-operative movement in India before me, as well as some of the Registrars' Annual Reports (which do not, however, include that from the Madras Presidency) the spirit moves me, and very forcibly, indeed, to express, before the population of a Presidency which, although popularly dubbed "Sleepy" has shown itself anything but somnolent in this particular respect, the joyful satisfaction that I feel at the results obtained.

It is about twenty years ago that we—in London it was mainly the late Sir Charles Bernard, a true friend of India, and myself—laboured in thought how to secure to India the benefits of co-operative credit, which since 1883 Sir Henry Stokes and Sir W. Wedderburn had been clamouring for. My friend, the late Lord Wenlock, who introduced my Thrift and Credit Societies Bill in the House of Lords, as Governor of Madras despatched Sir F. Nicholson on a tour of inquiry in Europe, which

produced that magnificent report published in 1895, with a second volume that followed in 1897. Sir F. Nicholson also prepared a Draft Bill, on which I was confidentially consulted, but which appeared to me much too big. That opinion of mine, expressed to the India Office, had the unfortunate effect of leading, by a misunderstanding, to the opposite extreme. I was alarmed when Sir C. Bernard wrote to me:—"you are right; we will restrict the measure to co-operative banking." I had wanted to have it restricted to "co-operation" in its wider sense, discarding only friendly societies and the like. It was not all plain sailing. But when I visited the then nonagenarian Sir Arthur Cotton, who ought to be remembered in Madras—Sir A. Cotton of the Coleroon Anicut fame—at Dorking, and told him of what co-operative credit meant, he jumped up in his chair and exclaimed:—"that is the very thing for India; and, whatever expectations you may have formed, multiply them by twenty, and you will still find them exceeded."

It almost looks as if that prophecy were destined to come true. There had in India been a multiplication of societies and an advance of business—mainly sound, so far as I can see—such as has not anywhere, been equalled in the corresponding early stage. That is, of course, above all things due to the appropriateness of the practice in Indian circumstances, a natural predisposition of the native mind, in all its varieties of race and caste, sharpened by that need, which has all the world over proved the most effective recruiter for co-operation. But we owe very much also, and should gratefully acknowledge it, to the Registrars, who have shown, so far as I can see, as great judgment as zeal in the matter and have therefore kept the movement on the right lines—assisting with keen counsel, encouraging to sound action, but wisely refusing to tolerate irregularities, and keeping officialism out of the movement as effectively as they could. One is glad to see their action now obtaining more and more support, not only from public opinion in general, but also from volunteer workers. The more can be done to promote public interest and to attract volunteer workers, the better is the movement likely to thrive. As regards Madras specifically, I cannot forget that that province has been among the foremost to emancipate itself from the necessity of State aid and to rely upon its own resources. State aid is but leading strings for babes, a go-cart which prevents stumbling but also retards progress and impedes action. Hence that unhealthy hankering after *takavi* money exhibited at the Simla Conference should be suppressed.

I must not flatter you, Indians, by leading you to suppose that in your co-operative movement all is, as one would be content to leave it to an indefinite future. The Registrars' Reports with laudable frankness indicate many shortcomings. However, Rome was not built in a day. At the present stage, it is sufficient if there is the right spirit in the movement. Greater union, fuller supervision and inspection, and perfected methods are sure to claim their place in course of time.

From the Registrars' Reports I gather that there are certain favoured districts in which cheaper credit is not wanted, inasmuch as sowkars have by some force or other been driven to charge only reasonable interest. Now, it ought to be borne in mind that cheap credit is not the only object or benefit of Co-operation. It has more to give to those who practise it. But co-operation cannot properly be practised with good effect where those who practise it do not really feel the want of it. And such districts as those alluded to had much the best be left to themselves for the present. There is room enough for work elsewhere. The paying off of old debts is of course the object standing foremost among objects of co-operative credit. The mere substitution of a cheap loan for a dear one will in many cases of itself be the making of a man. But it wants to be exercised with judgment, or it will lock up too much money in more or less permanent investment. There are other districts in which co-operation for the present appears unprofitable from want of education. Education is the life-blood of co-operation. Such districts, once more, had better be let alone for the present or entrusted to the loving care of the various missionaries, who appear to be doing excellent work on such neglected ground.

One is sorry to see, on the one hand, societies poaching on one another's ground, to steal away members, and on the other, cutting up limited areas into diminutive fragments, from wider societies maintaining themselves where there should be one. Some people interested in the movement, I find, take an exaggerated view of the necessity of smallness. Paucity of members is not in itself an advantage. The more members can be united in the same society without detriment to the essential prerequisites to fruitful action, the stronger will the society be. The district must be small, in order that members may know and automatically watch one another. That is all. I was in hopes that the difficulties arising from caste had in the main been surmounted. I have had assurances to that effect. It would be a

pity if unnecessary divisions were to weaken the movement.

Another thing that one cannot help feeling regret at noticing is the tendency to rely upon mechanical means for appraising members' title to credit, coupled with a desire to exact an over-business-like *quid pro quo*. Co-operation is the refuge of the necessitous. Under its shelter, the possession of money should lose its traditional privileges. Co-operative credit has been termed, by one of its acknowledged masters, "the capitalisation of honesty." It loses its co-operative character when its benefits are allotted to the highest bidder. And co-operative credit means that every case shall be inquired into by a competent committee. It should be the employment of the loan and the character of the applicant which determine the grant of credit, not the applicant's stake in the society. There have been serious collapses in Germany lately—in the Haar Union—owing partly to artificial inflation of credit by outside support carried to undue lengths and producing a reckless disposal of money, but also, and in a great measure, to insufficient inspection and failure to exact cessation and rectification of abuses.

I have been questioned a good deal about the proper way of dealing with reserve. It may therefore not be amiss to explain that the reserve funds accumulations really have two distinct objects and might therefore with advantage, when they become considerable, be divided into two. Some liquid reserve it will always be well to have, to provide for contingencies. But the main part of the reserve was intended by Raiffeisen, in course of time to replace borrowed capital and, accordingly, to be dealt out in loans should occasion arise. It could scarcely be reckoned good business to have money lying idle, or earning only a minimum interest, while borrowing for the requirements of the society at a much higher rate.

In conclusion, I would venture to express a hope that after credit has so well established itself in India, other applications of co-operation should also make more headway. I find that some of those interested in Indian Co-operation favour the opinion that that should be deferred till credit has fixed its roots deeper in the soil. Of course Credit is the very best preparation to other forms of co-operation. But one should take advantage of any need experienced for co-operative action. I am now thinking mainly of agriculture which, in India as elsewhere, certainly requires the help of Co-operation to lift it to a higher level. Co-operative stores, where they are wanted, are likely to work their way gradually. That is likely to be in towns.

Co-operative production, such as are forming among weavers, is, according to Schulze, the highest form of co-operation, but also undoubtedly, in its application to industry, the most difficult. It cannot be forced. But co-operation in agriculture suggests itself wherever a plough or a spade is used. Co-operative purchase of agricultural requisites is the form which is likely to suggest itself first. In respect of the supply of pure seeds, I think in the earliest stage, Government might do something. But in agriculture, production or conversion of produce into marketable shape presents far fewer difficulties than does industrial. Under this aspect, the success of the co-operative dairies thus far formed is decidedly encouraging. And some beginning appears also to have been made where sugarcane is cultivated. But there is a wide field open beyond all this. In India, of all countries I should say there must be room for such co-operation in the common use of implements, and common work—for irrigation, etc., as I quote instances of, in my "Co-operation in Agriculture."

INDIA'S INDUSTRIAL REVOLUTION

BY R. V. DHULEKAR, B.A.

I. THE INDUSTRIAL REVOLUTION.

The events that have been occurring during the latter half of the last century have effected a momentous change in the life of the Indian nation in all its phases. The introduction of railways and other more convenient means of communication and transport, the building of roads and bridges, the opening of schools and colleges, a closer contact with the western world, and lastly the introduction of large capitalistic industries,—all forcibly point to the fact that the old order is changing, yielding place to new. The economic organism is undergoing a radical change and the characteristics of the old order are more or less rapidly disappearing. And thus we are led to consider seriously the nature of the changes effected and the results produced.

This transition to new conditions is spoken of by nearly all writers as the Industrial Revolution. It is difficult to find a more apt phrase to signify the changes that the country is undergoing at the time. The industrial revolution in India does not mean a change in the economic conditions only but is bound to affect profoundly the nation's life in all its spheres, more so, when the changes taking place are not an indication of an evolution from within but have been brought about by external forces acting upon Indian conditions.

Lord Macaulay did not speak too strongly when he said that, excepting the inventions of the alphabet and the printing press, no inventions have done so much for the moral and intellectual progress of man as those which abridge distance and improve the means of communication. But for the introduction of railways and steamers, and the telegraphic transmission of messages, India would have remained for years to come an isolated country as she had been. She has now been brought into direct communication with the world at large and her goods now compete with those of other parts of the world. This closer contact with the outer world has em-

phasised the difference between the economic conditions of the civilised nations of the world and following Sir T. Morison, we are led to divide the countries of the world under two heads :—(1) those which are following the old inefficient methods of conducting industry, both in respect of production as well as distribution of wealth ; and (2) those who, like England, Germany, the United States and others have left the old behind them and taken to newer and more efficient methods of production and distribution. No country of the world at present can be called to belong exclusively to the first category as almost all countries are more or less rapidly coming out of the old rut. India is also changing her older inefficient methods of production and distribution and introducing newer and more efficient ones.

There has been a synthesis of adverse causes which has retarded the progress of the country towards newer conditions. The difficulty of transport on account of the absence of adequate means of communication combined with the insecurity of travel kept the villages isolated and economically self-sufficient. Any diffusion of knowledge and information among the mass of the people was practically impossible. The overwhelming importance of agriculture as the main support of the people in general arrested the growth of manufacturing industries. The caste system made mobility of labour almost impossible. And so it is not at all surprising that with all the improved means of communication and freedom of exchange, the Indian village is not any the more different from what it was half a century back. The institutions that had taken root centuries ago could not be eradicated in a few years. The social and religious susceptibilities, mostly the effect of ignorance, have in a great measure helped to prolong the period of passage to more modern conditions.

When we turn to the study of the changes that have taken place, what we find is a record

of progress and improvement in almost all directions. Peace and safety have insured better and more stable conditions of industry. The printing presses, schools and colleges, easy means of communication and transport, roads and bridges, all have tended to effect improvement in the Indian economic life. Construction of railways and irrigation works have improved agriculture, the former helping many other industries. In the way of freedom of exchange, money payments have replaced the primitive methods of payment in kind. The medium of exchange has been placed on a sound basis, credit is established, banking facilities have been furnished, and capital is organised. Large capitalistic industries, such as the cotton, jute, wool and iron industries, have come into being, and a reference to statistical information reveals the wonders that have been wrought. The education of the people on western lines, and a closer contact with the people of the West have infused a vigour in the life of the people to come out of the old rut and to effect modern industrial reforms. In short, India is now passing from the group of older countries with inefficient methods to that of countries with more modern and efficient methods of production and distribution of wealth.

II. RISKS OF EVIL.

The example of England during her transitional period reveals the fact that such a radical transformation is always attended with risks of evil that are to be guarded against. It would be vain at this stage to check the advancing tide, because in the words of Mr. Samuel Montagu, "the Industrial Revolution of India has begun, and nothing can stop it. You might just as well try to stop the incoming tide with your outstretched hands."* The same process is going all over the world, and Sir T. Morison finds difficulty in drawing any hard and fast line between the two categories under which he divides the countries of the world. Because, he says, "the countries in the first category (*i.e.*, in which the Industrial

* Budget Speech, 26th July 1911.

Revolution has not been completed) are showing a tendency to pass into the second; wherever circumstances permit they are organising their industry upon western lines."† Now, seeing that the change is inevitable, the risks which India would have to undergo in the course of such a transformation ought to be guarded against. And continues Mr. Montagu that "India may derive one advantage from the fact that her Industrial Revolution has been so long delayed."... "She may profit by the abundant mistakes that we made in this country (England) if she takes advantage of her experience and with a wise forethought closes the doors to industrial abuses before they have grown strong, and in that case, she may look back upon her Industrial Revolution, without the shame and regret with which we are forced to contemplate some of the features of our own." Mr. Montagu is no doubt here referring to the extremely depressed condition of the masses (*i.e.*, the workpeople) during the Industrial Revolution in England. One has simply to cast a glance at the reports of the many commissions appointed to investigate the industrial life in the mines, factories and works between the years 1833—1844 to convince himself of the truth of the utter degradation and miserable condition of the labouring population of England. And this and other evils, Mr. Montagu and others with characteristic forethought warn us to guard against.

III. RISKS TO AGRICULTURE.

Before dealing with the many evils that are involved in the transformation to the new order, it will not be out of place to remind the reader that India is mainly an agricultural country and so any conclusions based on the analogy of the European countries, specially England, would be simply hazardous and futile. In the case of England, the Industrial Revolution resulted into making the country a highly developed manufacturing country. Improvements in agriculture were introduced but it was in the domain of manufacture that new inventions of machinery and modern

† Economic Transition in India,

methods of organizing business were largely employed. The increased demand for wool led to the consolidation and enclosure of farms for pasture. The result was the misery and degradation of the agricultural classes. But as the country was not much dependent upon the home food supply, the effects were not so far-reaching as would be the case in India which largely depends on agriculture. She runs the risk to a greater extent of harming the agricultural interests by her paying too great an attention to the development of manufacture and thus attracting people from the villages by hundreds. In the domain of agriculture, concentration of labor and capital has not been found possible to the same extent as in manufacturing industry. In India nearly all the cultivated area is divided up into millions of small holdings, varying from 3 to 5 acres on the average. The cultivators employ little or no capital in efficient implements and good manure. Much remains to be done in this direction. Agriculture being the chief industry of India, we cannot afford to neglect the changes that may take place and the results they may produce. Firstly, competition for land consequent on the increased demand for agricultural products has brought in competitive rents. Waste lands have been broken. But the progress in the use of machinery and good manure is slow owing to the poverty of the cultivator. Secondly, the peculiar nature of the land-tenures has created varying degrees of rights in the different holders of land, thus making the employment of large capital more difficult. The landlords who can command capital have not as yet shown any inclination to invest capital in improvements. What path the agricultural revolution will follow it is difficult to surmise. But it is certain that improvements are impossible so long as the farms are not consolidated and more capital is not invested in better implements. But here too, we are to guard against the danger of reducing the mass of the country-people to the state of a *resourceless body of day-laborers*. And so a system of Co-operation may prove beneficial.

IV. RISKS TO MANUFACTURES.

When we turn to manufacturing industries, we find that the industrial revolution has proceeded further than in agriculture. The essence of the modern industrial system is production on a huge commercial scale of goods of a uniform pattern through the agency of up-to-date machinery for distribution on an equally large scale among the markets of the world. Thus the system analyses itself into (1) a system of machine made industry, and (2) a system of capitalistic distribution. Such a system aims at production on a large scale as well as distribution on an equally large scale and can only be successfully carried out by the concentration of labour and capital. The production of goods of a uniform pattern admits of minute division of labour and the employment of complicated costly machinery, propelled by powerful motive forces. All the advantages of industry on large scale are made possible,—efficient labour, efficient management, large and constant demand, good prices, owing to cheap and efficient marketing the goods, etc. All these prospects of making fortunes offer irresistible temptations to new and young minds. All sorts of schemes are put forward, and people are invited to advance capital. Bright prospects of gain are put before the people's mind and all sorts of hazardous enterprises are launched in. Capital is placed in the hands of inexperienced men and profits are expected with gaping mouths. But the business creeks under its own weight, and a heavy blow is given to every kind of enterprise for a few years to come. This is one of the greatest risks that countries during their transitional period have to undergo. In India too, many a business has failed on account of mis-management due to inexperience. The results of such failures are cumulative because the capital of the country fights shy of any new enterprise for many a year to come. Again, the cut-throat competition that is now carried on by businessmen has a great baneful effect on the progress of an industry. Sometimes promising businesses, furnished with up-to-date appliances fail simply because

of the beggar-my-neighbour policy of the merchants. This evil has not as yet made its appearance in Indian businesses, but the policy of cut-throat competition pursued by foreign nations is none the less harmful to Indian industries. And so the risk of the Indian industries being crippled by foreign competition can only be guarded against by the employment of well-organised capital, highly skilled labor made efficient by technical education, and lastly skilful and highly efficient management. Sometimes the failure of an industry is not due to mismanagement but to the fact that the importance of profitable by-product has not been adequately recognised, e.g., the liquors prepared from molasses are valuable by-products in the manufacture of sugar from *gur*.

V. LABOUR DIFFICULTIES.

We now come to the most important of the risks of evil which the country has to face in the course of her passage from the old order to the new. I mean the labor problems which rich countries like England and the United States have found immensely difficult to solve. As said before, the essence of the new order is large capitalistic production and also distribution on an equally huge scale. The vigilant entrepreneur makes his appearance side by side with the creation of an army of wage-earners. The importation of the Western Industrial system, which is another name for Capitalistic production, means and involves the gradual partition or differentiation of the population into two classes, (1) the capitalists armed with all the modern scientific resources of large scale production and distribution, and

(2) the wage-earning class, engaged in tending machines and producing wealth and profits for their master. The independent mechanic disappears from the scene, and the resourceless wage-earner occupies the field. The exploitation of the poor by the rich enters on a new phase, more efficient methods displace less efficient ones, never intended to make the lot of the labourer any the better. The capitalists control the markets of the world, regulate the wages of labourers, and even influence the foreign policy of Western nations. Any casual observer of the industrial life of Bombay and other manufacturing districts would bear witness to the fact that a class of weak, degenerate, poor and resourceless wage earners, has already been created and is slowly but steadily increasing in number. And so we might safely remark that though the days of servitude as appertaining to soil are gone, the Industrial Revolution would, as it has already done in the West, usher into existence a new class who may be properly designated as "Industrial Serfs." And thus India would have to face all the varied problems which have confronted Western nations so long. The utter ignorance of the mass of the Indian people makes the labour problem still more difficult to solve. Long hours, hard work, low wages, irregularity of employment, the undesirable mixing of sexes in the workshop, etc., all would have to be faced.

These are a few of the many risks of evil that are involved in the Industrial Revolution of India, and it is the work of the leaders to devise adequate means to save the country from their evil effects.

The Agricultural World.

Insecticides.

For the destruction of insect pests which are so prevalent in our gardens, a large number of insecticides and fumigants have been experimented with. With the exception of kerosene emulsion spray fluid, all have been found impracticable, or too costly. This standard kerosene emulsion is the Hubbard-Riley formula. It has many advantages, keeping perfectly for years, and always ready for use without any separation of the oil on mixing with water.

	Gals.
Kerosene oil	2
Boiling water	1
Soft soap (8 per cent. potash)	$\frac{1}{2}$ lb.

It is made into a spray fluid by mixing with water in various proportions for different pests :—

One part emul-	{	40 for harder plants.
sion in		80 as an insectifuge.
		2 for brushing on woolly aphis, &c.

Spreading Farm-yard Manure.

The dotted appearance of many stubble fields shows that the importance of spreading farm-yard manure without delay is not yet sufficiently appreciated. Indifference regarding this point means waste of valuable plant food. According to the *Times*, the risk of loss is less when the manure is spread on the surface than when it is allowed to lie in heaps, while immediate spreading means even distribution. It used to be thought that it was a wasteful practice to leave dung spread long before it was ploughed down, but fuller knowledge and riper experience have proved this to be wrong. For one thing there is no reason why manure applied to stubbles should suffer depreciation from exposure any more than that spread on grass land, but it has also been

found in careful experiment that the valuable ingredients sink into the top soil to be held in readiness for the use of the following crop. So pronounced is modern opinion on this point that it is the custom in some of the best farmed districts purposely to leave the manure exposed for two or three weeks before it is ploughed down, care being taken to have the heaps distributed without delay.

Pipping.

A good many chickens have on the end of their tongue a small scale, which fastens itself on to the tongue, and needs removal in early chickenhood. This process is called "pipping," and although we have heard the opinion expressed that all chickens require, "pipping," this is not really the case, as a larger number of chickens are free from the scale on the tongue than those which have it. As it is not an infrequent thing, it would be well for every one who has chickens to carefully examine their tongues and see if they are free from these small scales, which is removed by inserting the finger nail of the first finger under one side of it, then with that finger and the thumb the scale can easily be peeled off, and will be found to resemble a quill pen-nib in shape and texture. After the removal of the scales the birds thrive wonderfully, and the difference is quickly noticed.

Sterilising the Soil.

At the French garden at Evesham, Mr. J. N. Harvey has lately been carrying out interesting experiments which promise to be successful in the partial sterilisation of soil for plant culture. At present the most effective method of partial sterilisation is to heat the soil to a temperature above 14 deg. Fahrenheit, but not exceeding 122 deg. Effective chemical treatment also appears to be possible. Mr. Harvey has been using steam, which, by an arrangement of

pierced pipes, he forces through a quantity of soil at a pressure of about 80 lbs. After about 15 minutes the soil is removed, and fresh soil is treated. At a trifling expense Mr. Harvey can in one day sterilise four or five cart-loads of soil, which will go a long way in potting. There is a marked difference in the appearance of tomatoes grown in sterilised soil in one of Mr. Harvey's big glass-houses, and tomatoes alongside grown in untreated soil. The plants grown in sterilised soil are more vigorous and healthy looking, and are estimated to carry 80 per cent. more fruit than plants grown in untreated soil.

Why the American Farmer is Rich.

America has made prodigious strides in farming. How has it all been accomplished? Mr. Isaac F. Marcosson answers, "simply because farming has ceased to be a haphazard and unintelligent habit, and has become a science. Man has made himself almost immune against the inroads of disease and weather. He can conserve moisture, and fertilized a parched soil; he can rotate his crops and intensify his farming; he can breed new cereals and graft upon a hardy American plant the life and substance of another clime. In the conquest of the earth is a miracle far greater, even if less spectacular, than the mastery of the air.

None of this happened overnight; it has been the result of a long, highly organised, and conscientiously developed campaign as much against the farmer as against the soil. It has made the traditional clodhopper a vanishing type, and has produced a school of agricultural statesmanship that has had some notable exponents." And America pursues statesmanship in Agriculture.

Protection of Crops from Hail.

In the Annual Report of the Kumaun Government Gardens for the year 1912-18, attention is again called to collectors of electricity as used in France for the protection of crops, etc., from hail. The following article, which appeared in the *Gardener's Chronicle* and which

is reproduced in the report, briefly explains the working of the apparatus:—

The installation, which costs about six pence per acre, consists of three essential parts, namely, a terminal, a conductor, and a diffuser. The terminal is made of a good conductor of electricity. For example, copper is fixed at the top of a high building, and should not be less than 33 feet above the tops of the highest trees in the neighbourhood. The conductor is made of thick copper plates in a lead casing and connects at its lower end with the diffuser. The latter, also of copper, is placed in a pond, well, stream, or underground water-courses.

It is said that hail does not form within the region, and hail stones driven by wind into the protected area are found to melt at once, and hence to do no damage.

The report, however, concludes that the foregoing is still in the experimental stage and that the time for profitable action in India has not yet arrived.

Experiments made with wire-netting and cotton nets, the report adds, to prevent damage from hail have not so far been encouraging, but the same is deserving of and will receive continued attention.

Rapidity of Germination in Tobacco Seed.

The following summary of results of an investigation into the influence of sulphuric acid and of factors like age and hybridization on the germination of tobacco seed, appear in Vol. V, No. 5 of the *University of California Publications in Botany*:—

(1) The action of 80 per cent. sulphuric acid upon tobacco seed for lengths of time not over ten to twelve minutes increases markedly the total amount of germination, and in certain cases increases rapidity of germination.

(2) The action of concentrated sulphuric acid (sp. gr. 1.84) for periods of time as short as one minute killed the seed used.

(3) A markedly injurious effect of prolonged washing with running water after sulphuric acid treatment was noted.

(4) Six, seven, and eight-year-old tobacco seed was found to give a relatively high percentage of total germination in most cases.

(5) Rapidity of germination in general was found to be independent of the age of the seed, and to be characteristic of the seed of certain species or varieties throughout, and not characteristic of others.

(6) A certain period of 'after ripening' seemed to be essential for average germination percentages, as shown in the case of 1912 *N. acuminata* varieties. Seed taken from dehiscing capsules on the plants in the field gave very low percentages of germination in the case of *N. acuminata* varieties alone.

(7) F1 hybrid seed, three years old, gave higher percentages of germination than the seed of the parents of the corresponding cross and of the same age.

(8) The relation between the germination of parent and hybrid seed indicated that interesting and possibly important supplementary results could be obtained by the germination under controlled conditions of the seed used in hybridization experiments.

Hints on the Management of Dairy Cattle.

The November number of the *Agricultural News* abstracts the following hints on the management of dairy cattle in Jamaica from the *Bulletin of the Department of Agriculture* of that place. They are of interest to us in India as well:—

(1) The most certain means of improvement of dairy cattle is by the use of bulls of known pedigree from desirable parents.

(2) No cow should, as a rule, be allowed to run with the bull until two months after calving. If possible, each cow should give a calf regularly once a year.

(3) Frequently native cows dry off very rapidly when they get in calf; in such cases it is profitable to milk the cows for nine months before putting them to the bull.

(4) A bull of imported blood should receive grain feeding; this increases the number of cows he is able to serve, forty to fifty cows to each bull having been found within the range

of the herd bulls at the Hope Government Farm.

(5) Some bulls exhibit a marked tendency to give a predominance of heifer or of bull calves. For the dairy, a heifer breeder is the most desirable bull to possess.

(6) It should be borne in mind that the value of a sire cannot be realized until his daughters come into milk. It is, therefore, desirable not to part with a bull until his breeding value in the herd has been demonstrated.

(7) In Jamaica, it has been the experience of breeders that a cow's period of gestation is exactly the same as for animals in other countries.

(8) Dehorning is desirable owing to the tendency native cattle have to injure one another. The application of caustic potash to the embryo horns of a calf soon after birth enables the dehorning operation to be effected very simply and without suffering to the animal.

(9) If a cow is to be milked without its calf later on, it is highly undesirable to allow any cow to suckle its calf, which should be removed from the cow as promptly as possible. The Tropics appear to accentuate the maternal instincts of dairy cattle.

Power Cultivation for the Eradication of Hariali.

The Agricultural Department of the Government of Bombay has been provided with a set of Steam Cultivating Tackle on the Double Engine Cable system, for the eradication of the deep rooted grass, *hariali*, which is reported to be such a terrible pest in the Dharwar District. Briefly, the work required to be done is the turning over of the soil to a depth of from 14" to 16" during the dry season. The effect of this is so thoroughly to dry out the soil to that depth that the grass cannot live. It is obvious of course, that such heavy work as 16" ploughing cannot be successfully and profitably done by animal drawn implements.

"The machinery consists of a pair of engines capable of developing 90 Indicated Horse-Power fitted with winding drums and

450 yards lengths of steel wire cable. These engines, placed at opposite sides of the field to be operated upon, haul backwards and forwards between them a three-furrow plough, set to work at the required depth of 16". The work done by this implement is most effective, completely turning over and breaking up the soil to the requisite depth and exposing the roots of the hariali to the drying influences of sun and air.

The November issue of the *Indian Industries and Power* contains illustrations of the plant at work together with the above-mentioned description.

According to that journal, the Agricultural Department are charging the cultivators from Rs. 17 to Rs. 21 per acre according to conditions, whereas the operation of hand-digging would roughly cost anything from Rs. 40 to Rs. 75 per acre.

Another point noticed by the same journal is that quite apart from the question of the hariali, the deep and thorough stirring which the soil is receiving, is bound to have a very considerable effect on the yields of cotton; the value of such work being also materially enhanced by its being done during the dry season; it is more than probable that the effects on the crop of the deep ploughing will last for two, three or even four years, and at the end of this period it is very likely that the cultivators will demand the work to be done over again irrespective of whether they have any hariali in the land or not.

It is true that the initial outlay involved in the machinery is too large to enable cultivators themselves to purchase it for their own use, but some means of making the machinery available for them can be found possibly by a capitalist syndicate or a co-operative association.

Sugar Cultivation in India.

Mr. Runar Olsson Seffer, M. Sc., formerly Chief of the Botanical Section of the Department of Agriculture in Mexico, and a sugar-planter in Queensland, Hawaii and Mexico, and at present Editor of the *Review of Tropical Agriculture*, has an interesting article on the

sugar industry in this country, in the course of which he gives the following practical hints, based upon a thorough knowledge of cane-planting in this country and six other cane-producing countries:—

The subject of fertilisation is one which must be worked out in large measure for each individual district and sometimes plantation, and it is therefore not possible even to make any suggestions as to the best fertiliser formula to adopt.

To those who are seriously considering the fertilising of a small area as a trial plot, he suggests that they should also carry on a small experiment for changing the planting season from February to September and October. To begin with, plant a leguminous crop immediately after February harvesting, turn under this crop and plant cane as early as possible after the rains and then carry the crop over the cold and dry season by applying a quick acting nitrogenous manure in small doses. This will allow the cane 18 months growing season and ample time to mature. In case of frost or early maturing varieties, cut down the young cane immediately after the frost and also for maturity control, in case the nitrogen manure does not prolong this stage sufficiently. By cutting at the end of December or in January, the cane will have a distinct start over that planted in February and even more so in case the young cane need not be cut. It will also make the stools larger. Plant a foot wider between the rows than is at present the case or $4\frac{1}{2}$ feet between rows. In planting use only the uppermost joints for sets and place the sets in two continuous rows in the same furrow, which should be as deep as possible. If no rain after planting, or cutting of young cane, cultivate the space between the rows. The more the better. Nitrate of soda should be applied as a top dressing between the rows after cane has broken ground and then covered by stirring the soil with a cultivator.

In adopting earlier time for planting the cereal crop should be eliminated and rotation carried on with a leguminous crop and cane,

Secure sets of a better variety, if possible, if not improve the one standing by thorough cultivation, judicious fertilising and wider planting.

Never harvest sugar-cane before it has reached maturity as it quickens deterioration.

In case irrigation is used, never irrigate at the time of planting; allow a few days or a week to pass. In case the sun cakes the soil, irrigation will not help it except temporarily, while cultivation will conserve not only sufficient moisture for the seed to germinate but will keep the surface friable. Give first watering about a week after planting and the second, not before the plant asks for it. If a planter cannot tell this he had better seek another outlet for his energies. Continue watering during the dry seasons of the year when the cane needs it but not more nor less, and stop irrigating from six weeks to two months before harvesting. Never water immediately before harvesting when sugar is to be manufactured, nor *gur* for that matter, and never cut the cane before it is properly ripe, while if sweetmeat is aimed at then use the reversed method to the above.

Veterinary Assistance and Cattle Breeding.

At the last annual meeting of the Board of Agriculture held at Coimbatore, many important subjects were discussed and the line of action to be adopted to give effect to them.

The programmes of work of the Imperial Bacteriologist and of the Provincial Veterinary Department came up for discussion first.

The sub-committee which sat to discuss how the energies of the Veterinary Department could best be utilised for the dissemination of preventives against cattle disease and the introduction of prophylactic measures, placed before the Board four resolutions which were passed by the Board after considerable discussion. These were to the effect that the Veterinary staff of each Province was to get in close touch with the rural population with a view to instruct them on the care of cattle, sanitation, storage of forage, water-supply and prompt and effective segregation on the out-

break of contagious disease and the early reporting of the same. Another recommendation was the proposal to extend inoculation by the unqualified staff and the suggestion of an adequate increase in the superior and subordinate staff of the Veterinary Department. Another resolution referred to the establishment in every province of a system of cattle insurance on co-operative lines as the best means of creating a strong public opinion in favour of improved cattle hygiene.

These resolutions were accepted.

The Board then dealt with the suggestion of the sub-committee which sat to discuss the subject of cattle-breeding and fodder-supply. The recommendations of the sub-committee on fodder-supply were, that an investigation should be made in each province of the existing sources of fodder supply and the utilisation of it to the best advantage; that cultivators should be encouraged to include some fodder crops in their rotation; and storage against famine should be encouraged.

Regarding cattle-breeding the sub-committee made nine recommendations which were as follows:—Preservation of grazing grounds, improvement of waste areas, increase in the number of cattle-breeding stations, the maintenance of indigenous breeds of value, the formation of breeding tracts, the distribution of stock from Government Farms, the holding of cattle shows, the elimination of undesirable male stock and an increase of the staff to undertake systematic attempts at cattle-breeding. Another recommendation suggested by this sub-committee was that the investigation of the relative values of Indian cattle food was absolutely necessary and could be best undertaken at Pusa, the necessary staff being entertained to carry out the work.

All the recommendations of this sub-committee, except the last one, were approved by the Board.

Regarding the last recommendation, the Board gave its approval, but regretted that the work could not at present be undertaken on account of the necessity of a very expensive staff and equipment.

Farm Buttermaking.

A bulletin recently issued by the Washington State Experiment Station gives a number of useful hints on making butter on the farm.

Butter made from a single herd of cows in a small dairy located on the farm should command the highest price of any butter on the market. Where one man has control of all the process through which the milk goes from the time it is milked until the time it is printed as butter, the product should be the best obtainable, if this one man understands the principle and the art of buttermaking.

The first essential in making good butter is good cream. To get this simply means to take ordinary precautions regarding clean cows and barn, clean attendants and clean utensils; and then cooling the cream at once after separating, either by running it over a cooler, or by setting in running cold water and stirring. Cream should not be stored with any substance having an aroma.

Sweet cream churns hard and gives a butter having a fat taste. To sour, or ripen the cream, first heat it to about 70 degrees F. (use a thermometer) and let it stand until it has a mild but distinctly acid taste; or, second, add some sour milk or butter milk (starter) to start the ripening, at the same time holding it at 70 degrees. The best cream for churning is that which tests about 30 per cent. fat after the starter has been added.

The temperature at which the cream should be churned depends on size of fat globules, hardness of fat globules, age of cream, amount of cream, percentage of fat in cream, kind of feed the cow is getting, and this cannot be determined except by trial. Thirty-five degrees may be proper on one farm and 60 degrees on the one adjoining. A good rule to follow is to have the butter come about the size of wheat kernels in about 30 to 40 minutes. If it takes longer the cream is either too sweet or at too low a temperature, or the churn is too full. If it comes sooner than 30 minutes, the temperature is too high.

While the granules are about the size of wheat, the buttermilk should be drained, the

granules washed and the salt added. Then they are worked together, only enough to distribute the salt evenly. When the churn is not stopped until the granules become large, some of the buttermilk is encased and it makes butter of poor keeping quality.

How to Fight Drought.

During a hot, dry period when the sun is at its highest altitude and drying winds are prevalent there are many plants which suffer from the consequent drought, and any means by which this risk of damage may be reduced, especially at a time when labour is in the greatest demand, are welcome, says *The Gardener's Chronicle*. Naturally, the first impulse of the conscientious gardener is to supply the water which is lacking, but in many cases it would be better to take other means. When water is given to the ground great care should always be used to supply it in a form as nearly resembling the falling of rain as possible; by this means it is broken up into numerous small particles which have sufficient time to become warmed before reaching the roots. Moreover, when water is given in this way it has time to percolate gradually into the soil without causing a hard crust to form on the surface, and even when the greatest care is exercised it is advisable to move the surface soil as soon as it is sufficiently dry, so that the percolation tubes caused by the water passing into the ground are broken at the surface. This effectually stops evaporation, and consequently less water is needed to keep the soil in a moist condition.

On heavy soils it is seldom necessary to give any water to growing plants for the simple reason that the sub-soil contains enough surplus water to carry them over any period of draught, that is, providing the proper measures are taken to conserve the water in the sub-soil. In many hot, dry countries, this conservation of water is carried on under the name of "dry farming" to an extent which is astonishing, and gives better results than irrigation, and this with the use of much less labour. The invention of many new tools for carrying out this form of culture has no doubt helped to spread their

practice, but it might be adopted to a far greater extent than it is at present.

The first movement of the soil should be made with a toothed "cultivator," which makes the work far easier and more speedy of accomplishment than with a "Dutch" hoe. Care should be given, not so much to the cutting of weeds, as to the thorough breaking up of the surface; then a hoe over, and the ground will continue in a soft, friable state, easily and speedily worked, and it will act as a blanket conserving the moisture in the soil and yet allow the air to penetrate with beneficial results.

If soil is treated in the way outlined above, the root action will be perfect if everything else is right, and all the water that will be required is a light spraying after the sun is off the plants.

As much, or even more, benefit can be derived from the considered use of a spraying machine than from root watering; there never was a time in the history of horticulture when the engineering part of spraying was so perfect, and so easily manipulated, and yet in many of our large establishments a spraying machine is seldom used for the simple spraying of water on outside subjects. We go on spraying plants which are in greenhouses, never realising the great benefit which would follow from the same operation outside, added to which is the economy both in water—which is a great consideration when it has to be carried a distance—and labour. The time when plants make the most growth is "after the turn of the day." At this time the nights become longer, and plants are subject to heavy dews, and hence are able to obtain all the water they require. Now if this happy state can be realised earlier in the year by artificial spraying, the crop will give in many cases a double yield, and fully repay the little extra work. It is wonderful to watch how quickly a plant recovers from the utter exhaustion of a sunny day, when it receives a gentle fine spray under the foliage. It has the same effect that a bath has on a tired man, and it should be practised, especi-

ally on heavy land, to the exclusion, or nearly so, of root watering.

Mulching of garden crops with short manure is another means by which water can be conserved in the soil, but possibly there are more reasons against this practice than appear on the surface, especially for plants growing in the open ground. It is often assumed that plants gain a considerable amount of nourishment from the manure used, but this can only be true where there is plenty of time for the plant food to become available, and even then rain or artificial watering is needed to bring the food in contact with the roots.

SHADING.

Shading is a means of helping plants to give the best results, which deserves more attention in these days of cheap material suitable for the purpose.

The Gases of Swamp Rice Soils.

Bubbles of gas are given off, when a stick is forced into the soil of paddy fields or when it is otherwise disturbed. Cultivators generally do not know what important part this gas plays in the growth and development of the rice plants; and a series of experiments undertaken by the Agricultural Research Institute of Pusa and published in its *Memoirs*, Vol. III, No. 3, have resulted in a body of facts which throw much light on the effects of manuring and drainage of paddy fields. These bubbles of gas are invariably found to consist mainly of Methane and Nitrogen. The proportion these gases bear to one another varies greatly, the Methane from about 15 to 75 per cent. of the total and the Nitrogen from about 10 to 95 per cent. In addition, Carbon-dioxide is generally present together with small amounts of Oxygen and Hydrogen. The amount of Carbon-dioxide present is, on the average, about 5 per cent. but this value may fall as low as 1 per cent. and rise as high as 20 per cent. The amount of Oxygen is usually only a trace, but values as high as 5 per cent. have occasionally been met with. Hydrogen is generally absent but as much as 10 per cent. has been recorded in uncropped plots.

Elaborate examinations conducted on the swampy soil at the various seasons of the year to test the composition of the gas derived from differently treated plots, viz., (1) cropped and manured, (2) uncropped and manured, (3) uncropped and unmanured, (4) cropped and unmanured, show :—

(1) The normal fermentation of green-manure in swamp paddy soils leads to the production of relatively large proportion of Methane, a smaller amount of Nitrogen, together with some Carbon dioxide and Hydrogen.

(2) The introduction of a crop to modifies the gas production that the proportion of Methane in the gas is greatly reduced and that of Nitrogen increased. The evolution of Hydrogen is practically inhibited.

(3) The action of the crop is to restrict the formation of Methane and Hydrogen either by retarding the rate of fermentation or by a portion of the intermediate products of decomposition being absorbed by the roots. There is also evidence adduced to show that the normal evolution of Nitrogen is retarded in a similar manner.

(4) The soil conditions are shown to be anaerobic in character immediately after water is admitted to the fields, and these conditions persist so long as irrigation proceeds. Under these circumstances, nitrification is impossible and the Nitrates produced during the dry season are quickly denitrified so that the Nitrogen required by the crop is obtained from the Ammonia and nitrogenous organic compounds, produced by the anaerobic decomposition of the proteids of the green-manure.

(5) Certain of the substances produced by this decomposition are toxic to the crop, and must be removed in the drainage water, or destroyed by prolonged decomposition before the seedlings are transplanted, otherwise the crop will suffer. The application of green-manure to badly drained areas must, therefore, be undertaken with circumspection and caution.

Paddy roots, unlike the typical water plant roots, require aeration if their healthiness is to be maintained. Experiments conducted to test the effect of drainage and aeration of the soil on the crop, lead to the conclusion that the surface film of algæ, etc., which covers the surface of swamp paddy soils and which evolves large quantities of Oxygen, is the chief agent in causing the aeration of the roots of the crop.

The Oxygen evolved by this film is dissolved in the irrigation water and thus produces a very highly aerated solution from which the roots derive the Oxygen essential for them. In undrained soils, this solution does not penetrate into the soil, and, consequently, the roots are congested near the surface of the soil and the amount of soil from which they derive their food is therefore limited and the crop suffers. In drained soils, this strongly aerated water penetrates the soil and the roots are able to penetrate to a greater depth. The mass of soil from which the food supply is drawn is increased and the crop benefits in proportion.

Too great a rate of drainage decreases the formation of the film and the aeration of the roots is thereby lessened. There is therefore for all swamp paddy soils an optimum rate of drainage which produces the greatest aeration and this rate of drainage is a comparatively low one.

Aeration of these soils by atmospheric Oxygen is not as effective in promoting root aeration as is aeration by the water draining through them.

The use of green-manures in drained paddy soils induces a greater activity on the part of the surface film, thus leading to a better aeration of the roots.

It is mentioned that one of the most important functions of green-manuring, so general in South India, lies in promoting an increased activity of the surface film which leads to create aeration of the roots.

The Co-operative World.

Co-operation in Baroda.

The first Conference of Co-operative Societies of the Baroda State will be held on the 2nd and 3rd February 1914, at the Model Farm, Baroda. His Highness the Maharaja of Gaekwar will open the proceedings. In connection with this Conference an Agri-Horticultural Exhibition has also been arranged.

Co-operation among Chambers of Commerce.

At the Ninth Indian Industrial Conference held at Karachi last December, the following resolution was discussed and passed :—This Conference calls upon all persons taking genuine interest in the advancement of Indian industries :—

1. To bring about co-operation and co-ordination between the existing Indian Chambers of Commerce, Trades Associations, Mercantile Unions and Industrial Associations.

2. To establish such Chambers and Associations at important commercial and industrial centres where none such are in existence, and for this purpose to widen the scope and enlarge the working of the Industrial Conference.

Misuse of Co operation.

An instance of the misuse of the Co-operative Society is given in the Bihar and Orissa report. "Shortly before I visited Daultpur," says the Registrar, "there had been a disturbance, at the 'Bakr-Id' festival resulting in a Police enquiry. In one of the Societies I found an entry in the Minute Book of a meeting said to have been held at the time of this disturbance in which it was recorded with satisfaction that no member of the Society had taken any part in the disturbance. I found, however, that two of the names corresponded with two of the arrests made on the spot by the Police. It was an ingenious effort to create an *alibi*."

Credit Societies.

What these Co-operative Credit Societies

have to guard against in the future, when they would increase both their attraction and business is, according to *Capital*, a famine season accompanied by temporary inability to continue the repayment of loans.

The essential attraction of co-operative societies is their believed soundness. Financial failure, even in a few cases, would prejudice the entire movement. But even audit is not enough. There is the question of building up adequate reserve to meet the contingencies which are bound to arise, however honest the members, when the present tide of agricultural prosperity begins to ebb, giving place, possibly to famine or want, accompanied by temporary inability to continue the repayment of loans. It should be remembered that, in times of financial stringency, unless there are substantial reserves, even apparently sound businesses are liable to find themselves in difficulties. This truth should be taken to heart. Supposing the stability of co-operative societies is placed beyond cavil—supposing they succeed in passing through a period of crisis with reputations unshorn—then it is not unlikely that such societies will be able to attract increased deposits. Swadeshi banks are, for the time being, out of favour, and the opportunity is offered to the co-operative societies within the next decade to fill the gap. All critics agree that co-operative societies require further capital, and it is difficult to imagine any more useful purpose to which hoarded wealth could be applied than the improvement of the land.

The Co-operative Kingdom.

The bacillus of co-operation, abroad in the world, has affected nations in a variety of ways; in some its activity has been directed chiefly to problems of distribution, in others triumphantly applied to financial credit, and in still others to agriculture. In every new country it invades, the social effect differs quite as markedly as the practical application. Denmark and Italy, to select two countries whose

conditions are opposed and whose methods in a manner complement each other, have especial success in production, further manufacture, and marketing of the things which are natively grown; three fields in which there is usually much waste and loss from the limitations of the farmer, not always caused by ignorance or inexperience, but often by economic factors which are not clearly understood.

Denmark, using co-operation only in such manner as to separate all the interests of the farmer, helping to maintain his entity, has taken good care to make her citizens individualists on the land and keep them so; the several forms of society, each provided for a single detail, are quite different from the many-purposed collectivist association of Raiffeisen's ideal. Denmark presents to-day the unique example of a Government which draws a large part of its sustenance from co-operation. It is well called the co-operative kingdom, writes John L. Mathews, in *Harper's Magazine*. The country has long been pre-eminent in dairying, and the Danes have specialised with great success, providing England with butter, bacon, and eggs, and reaching out toward a greater export trade. The farmers have also erected a large co-operative beet sugar factory and a considerable number of co-operative preserving factories. This entire business, including the immense yield of root and grain, crops and the export of fine live stock at fancy prices, is carried on by a population no larger than that of Chicago. Denmark has solved her human problem by means of proper education; she has solved her land problem by means of co-operative mortgage credit and Government aid; and, best of all, she has attacked the most troublesome difficulties between the farmer and his market with notable success.

Education and Co-operation.

At the Second Madras Provincial Co-operative Conference held recently, Dewan Bahadur R. Ramachandra Rao said in his paper, that the essentials for a successful co-operative society are that there should be wide publicity of transactions, that the management should be subject to the amplest local criticism, that

each unit member, however poor he be, is as important as any other member, however rich he be, for each pledges his all, that watchful care should be bestowed on the good conduct of all members, that a strong conscious feeling that each loan should be applied to a productive purpose and dereliction implies risk to each and every member and so on. In other words, the members should be educated to intelligently watch on behalf of the public the doings of the management and of each and every member. The absolute essential, he emphasised, is education—albeit elementary, but sufficient to check the society's workings.

Education, he continued, was necessary for the residents of a village to agree to start a society; likewise to keep the society going on after it is started; and to develop non-credit activities.

And in suggesting the resolution, "That the Conference resolves that in areas where co-operative societies work compulsory education should be introduced under suitable conditions and the Legislature should enact laws accordingly," to the acceptance of the Conference he remarked that it is enough if, in the beginning, the system is limited to villages where the outstanding loan is equal to the village *beriz*—a good index to the importance of the society. If necessary, the people may be asked to contribute; or to provide the school-building free; or to set apart land as the school master's *inam*. These are matters of detail. The education should be as elementary as possible—reading, writing, arithmetic, geography of the district and principles of co-operation. The last subject should, as in Bengal, be made a part of the vernacular in all primary schools whether they are in villages having co-operative societies or not.

The Second Madras Provincial Co-operative Conference.

The Second Madras Provincial Co-operative Conference held its sittings for two days this month in Madras. The proceedings were conducted in all the important vernaculars of the Presidency. As many as sixteen papers were contributed bearing on co-operative work

in all its aspects, one by Mr. O. M. Venkathath Aiyangar on the "Chief Defects in the Rural or Unlimited Societies" being in Tamil; particulars of the rest of the papers are as follows:—

A comparison of Burmese and Madras Co-operation, by the Hon'ble Dewan Bahadur L. D. Swamikannu Pillai, M.A., L.L.B.; Co-operative Federal Banks and Investment of Trust Funds, by A. Rangaswami Aiyar, B.A., B.L.; Government Servants' Co-operative Societies in the Madras Presidency, by S. Krishnamachari, B.A.; The Draft Rules under the Co-operative Societies Act, by K. B. Ramathan, M.A., B.L., L.T.; Levy of fees For Government Audit and Inspection, by C. V. Gangadhar Sastri, B.A.; Education and Co-operation, by Dewan Bahadur R. Ramachandra Rao, B.A., I.S.O.; The Common Good Fund, by T. Natesa Aiyar, B.A., B.L.; Co-operative Societies as Investment Institutions and Savings Banks, by Rao Sahib K. Vijia Raghava Chari, M.A.; On Banking and Supervising Unions, by K. Ramaswami Aiyar, B.A., B.L.; The Expenditure of Public Funds by Co-operative Societies, by C. N. Krishna Swami Aiyar, M.A., L.T.; Interest allowed on Money Decrees, by N. Ramaswami Aiyar, B.A., B.L.; Co-operation in Madras, by M. Shiva Rao of Puthur, South Canara; A Revolution's Evolution, by Geo. N. Thomssen; Necessity of Unions, by C. N. Krishnaswami Aiyar; Programme of Future Work of the Co-operative Movement in this Presidency, by P. S. Venkuswami Aiyar.

Co-operation is Business, not Philanthropy.

Why so many enthusiasts, well-meaning though, have gathered round the trumpet of 'co-operation' is, perhaps, the word has a soothing charm dear to the moralist. But it must be admitted that those votaries will do their idol more harm than good if they are unable to discern beneath the silken glove, the iron hand of business. And we shall not be weary of repeating what Sir C. Bayley said in a characteristic speech in opening the Behar and Orissa Co-operative Conference recently. The policy was laid down by Mr. Buchan and that policy which he never ceased to inculcate

was based on the necessity for treating co-operation as a matter not of philanthropy but of business and consequently for enforcing honesty and the punctual repayment of loans.

It must be made certain before any society is registered that it will be properly supervised and inspected as well as supplied with such funds as are required for its successful working. The best security for these essentials, save perhaps a few exceptions, said the hon'ble speaker, lies in insisting that all village societies shall be affiliated to one or other of the central societies. The result of working on these lines, as shown by statistics quoted by Sir C. Bayley, was, indeed, good.

A second point emphasised by His Honour was regarding Government support. He said that there are many administrative matters in which Government by its action can do a great deal; but though Government help, especially at first, is very necessary and though some measure of Government supervision will probably always be required, the real work connected with co-operative credit, the work of organisation, the work of management and above all the work of inculcating thrift can only be done by voluntary workers, by men who are ready and willing to devote their leisure and their best efforts to the furtherance of an agency which I firmly believe will in the future do more than any other for the benefit of the Indian people in the largest and truest sense of that too often misused expression.

Turning to the question of co-operative credit, the Hon'ble speaker said that it is and must always remain essentially unofficial. In this connection, he said that it is the intelligent non-official, the zemindar, the professional man, the pensioner, who can do more to forward it than any one else and it is to these classes that he especially appealed to give it their active support.

Agricultural Co-operation.

In concluding the eighth meeting of the Board of Agriculture at Coimbatore, Sir Robert Carlyle, in addressing the members of the Board and the visitors emphasised the close connection which ought to exist between the

co-operative movement and the progress of agriculture.

Looking back on the state of things in this country when Lord Curzon started the Agricultural Department in its present form the progress made was, he said, remarkable. Work of great value had been done on some of the most important crops grown in India and we are already beginning to see the result. The Department has in many places got into close touch with the cultivator and has succeeded in inducing him to look to it for guidance and help. Great as has been the advance already made, we are only at the commencement, and if progress is to be as rapid and as secure as we all desire, there must be close touch with the Co-operative movement. Co-operative Societies should afford an admirable non-official agency which could be guided on right lines by a comparatively small supervising staff.

The primary object of the Agricultural Department is to enable the cultivator to produce larger or more profitable crops. There are many different ways in which this object has to be pursued, but one of the most important means of bringing about the desired result is to establish numerous seed farms for the production of improved seed. For this purpose, observed Sir Robert, Co-operative Societies would seem to be well adapted. Independently moreover of the work done in direct co-operation with the Agricultural Department, there are other directions in which co-operation has to supplement the work of the Department. For instance, it is not always enough to teach the agriculturist the use of new or improved implements or the value of manures for his land, but he has to be helped to get what is wanted as cheaply as possible. Then again it is very important to help the cultivator to get the best price for his produce. All this requires the help of the Co-operative Department. In this connection, he would add one word of warning, and that is, that Co-operative Societies should not be used for experimental purposes and the functions allotted to them in connection with agriculture

should be of a very strictly defined character. This is essential as it is of the greatest importance that all the book-keeping of Village Co-operative Societies should be of the simplest character possible. In time, as education improves, this may become less important, but at the outset it is a matter which is of great consequence.

Madras and Burmese Co-operation.

In a paper contributed to the Second Madras Provincial Co-operative Conference, the Hon'ble Dewan Badadur L. D. Swami Kannu Pillai brings out the analogous points of co-operative work in Burma and Madras.

The total turn over of all Societies in Burma during the year ending 30th June 1913, was Rs. 160,25,332-18-7; in Madras, it amounted to Rs. 2,95,03,000. The total number of societies in Burma on 30th June 1913 was 1,155; in Madras, 1,079. The estimated reserve funds of Agricultural Credit Societies in Burma, on that date was Rs. 3½ lakhs; in Madras, Rs. 2½ lakhs.

Money-lenders in Burma have in several parts adopted a group system of money-lending, involving unlimited liability. But those in the Madras Presidency have not yet begun on a system of unlimited liability.

The Registrar notes that Unions in Burma are less spontaneous in their origin than the Societies and they are proportionately more lacking in vitality. But Unions in the Madras Presidency have taken up in earnest the administration of their component Societies and they afford material help to the Registrar in this respect, besides paving the way for co-operative self-government.

There is a desire in various parts of Burma for co-operative stores, the formation of which is only delayed by fear of trouble in the accounts. In Madras, there are seven Store Societies and applications for more such, but, the Registrar says, that the fear of trouble not only in accounts, but in regulating supply and demand deters the multiplication of such societies.

In Burma, there appears to be a demand for Police Societies though there are none such

In Madras, there is a single Government Servants Society and the Registrar says that there is room for other Societies of the same kind, particularly at the head-quarters of districts.

Of the Agricultural Credit Societies in Burma, 370 are of the Zurratti type with shares payable in ten instalments over ten years, and the remaining 606 are Raiffeisen Societies which have ten-rupee shares which are little more than entrance fees. The share capital of most of the Agricultural or Rural Societies in the Madras Presidency is small, being generally one Rupee per share. The share capital is purposely fixed low in order to enable poor agriculturists to take shares.

There are at present no Tenancy Societies in the Madras Presidency. In Burma, a Central Society, consisting of Burman capitalists who wish to see land revert from the Chetties' hands to those of the Burman, has been formed with limited liability to acquire lands which it will let to affiliated Raiffeisen type societies in its neighbourhood.

There are nine sale Societies in Burma. Co-operative sale is, of course, still experimental. The object, we are told, is not merely to sell paddy direct but improve the quality by ensuring that the paddy so sold is kept distinct according to varieties and cleaned by up-to-date methods. The grading of agricultural products is unknown to the ryots of the Madras Presidency, though in all provinces the Agricultural Department is endeavouring to familiarise the ryots with the advantages of grading.

Many other points of similarity, such as Auditing, Cattle Insurance, etc., are noted and we are told in the end that the uneducated cultivator has a better idea of his economic requirements and potentialities than his well-wisher who disclaims his jejune views to all and sundry.

Co-operative Bank and Popular Education.

Mr. Crosthwaite submitted his paper on "Co-operative Banks and Popular Education" prepared for the Central Provinces Co-operative Conference, to the last conference of the Registrars of Co-operative Societies held at

Simla. The first portion of the paper deals with the general aspect of the question and the latter portion exclusively treats of the origin, growth and development of the Co-operative movement in his province, namely, the Central Provinces.

He opened the subject by quoting, that "the worth of a Co-operative Society is the worth of its members." "Worth," from the co-operative point of view is of two kinds,—moral and material. The worth of a new Society formed from the poor and illiterate classes—and with such, Mr. Crosthwaite mentioned, they were generally confronted in the Central Provinces—is crude in quality and doubtful in quantity. It was the aim of the co-operative movement to develop this actual worth by means of patient and persistent training. As Mr. Wolff has said, "No co-operation can flourish without education. *We may choose our own methods according to the circumstances of each case.* The great point is that education as such, education as a main item, education in co-operation, in the mechanical services entering into its practice, and education in agricultural craftlore, should be placed prominently in the programmes of co-operation, in the very forefront."

Mr. Crosthwaite is not one of those who hold that education must precede co-operation. On the contrary education, used in its broadest sense is awakened in a most effective and practical manner by the influence of simple co-operative credit societies. Popular education, in his opinion, could very well commence with instruction in co-operative principles and methods.

No Registrar, he said, who understood his business would try and import an excessive element of officialdom into co-operative institutions; for success in organization and solid permanent results are not to be attained by sham co-operation. "It must be remembered that the Government of India definitely stated that the organization of co-operative societies was not to be regarded as part of the ordinary duties of the district staff, though Government also declared that it fully recognises

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that enthusiastic officers could do much to help the movement. If the co-operative movement is to be attractive, the field of enterprise which it is to cover must be a broad one. It must appeal to the heart and the intellect and not only to the purse or to a sense of duty.

The mere lending of money was not in itself the aim of co-operative banking. In India, at present, he was afraid that the tendency of the co-operative movement was to press too eagerly for the introduction of very advanced forms of co-operation. The result would be a distinct danger of bringing in too much Government departmental assistance at the expense of self-help.

He held, however, that the time when the co-operative movement would be able to proceed altogether independently of Government would never come. In other countries the State was an important partner in the movement—a partner whose activities were restricted, as a rule, to doing what was necessary to help the people to help themselves. Popular self-help, he stated, was a delicate plant to grow. It required expert care and attention and, if forced, it would perish. The difficulty was to hit off the happy mean between a disastrous coddling and an equally disastrous want of supervision and training.

The principles which Mr. Crosthwaite would like to see generally accepted are as follows:—

(i) The progress of the co-operative banks (which include amongst their members and their directors the best educated men available) must not be confined to lending money only but must extend to the spread of general enlightenment amongst the societies which are members of and are financed by the banks.

(ii) In order to keep the active support of educated workers it is necessary to captivate their imagination and show them clearly that co-operative banks are not intended only for the benefit of certain classes but that they fit into a scheme of general improvement.

(iii) Government must give the necessary assistance in carrying out this scheme but

must not itself undertake too much or too little. Both ways lies danger. Safety can only be secured by correct adjustment.

(iv) One must be careful not to emulate too hastily certain advanced forms of co-operation in other countries. It is far better to await the results of education in co-operation than to force the pace and make a mock of self-help by running societies with an excessive measure of Government assistance. If a project be such that there cannot be a fair division of work between officials and non-officials, then clearly it is too advanced and should be postponed until unofficial co-operators are fit to perform their proper-share of the task.

The subsequent part of the paper was devoted to a history of the co-operative movement in the Central Provinces and Mr. Crosthwaite concludes, "From the purely business point of view I am sure that it will pay co-operative banks to make popular education part of their programmes. I think I can quite safely go further than that and say that unless co-operative banks do make popular education part of their business they will decay just as rapidly as they have sprung up."

A discussion followed and the Conference then adopted the following Resolution as regards the 1st and 2nd principles laid down in Mr. Crosthwaite's paper:—

"The educational value of the movement, especially in relation to agriculture, should be brought to the notice of district officers in order that their interest in co-operation as distinct from administrative interference should be duly maintained."

As regards the principles 3 and 4 in his paper, Mr. Crosthwaite said that they must not press too far forward in giving co-operative societies work which they were not trained to carry out and that they required very careful nursing.

The Conference accepted the third and fourth principles laid down in Mr. Crosthwaite's paper.

Co-operative Butter Sale in Germany.

Dr. Grabein, General Secretary of the

National Federation of German Agricultural Co-operative Societies, at Darmstadt, contributes an article on the "Organisation of the Sale of Butter by the Dairy Societies, with an Account of the Development and Activity of the Federations for the sale of Butter" to a recent number of the *Monthly Bulletin of Economic and Social Intelligence*. In it he shows that the German Dairy Societies have made considerable progress in Germany in the last twenty years, as has indeed the agricultural co-operative movement generally. The number of co-operative dairies in Germany is about 4,100. All these dairies annually treat about 4,500 million litres of milk producing altogether about 160 million Kgs. of butter of an approximate value of 370 million marks. It may be roughly estimated that the co-operative dairies supplied only about one-third of the butter produced in Germany. Dairy co-operation has therefore a vast field before it to expand in. The fact is, however, that the co-operative production of butter has attained a very considerable position in German economy.

VARIOUS METHODS OF SELLING BUTTER.

The butter of the co-operative dairies is either sold directly or through the medium of federations for the sale of butter. When the co-operative dairies sell their produce directly, they consign it, either to wholesale or retail dealers (wholesale sale), or to the consumers and members of the societies (retail sale). There are not sufficient statistical data to determine the degree to which each of the different forms of sale is practised. It may generally be said that in districts where a considerable amount of butter is produced, but the population being not dense, the dairies are obliged to sell their butter wholesale to large dealers at a distance.

Butter is sold to wholesale or retail dealers either at a price fixed in advance, which remains in force for the whole period of the contract, or at the market price of the day. Generally, sale at the market price of the day is most usual. To establish this price, the quotations of the centres of the butter trade,

within the sphere of influence in which the place of production is, are consulted. Members are often granted specially favourable prices, sometimes far lower than the market prices.

VARIOUS FORMS OF SALE.

The question whether preference should be given to wholesale or retail sale has been keenly discussed in the German co-operative press. No agreement could be come to. Everybody, however, agrees that every co-operative society must, in the first place, endeavour as far as possible to meet the needs of members and non-members of the locality. In districts of large production without urban centres near, that might make a large demand, the co-operative dairies have to address themselves to wholesale and retail dealers for the sale of their produce. It may be to the advantage of the dairies to deal with retail rather than with wholesale dealers when they have succeeded in obtaining for themselves a solid clientèle which can take their whole output of butter regularly at suitable prices.

The question whether it is best to adopt a fixed price or that of the market for the day is a simple one. The sale of the output at a fixed rate is a great convenience for the management of the business, but it is not scientific and it costs the dairies dear. Several co-operative dairies have had sad experience of this, in the autumn of 1911, when, through deficiency of pasturage, the price of butter at Berlin rose to 158 marks the $\frac{1}{2}$ quintal and the dairies, bound by contracts for the year to supply at fixed prices, could only obtain 120 marks. Therefore the co-operative federations are unanimous in recommending the dairies to arrange their contracts in accordance with the daily market price.

FEDERATIONS FOR THE SALE OF BUTTER.

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North German Federation for Sale of Dairy Produce .. in 1911 :	16.78

that enthusiastic officers could do much to help the movement. If the co-operative movement is to be attractive, the field of enterprise which it is to cover must be a broad one. It must appeal to the heart and the intellect and not only to the purse or to a sense of duty.

The mere lending of money was not in itself the aim of co-operative banking. In India, at present, he was afraid that the tendency of the co-operative movement was to press too eagerly for the introduction of very advanced forms of co-operation. The result would be a distinct danger of bringing in too much Government departmental assistance at the expense of self-help.

He held, however, that the time when the co-operative movement would be able to proceed altogether independently of Government would never come. In other countries the State was an important partner in the movement—a partner whose activities were restricted, as a rule, to doing what was necessary to help the people to help themselves. Popular self-help, he stated, was a delicate plant to grow. It required expert care and attention and, if forced, it would perish. The difficulty was to hit off the happy mean between a disastrous coddling and an equally disastrous want of supervision and training.

The principles which Mr. Crosthwaite would like to see generally accepted are as follows :—

(i) The progress of the co-operative banks (which include amongst their members and their directors the best educated men available) must not be confined to lending money only but must extend to the spread of general enlightenment amongst the societies which are members of and are financed by the banks.

(ii) In order to keep the active support of educated workers it is necessary to captivate their imagination and show them clearly that co-operative banks are not intended only for the benefit of certain classes but that they fit into a scheme of general improvement.

(iii) Government must give the necessary assistance in carrying out this scheme but

must not itself undertake too much or too little. Both ways lies danger. Safety can only be secured by correct adjustment.

(iv) One must be careful not to emulate too hastily certain advanced forms of co-operation in other countries. It is far better to await the results of education in co-operation than to force the pace and make a mock of self-help by running societies with an excessive measure of Government assistance. If a project be such that there cannot be a fair division of work between officials and non-officials, then clearly it is too advanced and should be postponed until unofficial co-operators are fit to perform their proper-share of the task.

The subsequent part of the paper was devoted to a history of the co-operative movement in the Central Provinces and Mr. Crosthwaite concludes, "From the purely business point of view I am sure that it will pay co-operative banks to make popular education part of their programmes. I think I can quite safely go further than that and say that unless co-operative banks do make popular education part of their business they will decay just as rapidly as they have sprung up."

A discussion followed and the Conference then adopted the following Resolution as regards the 1st and 2nd principles laid down in Mr. Crosthwaite's paper :—

"The educational value of the movement, especially in relation to agriculture, should be brought to the notice of district officers in order that their interest in co-operation as distinct from administrative interference should be duly maintained."

As regards the principles 3 and 4 in his paper, Mr. Crosthwaite said that they must not press too far forward in giving co-operative societies work which they were not trained to carry out and that they required very careful nursing.

The Conference accepted the third and fourth principles laid down in Mr. Crosthwaite's paper.

Co-operative Butter Sale in Germany.

Dr. Grabein, General Secretary of the

National Federation of German Agricultural Co-operative Societies, at Darmstadt, contributes an article on the "Organisation of the Sale of Butter by the Dairy Societies, with an Account of the Development and Activity of the Federations for the sale of Butter" to a recent number of the *Monthly Bulletin of Economic and Social Intelligence*. In it he shows that the German Dairy Societies have made considerable progress in Germany in the last twenty years, as has indeed the agricultural co-operative movement generally. The number of co-operative dairies in Germany is about 4,100. All these dairies annually treat about 4,500 million litres of milk producing altogether about 160 million Kgs. of butter of an approximate value of 370 million marks. It may be roughly estimated that the co-operative dairies supplied only about one-third of the butter produced in Germany. Dairy co-operation has therefore a vast field before it to expand in. The fact is, however, that the co-operative production of butter has attained a very considerable position in German economy.

VARIOUS METHODS OF SELLING BUTTER.

The butter of the co-operative dairies is either sold directly or through the medium of federations for the sale of butter. When the co-operative dairies sell their produce directly, they consign it, either to wholesale or retail dealers (wholesale sale), or to the consumers and members of the societies (retail sale). There are not sufficient statistical data to determine the degree to which each of the different forms of sale is practised. It may generally be said that in districts where a considerable amount of butter is produced, but the population being not dense, the dairies are obliged to sell their butter wholesale to large dealers at a distance.

Butter is sold to wholesale or retail dealers either at a price fixed in advance, which remains in force for the whole period of the contract, or at the market price of the day. Generally, sale at the market price of the day is most usual. To establish this price, the quotations of the centres of the butter trade,

within the sphere of influence in which the place of production is, are consulted. Members are often granted specially favourable prices, sometimes far lower than the market prices.

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	Million Mks.
Federation of "Clover"	
Dairies "	1911 : 2'08
Co-operative Sale Society for the North-West German	
Dairies "	1911 : 1'60
Central Society for the Sale of Butter, Breslau . . . "	1911 : 0'55
Lower Bavarian Co-operative Society for the Sale of	
Butter "	1906 : 3'02
Suabian Dairy Federation . . "	1907 : 2'28
East Prussian Co-operative Society for Production of	
Table Butter "	1898 : 0'58
West Prussian Federation for the Sale of Butter . . . "	1907 : 2'43
Federation for the Sale of Butter by Auction, at	
Hamburg "	1912 : 3'30
Federation for the sale of Butter by Auction, in	
Berlin "	1912 : 1'50
Total ...	36'02

Allowing for a certain increase in the sale of the four federations, the figures given for which refer to years too remote from us, the total amount of butter sold by the central societies may be reckoned at from 40 to 45 millions. This amount does not seem too large, when we compare it with the total amount of butter produced by co-operative societies, which is about 370 million marks. Certainly the centralisation of the sale is less appreciable in the case of butter than in that of grain and livestock, on account of the different nature of such produce.

An institution lately founded by the National Federation of German Agricultural Co-operative Societies must also be mentioned. In

May, 1912, the National Federation organised a free exchange of addresses between dairies desiring to purchase butter and those wishing to sell. In this way, the dairies are given the possibility of coming into immediate relations with each other, while the expenses of Commission usual in trade are saved.

FEDERATIONS FOR SALE.

The existing federations for the sale of butter have almost all been constituted under the legal form of registered co-operative societies. They declare that their chief object is the collective sale of the butter produced by their affiliated dairies. If these federations are to attain their object, they must make sure of the *Compulsory Consignment* of the butter produced by their members. The federations sell the butter to wholesale or retail dealers at the warehouses they have founded or by auction. The commission charged by the federations varies between 1 and 4 pfennings a pound. Payment for the butter sold is made to the dairies either on the basis of the prices actually received for the produce forwarded by the dairies after deducting expenses; or on the basis of an average price, after classification of the produce according to quality. The results obtained by these federations have answered the expectations of their founders. These institutions have above all had a favourable influence on the formation of wholesale prices.

As the purchasing power of the population is increasing and superior quality is always better appreciated by a larger clientèle, perfect home manufactured butter will be as readily sold as indifferent butter exposed to severe foreign competition. Therefore, the importance from the point of view of national economy is pointed out of the federations for the sale of butter actively seeking to improve the quality of their produce.

The Industrial World.

Sericulture in Gwalior.

It is announced that a scheme regarding the rearing of silk-worms, as a cottage industry in that State, which for some time had been receiving the attention of the Darbar, has been sanctioned. The salient features of the scheme are that, for the present, work will be started at four centres, *e.g.*, Chanderi, Sipri, Gwalior, and Ujjain (or in some other selected places). A nursery for the supply of castor and mulberry leaves will be attached to each centre. Arrangements have been made for the supply of pure seed from Pusa and other places. There will be a special staff for popularizing the work of silk rearing amongst the cultivators.

Schrottky Indigo Paste.

Dr. F. Marsden, Government Tinctorial Expert, Madras, says in his latest quarterly report :—Early in September I was requested by the Director of Agriculture to attend a dye trial with the Schrottky standard natural indigo paste, at one of the large mills, and as the success or failure of this product appeared to be of importance to the agricultural community, I did so. The paste, which had been made at an indigo factory in the north of the Presidency in the presence of officials of the Agricultural Department, was tested for value against the commercial branch of synthetic indigo, and the result of the trial was in every respect unfavourable to Schrottky paste.

Indian Technical Students.

A note by the Hon. Rai Sita Nath Bahadur, Honorary Secretary to the Bengal National Chamber of Commerce, to the Bengal Government regarding the proposed Calcutta Technological Institute contains a very practical suggestion for removing the serious difficulty which is experienced by students of applied arts and sciences in securing apprenticeships

in factories after completing their studies. The difficulty is that the newly trained students are looked upon with feelings of jealousy as prospective competitors in their respective branches. The remedy for removing this difficulty, which is suggested in the note referred to above, is that the Government should impose necessary conditions on firms for taking apprentices while making purchases from them. This procedure can, doubtless, be effectively applied to firms both here and in foreign countries. The Government is a big customer in nearly all branches of industry and by adopting the procedure suggested it can secure apprenticeships for Indian students in all of them. For instance, in placing large orders for electrical supplies with an electrical engineering company, it can impose the condition that they shall take so many students as apprentices. This procedure is being successfully adopted by the Japanese Government in securing apprenticeships for Japanese students in foreign firms.

The Canning Industry in the U. S. A.

The December number of *Dun's International Review* contains a copiously illustrated article on the wonderful development in preserving the different kinds of food by extensive use of labour-saving machinery. Efforts to preserve various kinds of food in times of plenty for future use have been made by mankind since the beginning of history. It may, perhaps, be a far cry to trace the first rude attempts almost confined to the drying of seeds or grain, and then putting them away in places where they would keep in good condition until needed for consumption, to the latest and most up-to-date innovations introduced with the help and guidance of scientific and hygienic laws, where every process involved is perfected by modern machinery. We do not intend to follow the

could, without much difficulty, procure an almost unlimited supply of the best unadulterated Ceylon papain if they were willing to pay a slightly better price for it than for the West Indian product, and would accept it in its natural state.

The Possibilities of Silk in India.

In the November issue of the *Indian Industries and Power*, Commissioner Booth Tucker discusses the potentialities of this important industry and suggests some lines on which it may be developed. India is the natural home both of the silk-worm and of its principal food, the Mulberry. While that is the case, it is a matter for wonder why this country has so far lagged behind in the rearing of silk. Of course half-hearted attempts are being made in some parts of India to cultivate the silk-worm, but no systematic attempt has as yet been made. Commissioner Booth Tucker gives some reasons for this. The silk industry is peculiarly dependent for its existence in certain branches upon the sympathy and support of Government. The manufacturing processes may safely be left to private initiative. But when we consider the growing of silk-worms and the production of cocoons, Mr. Booth Tucker is correct in saying that it neither has flourished, nor can flourish, nor continue to flourish without such assistance as only a Government and no private individual or corporation can render.

The silk-worm is an extremely delicate creature, to protect which, an encyclopædic expert knowledge is required. Unless it is domesticated, fed, cared for, policed and protected, it soon disappears, or maintains a precarious and ignoble existence.

One ounce of eggs will devour the leaves from 15 matured mulberry trees. To keep in the field a commercially valuable army of silkworms, millions of trees will be required, and who but Government can arrange for these to be planted and maintained? Once planted, however, the mulberry tree becomes a valuable asset to any State, or Public Department. One small forest of some 10,000 acres, of which about 75 per cent. consists of mulberry, yields

to Government an annual revenue of more than half a lakh of rupees for timber and fuel alone, after paying all expenses, and this only from an annual cutting over of a block of 400 to 600 acres. No replanting is necessary. In 15 years, the cut-over area is ready to be cut again! Its riches in leaves and fruit have not yet been exploited.

It may be asked, how can Government help to establish the industry? Mr. Booth Tucker gives the following reply:—

(1) By placing a reasonable sum on its budget for annual expenditure. No Local Government can do much with an expenditure of less than one lakh. If it is not prepared to make so small a sacrifice for so great an object, let it leave the question to others, who are prepared to deal seriously with it.

(2) Let definite orders (not good advice) be issued to Forests, Canals, District Boards and Municipalities to plant mulberries, both trees and bushes, and to supply young plants to all who apply.

(3) An army of instructors will be required. For this the ordinary vernacular schools can be utilised. Let all teachers be encouraged to learn the elements of Silkology by an addition of Rs. 2 to Rs. 3 per month to their salary. Let mulberry be planted near every school and seed of the best kinds or worms be given to the children, and the cocoons they raise be bought back from them at their market value.

(4) Bulletins, pamphlets, wall cards and press notices should be issued in both English and the vernacular, and an active campaign carried on. A Silk Magazine might very shortly be issued and would soon secure a considerable circulation.

(5) The diseases from which silkworms suffer must be intelligently combated by a competent staff of experts, who will give the people the necessary instruction. Since Pasteur discovered the causes and cure of Pebrine, disease can easily be controlled by the adoption of proper precautions.

(6) The French plan of offering bonuses and prizes to the producers of silk is also excellent.

(7) It goes without saying that the example

of even the most tariff ridden countries should be imitated in placing the raw produce on the free list so far as customs and octroi are concerned.

(8) Finally, a special Silk Bureau or Department should be organised in each Province or State, and a free hand given to its head and a reasonable sum of money placed at his disposal. A good organising man with business ability is more needed for this position than a silk expert. It must not be forgotten that an expert seldom possesses those qualifications which are imperatively necessary for a leader. The latter should, however, have at his elbow an expert, to whom he can turn for information regarding all technical details.

The Indian Industrial Conference.

The Hon'ble Mr. Lalubhai Samaldas' presidential address at the Ninth Session of the Indian Industrial Conference held last month at Karachi is an instructive document of the country's progress in industrial matters. He divided the industries of this country, for practical purposes, into agriculture and its allied industries, including within the scope of the last term, manufactures, mining and chemical industries, and indigenous industries or handicraft.

Among the "large" industries, he mentioned the cotton mills of Bombay, and the jute mills of Bengal. He pointed out that the total production of woven goods was steadily increasing and that there was a tendency to improve the quality of these goods.

American cotton is being imported to a much larger extent than before, enabling the mills to spin finer counts of yarn. The production of woven goods has doubled itself in the last decade, and yet the imports of woven goods do not show any decrease. This, Mr. Samaldas explained, was due to the fact that the production of white and bleached goods in this country is on so small a scale that it has not affected the import to any appreciable extent. In his opinion, so long as Indians have to depend for plant and machinery on foreign countries, so long as they are behind these countries in their knowledge of technological

chemistry, and so long as they are not able to produce cotton equal in quality to American or Egyptian cotton, they would find it difficult to compete on fair terms with Manchester or other centres of weaving industries.

In this connection, he referred to the continuance of the excise duties on cloth produced in Indian mills. The import duties on cloth were imposed for fiscal purposes only, and not with the idea of protecting the mill industry of this country. As a free trader, he asked for the repeal of the excise duty.

Mr. Lalubhai Samaldas further said that similar progress was noticeable as regards other factories, such as cotton and jute presses, ginning factories, iron and brass foundries, rice mills, tile factories, etc.; the only industry that shows a falling off is the indigo industry, due to the introduction of synthetic indigo in the market. Then, he proceeded to say that except in respect of tile factories, there has been an increase in the number of factories worked by mechanical power and a corresponding decrease in those worked by hand-power.

Among other "large" industries, he pointed out the Tata Iron and Steel Company as, perhaps, the largest and the most important Swadeshi industry that has been recently started in the country.

The President, then, in a general way, outlined the causes of failure of a large number of joint stock concerns? These are, he said:—

(1) want of expert preliminary inquiries as to the possibility of the success of that particular industry;

(2) inexperienced or inefficient internal management.

(3) want of control by the agents;

(4) want of commercial or economic knowledge as regards that particular industry;

(5) the difficulties in the way of getting the required working capital at a profitable rate of interest.

To emphasise the necessity of careful preliminary inquiries, he drew attention to a matter referred to in the latest report on the moral and material progress of this coun-

early literature on this subject, dwelt upon by the *Dun's Review*.

While the business of canning has become a very important factor in the commercial and industrial life of many countries, it is in the United States that the industry has reached its fullest development, rendered possible by the low cost and vast supplies of raw materials, the extensive use of labor-saving machinery and the carrying on of operations on a very large scale. Some idea of its present day importance may be gathered from the following figures given by the Bureau of the Census:—The latest returns show that there were in the United States in 1909 some 3,767 establishments actively engaged in canning and preserving, with an invested capital amounting to \$119,207,000. These concerns paid out for raw material \$101,823,000 and turned out products valued at \$157,101,000.

The principal vegetables canned are tomatoes, corn, peas, beans, etc., and of fruits, pears, peaches, apples, berries, apricots, etc. There are also canned salmon, sardines, oysters, and other kinds of fish. In addition to the foregoing, condensed milk is put up in cans, besides large quantities of various food-stuffs, among them lobsters, shrimps, crabs, clams, baked beans and many different kinds of soups and meats—with the list constantly being added to.

The smoking and salting of fish or meat which followed the most primitive method, was succeeded by the use of sugar as preservative. Finally came the system of sterilization by heat, which is now the method of preserving articles of food most in use. It is wrong to think that all materials can be treated in the same way; methods depend upon the nature of the article to be preserved.

One point needs special mention here. It must be said that until Pasteur, by his discoveries in bacteriology, pointed the way towards placing food preservation upon an exact scientific basis, the business was largely of a haphazard nature. There was much loss by spoilage, for which no reason could be given, as the packers could not understand why one

lot of food would keep, while another, apparently put up in exactly the same way, would not. It is now known that this spoilage is caused by bacterial action, and investigation has shown that in every instance it has been due to improper processing. This knowledge was obtained through an extensive series of experiments, which eventually disclosed the proper amount of heat and the time of treatment to which any given article should be subjected to insure the absolute destruction of any bacteria that might be present. These experiments were supplemented by microscopical examination by experts, so that the industry may now be said to be conducted along absolutely exact scientific lines. It is mentioned that, in the United States, the farmers who devote their energies to the raising of produce for the canneries have become specialists, with the result that the raw material provided for the requirements of this industry is generally of far better quality than that which is raised for the general market. This feature is not the least potent factor contributing to the rapid expansion in the demand for American canned goods, for the consumer has found that in many instances the food which he can purchase preserved in tin, is not only cheaper, but is better than that which he can prepare himself.

Papain.

A recent issue of the *Journal of the Royal Society of Arts* contains some useful information regarding the production and uses of papain. Among us, particularly in South India and Ceylon, the digestive qualities of the papaya are so well known that the fruit is almost universally used, and, undoubtedly, with great effect in preventing dyspepsia. The *carica papaya* grows largely in Ceylon, India, the East and West Indies, and the Hawaiian Islands, and seems to prefer a slightly sandy soil that is not too rich. According to the American Consul at Colombo, there are several varieties of *carica papaya*, and the papain derived from the different kinds varies accordingly, the best being obtained from the male trees of the Ceylon hybrid papawa. The papain obtained

from the West Indian variety is said to be inferior. The digestive and disintegrating properties of papain are remarkable. The milk, and even the fresh leaves of the papaya tree, will render the toughest beef tender in the space of two hours. Indian cooks invariably wrap tough raw beef with the fresh leaves for half an hour, or apply a small quantity of the fresh milk directly to its surface, or put a piece of the green fruit into the raw curry when the beef will not boil soft. If a large quantity of the juice is applied to the raw beef, it reduces it in little over half an hour to a pulpy mass that appears as if it had undergone partial digestion. Papain is said to be capable of digesting ten or twelve times its weight of egg albumen at the temperature of the human body.

There are many other uses for papain. Taken in tablet form, or in the form of raw fruit, it acts gently but effectively upon the liver and bowels. It is also said to remove freckles, and is frequently used by the natives of Ceylon as a soap. From its power to remove stains in clothes, papain is called "melon bleach" by the Cingalese, and they use it in the water when washing coloured clothes, especially black, which it seems to intensify. In the Annies it is used as a cosmetic, and produces clear, sunny complexions. Commercial papain, or the crude drug, is a brownish, gummy substance, looking like coarse bran or irregular granules of gum-arabic. In Ceylon, it is prepared by treating the juice of the fruit with rectifying spirits, and either drying in the sun or evaporating in dry-air chambers. The age, sex, and variety of the tree are important in determining the quality of the dried preparation. Papain is insoluble in water, coagulates when heated to 175° F. or when exposed long to air, and has an acrid taste and acid reaction.

Commercial papain is prepared in granular and powdered forms. The natural colour of the former is a light brown, which becomes darker when exposed to the air for any length of time. Powdered papain is of a light biscuit colour, which does not change on exposure to air; a darker-coloured powdered papain indicates adulteration or improper preparation.

Dr. H. Huybertsz, the Ceylon authority, states that European and American importers object to papain in its natural colour, and insist that it be white, or at least light. This, he says, is a great mistake, as it can only be obtained by bleaching, a process which sacrifices the therapeutic efficacy for pharmaceutical appearance. The taste of papain is slightly saltish and somewhat acrid. It has a peculiar, unmistakable smell, and the "feel" of granular papain should be crisp like biscuit, and easily crushed between the fingers. When it is doughy or sticky, it has been adulterated and badly prepared. It has also slight escharotic action, and collectors of the fresh juice have the skin of their fingers blistered. When mixed with water it has a soapy feel. Its adulterations are many and often difficult to detect, and range from dough and bread-crumbs coated with the fresh juice and dried, to the addition of gutta-percha and wild cactus milk.

At present, a crude material is prepared by natives in Ceylon, and, containing abundant adulteration, is purchased cheaply by local firms, who export it as papain or papaya juice. Its preparation is primitive, and consists only of drying in the sun or over a smoky fire, and of thickening by the addition of starchy matter, such as bread, flour, arrowroot, biscuits, etc. Recently the native has resorted to the use of a dangerous material for use in adulteration, namely, the milk from the gutta-percha and wild cactus. The latter has irritant properties, acting as a caustic. The comparative failure of papain as a therapeutic agent is undoubtedly explained in part by the sophistication to which it has been subjected. Up to a comparatively few years ago, the value of papain was little understood, and it was mostly used in making chewing gums and mucilaginous products. Since then the United States, Germany, and England have imported considerable quantities. In the former country, however, there appears to be a preference for the inferior qualities from the West Indies; the American importers also desire a white or bleached papain, which the Ceylon natives are not always in a position to supply. Importers, however,

try. The report says :—" One unsatisfactory aspect of the manganese industry is the loss that India has suffered by exporting manganese ore and importing steel instead of manufacturing at least a portion of the ore into ferro-manganese." On the face of it, the remark seemed justifiable. The question naturally arose as to why double freight is paid on the export of the ore—taking manganese at fifty per cent.—and the ferro manganese imported with the freight added to the cost of manufacturing the same, when both these freights could be saved by erecting a plant in the country to manufacture ferro manganese. It is only when they began to examine the details of the question that it is found that, at present, it is more profitable to import ferro manganese than to manufacture it.

Another industry which has made good progress during the year is that of cotton seed oil manufacture. The Tatas were the first to start this industry, and they had uphill work in establishing a market for these commodities. Other people have to a certain extent benefited by their work, and as a result, the Indian Cotton Seed Oil Co., Ltd., at Navasari, and similar factories at Akola are able to place their products on the market at a profitable price.

Another new industry, that has been started during the year, is that of cement manufacture. Two factories are being erected for this purpose; one at Porebander in Kathiawar and the other at Kani in Central Provinces. A third company has been floated for preparing Natural Cement. One of the two companies first started is going to lay down plant for glazed pottery.

The President also stated that there was a proposal to start a factory for the manufacture of hand-made paper in Ahmedabad.

There is not much progress to record, said the President, as regards indigenous industries except in the case of handloom weaving. Handloom weaving factories have been started in Madras, the United Provinces and in Bombay.

Condensed Milk.

In countries, like India, where the question of a dwindling milk supply is one of perennial alarm, it must be of considerable interest to look to any source that would allay the fear, if not completely remove it. It is with this idea that we turn to the exceedingly instructive article, appearing in the Year Book of the U. S. A., just issued, on the manufacture of condensed milk. During the last 25 years, this important industry has made rapid progress towards perfecting the various processes for successfully producing condensed and evaporated milks. It is evident that the industry is no longer in the experimental stage and can be relied upon to manufacture the produce with expert care.

'Condensed milk,' 'desiccated milk' or 'milk flour' is the resultant of reducing the water content of the milk, leaving the solids in a more concentrated form without destroying their food value, and at the same time improving their keeping qualities. In trade circles, however, the term "condensed milk" is applied to milk that is concentrated and preserved with cane sugar. The term "plain condensed milk" is applied to milk that is concentrated and sold in bulk without being sterilized or preserved with sugar, and the term "evaporated milk" is applied to milk concentrated and preserved in cans by sterilization. Evaporated milk contains nothing but normal milk reduced to about one-half of its original bulk, while the sweetened condensed milk contains fully one-third cane sugar. Evaporated milk has, to a large extent, taken the place of sweetened condensed milk.

To produce a condensed milk of good flavour and keeping quality, the milk to be treated must be of a superior grade. This is so important that the large American concerns engaged in the business employ trained men to examine the herds and ascertain that there are no diseased cows, that the stables and surroundings are in good sanitary condition, that the attendants who do the work are healthy and cleanly attired, and that the milk is pro-

perly cared for and cooled before it is delivered to the condensery.

To make doubly sure that the quality of the milk received is right, an expert, with a keen sense of taste, inspects every can of milk received, and if any unnatural flavour is detected, the can of milk is rejected and returned to the producer. This extreme care is absolutely necessary, because an objectionable flavour becomes intensified and cannot be eliminated during the various processes to which the milk is subjected.

Milk is usually condensed in a vacuum pan, although a few concerns concentrate milk in an open pan in the following manner:—The milk is run through a centrifugal separator and the cream removed. The skim milk is then pasteurized and run into rectangular vats provided with several pipes by means of which air is forced through the milk by a blower. During the process the skim milk is held at about 140 F., and the air, which is often heated by passing over steam coils, carries off the moisture in the milk, thus reducing its volume to the required consistency, usually about 4 to 1. After being thus treated, it is known as concentrated skim milk. If concentrated whole milk is desired, the cream which has been pasteurized is restored and emulsified in an agitator.

The equipment of a condensing plant using a vacuum pan depends upon the kind of product made, although the process used and the machinery required is similar for all condensed-milk products.

For the manufacture of "plain condensed milk," the equipment consists of a boiler, engine, scales and weigh-can, receiving vats, milk heater, hot wells, vacuum pan and condenser, vacuum pump, cooling tank, and cans. If skimmed milk is condensed, a separator is necessary, as well as vats, pasteurizers, and coolers for handling the cream.

In the manufacture of sugared condensed milk, the same equipment is necessary as for plain condensed milk, and in addition a tank is sometimes provided for dissolving sugar before adding it to the milk in the vacuum

pan. If the product is put up in cans, machines for filling and sealing cans are necessary, also for making cans when they are not purchased from outside can manufacturers.

For making evaporated milk, an equipment similar to that used in the manufacture of plain condensed milk is required, except that a tubular cooler is used for cooling the product instead of the cooling tank, and machinery for filling and sealing cans is also required; also a device for sterilizing the product in the cans, and a shaker for violently shaking the filled cans after sterilization.

A late innovation in equipping a milk condensery is the homogenizer. Difficulty is sometimes experienced by those engaged in producing evaporated milk in preventing a separation of the solids after it has been kept for a time, the lighter solids going to the top and the heavier ones to the bottom. As homogenizing normal milk prevents (partially at least) cream from rising, it is claimed that it will have a like effect on milk to be evaporated.

The granulation of the milk sugar, which gives evaporated milk the appearance of containing some kind of an objectionable grit, is also said by some to be overcome by the use of a homogenizer. This machine, however, has not been in use sufficiently long to determine definitely its value for the purposes mentioned.

The equipment of condenseries is quite uniform, but considerable variation is noted in operating, especially in the temperatures used. It is evident that no hard and fast rules can be laid down to be followed under varying conditions. The following description of the process used in making the different grades of condensed milk and the cost of equipping, contributed by a gentleman who has had extensive practical experience in its manufacture and in manufacturing and installing such machinery, is probably as nearly correct as can be obtained:—

"Plain condensed milk" is made from whole milk, from part whole and part skimmed milk, and from skimmed milk. To get the

desired density it is necessary to condense the whole milk 3 to 1 and the skimmed milk about 4 to 1.

The milk to be condensed, is put into hot wells and heated with steam to a temperature of 150° to 156°. It is then drawn into the vacuum pan and condensed, if whole milk, to 10° Bau., and if skimmed milk to 14° Bau. As soon as the desired density is reached the milk is superheated by blowing steam into the milk in the vacuum pan until the milk becomes thick. The temperatures used in this process vary from 175° to 200°.

As soon as the milk is sufficiently thick, the steam is shut off and water is run into the condenser to secure the proper consistency. The vacuum pump is then started slowly, and the vacuum drawn up to about 26 inches. The vacuum is then released, and the milk is drawn into 10-gallon cans and placed in the cooling tank and cooled to 36° to 38° F. by first cooling as cold as possible with water and then shutting off the flow of water to the cooling tank and turning the brine or ammonia through the coils in the side of the cooling tank.

Sugared milk to be put up in cans is made from whole milk and is condensed 4 to 1 and 1 pound of sugar added to each 3 quarts of milk condensed. The milk is heated in the hot wells as hot as possible by steam blown into the milk through a heater head. It is then drawn into the vacuum pan and condensed. There are different methods used in adding the sugar to the milk. Some manufacturers have a separate tank, where the sugar is dissolved either in hot milk or hot distilled water, and the syrup so made drawn into the vacuum pan gradually with the fresh milk; others draw nearly all the milk into the vacuum pan and dissolve the sugar in the hot wells in the milk left there for that purpose. It is then drawn into the vacuum pan after the milk is condensed.

Sugared condensed milk to be sold in bulk

is made from part or all skimmed milk in the same way as the canned goods, except that 1 pound of sugar is added for each 4 quarts of skimmed milk to be condensed. This class of goods is used by bakers and confectioners, and is made with any desired per cent of butter fat from whole milk to full skimmed milk.

Evaporated milk is made from whole milk and is heated in the hot wells the same as for sugared condensed milk. This milk is condensed in the vacuum pan until it has the required percentage of solids and butter fat desired by the manufacturer. After the milk is condensed it is run over a pipe cooler and cooled to about 60° and is then put into small cans and sealed. As soon as it is sealed it is put into the sterilizer and heated to about 240°. While in the sterilizer the milk is kept in motion, so that the contents on the cans will be heated through evenly. The time required depends upon the size of the cans and the condition of the milk, and varies from 18 to 45 minutes. As soon as the milk is sterilized it is immediately cooled in the sterilizer, and when cold it is removed from the sterilizer and shaken in a shaker until it is smooth.

A small condensed-milk plant for making plain and bulk-sugared condensed milk with a capacity to condense 10,000 pounds of milk a day can be built complete for about 7,500 dollars; a 20,000-pound capacity plant will cost about 20,000 dollars. The above estimate is based upon complete equipment and plain but substantial building.

The cost of the plant to make canned goods depends largely on how completely it is equipped and whether the cans are manufactured in the plant or purchased from some can manufacturing company. The cost of canned-goods plants ranges from 20,000 to 200,000 dollars, depending on the size and style of the equipment and building. It is not practical to make canned goods where the milk supply is less than 15,000 pounds per day.

The Commercial World.

Business Enterprise in India.

The business enterprise of India during the month of October 1913, may be seen from the following abstract of Companies registered in that month:—

			Rs.
6	Banking Companies	...	64,00,000
5	Insurance Companies	...	2,65,000
1	Navigation Company	...	1,00,000
8	Trading Companies (other than specified above)...	...	11,40,000
1	Cotton Mill	...	7,00,000
1	Flour Mill	...	1,50,000
1	Oil Mill	...	2,00,000
1	Planting Company	...	5,00,000
2	Companies (other than those specified above)	...	1,00,100
26	Grand Total	...	95,55,100

Directors' Salaries.

A correspondence dated 4th November 1913, appears in the *Economist* in which it is stated that it very frequently happens that the managing directors, by themselves, or in combination with principal shareholders, whom they appoint as directors, hold more than half the shares in a company. They are then in a position to assess their own value, and to fix the rate of their own remuneration out of the funds of the company.

It is maintained that directors are trustees for the shareholders, and that to pay themselves, or their friends or relations, more than their market value is just as wrong as to purchase goods and supplies, from themselves or their relations, at higher prices than they would have to pay in the open market. There is no practical remedy for this. This is a defect in the law that operates seriously to minimise the utility of the machinery set up by the Joint Stock Companies Act.

"A short clause added to the Act empowering minority shareholders to appeal to the court to have the directors' and managers' salaries taxed, or assessed, in any case, where they were

actually fixing their own salaries would be beneficial all round. It would be no hardship to the directors, as the dissatisfied shareholder could be penalised if it were found that he had brought a purely vexatious action. To make such an amendment effective, it would be necessary to give shareholders a legal right to know what salaries are paid."

Position of the Cotton Trade in India.

Cotton and its products represent on the average of the three years ending 1912-13 about 19 per cent. of the total value of the exports of merchandise from India, the actual figures being Rs. 42.23 crores and Rs. 222.98 crores. For comparison it may be mentioned that the value of exports of jute and its derivatives is Rs. 40.32 crores, while rice and wheat represent, respectively, Rs. 28.28 crores and Rs. 14.67 crores.

It has been computed that on the average of the three years ending 1912-13 the total cotton crop of India with its cotton seed has had a value of about Rs. 61,26,47,476, or some 5.2 per cent. of the value of all India's agricultural produce, so far as can be ascertained.

The raw cotton of commerce is the fibre or lint attached to "seed-cotton" which is the crop of the plant of the genus *Gossypium*. This plant in its several species and many varieties is so widely distributed in all tropical countries, and has been in cultivation so long a time, that in many of these countries it is virtually indigenous.

Although cotton is grown in many places, most of the world's commercial supply is obtained from the United States of America, from India, and from Egypt. The following statistics, compiled from the latest issue of the United States Department of Agriculture Year Book, show the average outturn of cotton in the three years 1909, 1910 and 1911:—

		Bales of 500 pounds, gross weight, or 478 pounds, net.	
United States	...	12,435,753 = 61 per cent.	
India	...	3,669,735 = 18 "	
Egypt	...	1,369,722 = 7 "	
Other countries	...	2,811,955 = 14 "	
of the world	...	20,287,165 = 100 "	
Total	...	20,287,165 = 100 "	

India therefore ranks second as a source of cotton.

The Packing of Paper for Export.

We do not export paper but we import it very largely. Not unoften the imported bales are received greatly damaged and it is as well that in such cases the attention of the supplier is drawn to the instruction given below for packing. When paper is to be shipped to foreign countries, it is of the utmost importance that it be packed solidly in strong wooden crates outside of jute sacks and with iron hoops. Paper is usually packed in large bales of 550 lbs. or even more. On account of the freight which is frequently charged according to the cubic measure of the bales, this is an advantage to the shipper, but at the same time they must be so tightly pressed, that they measure as little as possible. If the paper is of such a quality that it is very elastic and springs out again after the bales are pressed, extra solid frames and hoops must be used. The hoops must then be accurately fitted, so that the pressure becomes equal on all of them, and there always ought to be placed a hoop lengthwise and three or four across the bale. The paper, of course, must be well protected against moisture, as loading and unloading often must be done in rainy weather. The wooden frame must be made from dry material, so that moisture from the frame may not enter the bale. The frame must be sufficiently large to protect the corners and edges of the paper, as they otherwise may be torn. When rolls are to be packed the same rules apply as above. Rolls frequently are packed singly and without crates, for which reason it is still more important that the edges should be well protected. If several rolls are packed together, solid materials must be used. If the rolls are very small it may be practical to use solid cases for packing, but in this way the cubic measure generally becomes considerably larger than for pressed bales. For marking, there ought to be used stencils with plain letters and black India ink to secure lasting and plain marks. The best way is to mark on two sides of the bales to be certain that they do not get erased during the trans-

port, and also obviate the necessity of turning the bales around when they are to be sorted. Marking 'with care' and 'use no hooks' is always necessary, but it is doubtful if such marks are always heeded. It might be in the interest of every papermaker to see his paper 'well off' in order that the buyer may have a guarantee that what he orders will be delivered to him carefully packed, and therefore undamaged.

The Art of Selling.

The importance of a definite scheme of selling and how big sales could be built up in a few months are set forth in a recent issue of the *Organiser*.

Selling is difficult or easy according to the article you have to sell. Demand, quality, price and, to some extent, competition must all be taken into consideration. Some articles are difficult to sell because no demand exists for them. When, for instance, such a thing as a safety razor or a typewriter is first invented, nobody wants it. It may be of great utility, but before you can sell it you have to employ means of making its value known, and of persuading people to apply it to their own needs. This costs a lot of money, and in consequence, a large margin of the gross profit has to be provided in order to cover the selling expense.

EVERYONE WANTS INCREASED SALES.

Increased sales result from one or more of the following causes:—

(1) The use of better selling methods. (2) Improvement of quality or reduction of price of goods at present handled. (3) Selling other articles which are more easily disposed of, in addition to or instead of those at present sold.

Selling embraces many operations and they should all be permeated with a definite policy. This was how a firm of piano retailers successfully catered for business, securing both custom and profits.

Having got the name of a person who was interested in pianos, the next step was to send him a booklet which brought particulars of the kind of piano he wanted, even down to the price he was prepared to pay. This was

followed by an illustration and description of the piano that would suit him better than any other, and the business was carried through step by step to its logical conclusion. In conjunction with this scheme, a tactful assistant was employed to visit some of the people who did not reply, or who asked for further information, but as a rule the customers were not called upon; the matter was carried through by correspondence after the names had been obtained through the post.

But it must be remembered that there is only a limited number of articles to which this kind of scheme would apply. The selling methods of every article must be separately considered.

The question of price decides the class of people to whom you must appeal. The percentage of people who will buy decides to some extent whether you can approach them most economically through the press, by letter, or by a combination of both methods. The importance of the purchase, whether it is likely to be completed through the post or over the counter, and the profit on the sale will decide what subsequent steps are to be taken.

We hear so much of the science of selling and the power of advertising that we are rather apt to lose sight of the fact that success depends now, as much as ever it did, on giving the public what they want at the price they are willing to pay.

Advertising as a Psychological Science.

Mr. P. C. Burton, lecturing at the Birmingham Exhibition, said that there had been very considerable controversy as to what advertising really was. It had been called a gamble, an art, a science, a profession. It had also been called a most undignified method of creating sales for one's goods. Explaining, Mr. Burton continued:—"Every profession passes through three stages—the gamble stage, the skilled stage, and the art and science stage. The first of these stages is dependent upon individual knowledge, and the second upon collective knowledge. I think you will agree with me that

advertising left the gamble stage behind some years ago. It has almost passed through the skilled stage and arrived at a stage when it may be classified as a science.

"Although a number of interesting and instructive books have been written upon the subject of advertising, many of which have been of great value, I know of no two works so detailed in their examination of advertising problems as Mr. Gerald B. Wadsworth's 'Principles of Advertising,' and Professor Paul Cherrington's admirable work entitled 'Advertising as a Business Force,' and I strongly commend them to your attention.

"I have said that advertising is a science, and would suggest to you that the three great factors which bear on the advertising problem, and which must be carefully considered and weighed up by the advertising man, be he manager or agent, are:—(1) The product or article to be sold, (2) the possible field of consumption, (3) the means and methods by which the goods are to be conveyed to the consumer. It is essential that, before you attempt any advertising campaign or sales plan, you make a very clear analysis of these factors."

The lecturer then dealt at some length with Mr. Wadsworth's axiom, that the five most important points which the advertising man must consider are:—

- (1) The advisability of the commodity.
- (2) The source of the commodity.
- (3) The substance.
- (4) The group in which it can be named.
- (5) The class of commodity it is.

Concluding, he said:—"You will see how far this scientific analysis can be carried, and how extraordinarily interesting and intricate the problem of merchandizing becomes when all these commercial considerations are analyzed by the several methods just outlined. I have endeavoured to show you how vital a force in modern business and modern merchandizing advertising has become, and how necessary it is to consider the publicity side of a modern business, not only from the mere copy and design point of view, but also from the standpoint of a psychological study."

Negotiable Instruments Bill.

Sir William Meyer, introduced the Negotiable Instruments Bill in the Imperial Legislative Council on the 6th instant, and referred it to a Select Committee. In explaining the measure he said :—"The Bill was published in the "Gazette of India" of December 13th, and from the Statement of Objects and Reasons appended thereto Hon'ble Members will have gathered what purpose it is designed to effect. All that is now needed from me, I think, is a short explanation as to the necessity for the Bill and the way in which its provisions will operate. The object of the Bill can be set forth in a single sentence, being merely to place beyond question the legality of what are known as endorsements 'in the alternative,' that is to say, endorsements on a negotiable instrument made in such a way as to render the latter payable to two or more payees jointly or in the alternative to one or some of several payees. These "alternative" endorsements on Government promissory notes, which were a particular form of negotiable instruments, are, as Hon'ble Members doubtless know, particularly common in this country as a result of the joint family system. Formerly, it was the practice for the Public Debt Office on the presentation to them of note for renewal or for payment of interest to recognise such endorsement without question. In 1911, however, doubts were raised in certain quarters as to their legal validity and the Public Debt Office took objection to alternative endorsements in which all the payees named did not join. The matter was thus brought to the notice of the Government who considered it desirable to place it on a clearer footing. A further reason for legislating was the desirability of embodying in the Indian law the same definite statutory provision for the case of negotiable instruments made or endorsed in the alternative as exist in the English Law. The English Bills of Exchange Act 1882 makes it clear that any negotiable instrument made or endorsed in the alternative is valid, and Hon'ble Members will no doubt agree with me as to the convenience of approximating the

law relating to business documents as closely as possible to that in force in England. It was therefore considered expedient not to confine the proposed legislation to one particular class of negotiable instrument, viz., to Government promissory notes, but to extend it to all negotiable instruments as defined in the Act of 1881 i.e., cheques, promissory notes and bills of exchange. This purpose can be effected simply by embodying in the Indian Law the first sentence of sub-section (2) of section 7 of the English Bills of Exchange Act, which runs as follows :—"A Bill may be made payable to two or more payees jointly or it may be made payable in the alternative to one or two or one or some of several payees," a provision which, read with sections 71 and 89 (1) of the same Act, also applies to cheques and promissory notes. A proposal to undertake legislation on these lines was placed before Local Governments, the Chambers of Commerce and Presidency Banks in May last, and the complete unanimity of their replies justifies me, I think, in describing this modest piece of legislation as entirely non-controversial. I may add a few words by way of exposition on the substantive clauses of the Bill, copies of which are in the hands of Hon'ble Members. Section 13 of our Negotiable Instruments Act defines a negotiable instrument as a promissory note, a bill of exchange or a cheque by clause 1 of the present wording. By clause 2 of the present Bill we propose to add a sub-section to that section, re-producing in effect the wording of sub-section 7 of the English Bills of Exchange Act 1882, 45 and 46 Vict. C 41. The object of clause 3 of the Bill, which is based on section 34 of the English Bills of Exchange Act is to make it clear that not only can a negotiable instrument be made payable in the alternative when originally drawn in that manner, but that if not originally drawn, it can be made thus payable by endorsement. I may mention that it has not been considered necessary to make any corresponding specific provision as to the discharge of a negotiable instrument drawn in this form, for if such an instrument is specifically declared to be legal, then the receipt of

the alternative payee or payees will constitute a valid discharge. Similarly it has not been considered necessary to provide separately for the payment of interest.

Limitations in Business.

As a general rule a man is free to trade in whatever manner he pleases. The mode in which he conducts his business concerns himself alone and he is free to adopt any means within his power to secure an advantage over his rival.

A clear exposition of the rights and wrongs of trading was given by Mr. Justice Sargeant in delivering judgment in the case of *Spalding v. Gamage* (29 T.L.R. 541). He said :—

"A trader may commend or puff his own goods to an unlimited amount without giving cause of action to another trader, although the latter, if more scrupulous in statement, may in fact be considerably prejudiced by the glibness and exaggeration of the first trader. A trader may, apart from contract, cut prices to any extent and sell at a loss, with the object of taking away custom from a rival, without giving any cause of action to that rival. But a trader must not sell goods which are not those of a trader, rival or not, as being the goods of that trader; nor must he sell one class of goods of a rival trader as being another or superior class of goods of that trader. And when traders make a feature of undercutting and offering gigantic bargains to the public, it is necessary for them to be specially careful that the goods offered, at what is often represented as being far less than their true cost price, are the very goods which they purport to be, and the ordinary cost of which is stated as an attraction."

So strict is the principle of law, says the *Ironmonger*, that nobody has any right to represent his goods as being the goods of somebody else, that a trader will even be restrained from selling his own goods under a name which is merely a true description of the goods if, by so doing, the public are misled into thinking that they are buying the goods of some other trader. An *obiter dictum* of Lord Blackburn, in giving judgment in the case of *Singer*

v. Zoog (8 A. C. 15), should be noted. His Lordship said :—

"The original foundation of the whole law is this: that when one, knowing that goods are not made by a particular trader, sells them as and for the goods of that trader, he does that which injures that trader...it is an actionable injury to pass off goods, known not to be the plaintiff's, as and for the plaintiff's, even though not inferior."

Provided he does not do so dishonestly, or in breach of any contract, a trader may offer for sale, at less than cost-price, goods which he has not got in stock, but hopes to acquire, although by so doing he damages the trade of the manufacturer.

In the absence of fraud, a man will not be restrained by the courts from trading in his own name, even if there is a probability that the public may be occasionally misled by the similarity of his name to that of some other traders. Before the court will grant an injunction in such a case, it requires to be convinced that there has been a "passing-off" by the defendant of his goods as being the plaintiff's (*Turton v. Turton*, 42 Ch. D. 128). On the other hand, an individual is not entitled to confer upon a company the rights he possesses in the use of his name (*Kingston v. Kingston* (1912). 1 Ch. 575).

The restrictions upon trading owe their existence exclusively to the law of the land. In some cases, trading restrictions are self-imposed, and result from agreement of parties.

Agreements framed with a view to keeping up the prices of commodities are apparently in restraint of trade, since they aim at preventing a man from selling goods at his own price.

Further, it is an obvious fact that, in the ordinary way of business, a man is entitled to derive what benefit he can from his fund of knowledge, no matter in what manner he may have acquired it. There is an exception, however, in the case of a knowledge of trade secrets, which a person has acquired under circumstances which render it inequitable for him to make use of the secret processes otherwise than in the interests of the discoverer ;

as, for instance, where one person has derived his knowledge of a trade secret from having been in the service of another person. The legal position in such a case was stated by Mr. Justice Astbury, in the case of *Amber, etc., Co. (Lim.) v. Menzel* (1913, 2 Ch. 239) in the following words:—

"The Court will restrain an ex-servant from publishing or divulging that which has been communicated to him in confidence, or under a contract by him, express or implied, not to do so; and generally from making an improper use of information obtained in the course of confidential employment; and further from using, to his late master's detriment, information and knowledge surreptitiously obtained from him during his, the servant's employment."

Similarly it is wrong to copy the names and addresses of an employer's customers, or to appropriate any other part of an employer's property, with the intention of diverting it to one's own personal advantage and profit.

Commerce in Conference.

Sir Fazulbhoy Currimbhoy in explaining the resolution regarding the Industrial and Commercial Congress which owed its inception greatly to his efforts, at the Ninth Indian Industrial Conference held at Karachi last month, referred to the notion that the proposed Indian Commercial Congress was rival and antagonistic to the Industrial Conference. The president had assured that the scheme of a Commercial Congress was in no way antagonistic to the conference and Sir Fazulbhoy Currimbhoy said that it was almost superfluous on his part to adduce any further arguments in support of that position. He yielded to no one in his appreciation of the service which the Indian Industrial Conference had rendered to the country and is still rendering in creating, encouraging and promoting the industrial and commercial aspirations in the public mind and in representing to the Government the necessity of adopting measures to promote the economic well-being of the country. The conference has stimulated interest in industrial matters and it

has been one of the principal agencies in bringing about a change of sentiment which is visible everywhere. This, he said, was valuable record of good work accomplished in a comparatively short time and Sir Fazulbhoy said that he was not so ungrateful as to seek to undermine the institution which was responsible for that good work. It is proposed that the Commercial Congress should be more in the nature of such organisations as the Associated Chambers of Commerce having for their object the presentation of the collective views of the Commercial community of India.

The Electorates entitled to send delegates to the Congress are to be recognised, as also well known public bodies such as Chambers of Commerce, Leagues, Associations and so forth actively interested in Indian commerce and manufactures. The Congress will be the mouthpiece of these classes in representing to the Government their wants and wishes. It is evident that the bodies which are intended to be represented in the Commercial Congress are not directly or considerably represented here in this Conference. Nor is it likely that they will be in the near future, because, while all commercial men would be glad to join a movement entirely and specially devoted to their interests, only some of them can be expected to take interest in the large problems of policy which this Conference is called upon to consider. Moreover it is impossible to discuss in a Conference like this details of intricate commercial questions which arise from time to time and in which the trading and commercial classes are vitally interested. In his opinion, a general gathering like the Conference with large national objects in view is not in the least likely to be affected by the institution specially designed to be the mouthpiece of the commercial community. It may be asked and it has been asked, why start a new institution instead of joining in the one already existing? The answer is that the proposed Congress will be formed on the basis of the existing commercial bodies which are in no way connected with this Conference. While it will be com-

paratively easy to persuade local commercial organisations to organise a common gathering of their own delegates, it would be far more difficult to induce them to join a general Conference of this kind. Every trade and profession has its own genius and special requirements which can be adequately satisfied only in a body of its own members. Mr. Lalubhai Samaldas has already referred in his presidential address to the possibility of the amalgamation of the proposed Congress and this Conference. This will become possible in course of time. There is ample room and work at present for two such bodies. One cannot but help the other. The proposed Congress will be the means of creating and stimulating interest in the work of this Conference among classes who have not hitherto come within its influence. An idea seems to prevail that there is a "deliberate though indirect intention disclosed in the draft rules of the Industrial Congress to exclude European organisations probably on the ground that the interests of the two communities are irreconcilable." The draft rules have not any such intention even hinted at in them. Such, at any rate, is not their intention and as the Congress is for the commercial welfare of the country and as the commercial interests of Europeans and Indians are interwoven, they will do their best to secure co-operation of European organisations, and he appealed to the leaders of different Chambers to help in this movement. Moreover, the Indian Merchants Chamber and Bureau have already addressed European Chambers on the subject. If they desire any modification in the constitution, they will be glad if they will indicate at the preliminary meeting of the Committee the direction in which they deem them necessary.

The following resolution was adopted:—

This Conference welcomes the Scheme of the proposed All India Commercial Congress, formulated by the Hon. Sir Fazulbhoy Currimbhoy Ebrahim as affording unmistakable proof that the leaders of the Commercial and Industrial Community are awakening to the need of organising their interests so as to de-

velop greater solidarity of influence and opinion and to be better able to represent with weight and authority the Indian point of view in the counsels of the Commercial World of India and the Empire. It appoints a Committee consisting of the following gentlemen to consider and report how this Conference can best co-operate with the proposed All India Commercial Congress in advancing the objects which it is intended to promote:—K. N. Mudholkar, Hon'ble Lalubhai Samaldas, Sir Fuzulbhoy Currimbhoy, Sir R. N. Mookerji, Mr. J. Chaudhari, Hon'ble Babu Ganga Prasad Varma, Mr. C. Y. Chintamani, Mr. N. Subbarao, Mr. Rajaratnam Mudaliyar, Mr. G. Chagla, Mr. Usutalli, and Lala Lajpatrai.

The Tata Iron and Steel Company.

At the sixth ordinary general meeting of the shareholders of the Tata Iron and Steel Company held in Bombay on the 20th November last, Sir Sassoon J. David, in proposing the adoption of the report, dwelt on the working of the concern since the adoption of the last report in 1912. He stated that a second furnace had been in blast since 21st September, 1912, and continued to yield satisfactory results. The pig iron department worked very well and progress would have been more marked but for the dockers' and transport workers' strike in Europe which considerably interfered with the supply of bricks. Among other difficulties, he mentioned that of getting foreign workmen to stay in such a place as Sakchi. These are remediable defects, he said, and would soon be removed.

The company's financial prospects seem to give no cause for fear.

"The gross profit for the year is about 12½ lakhs. Of this about three lakhs and a half have gone in payment of debenture and other interest. This leaves about 9 lakhs. In addition, over a lakh of rupees of money derived from premium on shares was also available for disposal. Of these ten lakhs, nearly three lakhs and a half have been transferred to the wiping out of the cost and expenditure on relinquished collieries and a small sum has been used to write down the preliminary expenses account. Two lakhs have been carried to the depreciation account, about Rs. 70,000 are to be carried forward to next year and the directors recommend that the balance of about Rs. 3,68,555 be appropriated to the payment of preference dividends, clearing off all arrears."

It is hoped that better returns may be expected with the improvements that the company is to instal shortly.

Openings for Business.

[For particulars address, the Director-General of Commercial Intelligence, New Imperial Secretariat, I, Council Street, Calcutta, mentioning the *Wealth of India*. Firms that may like to follow up any enquiry should give proper references and restrict themselves to those enquiries only which they are fully and seriously qualified to handle.]

MOTOR CARS.

A merchant in Montreal, Canada, is desirous of appointing agents in Bombay, Calcutta, Madras, Karachi and Rangoon for the sale of motor cars. (C 190.)

BUTTON LAC.

A Hamburg firm is desirous of communicating with shippers of residues of button lac. (C 192.)

AGAVE.

A dealer in Hyderabad is desirous of communicating with purchasers of agave leaves or trees. (C 193.)

SEEDS, HEMP AND IVORY.

A New York firm is desirous of communicating with exporters of seeds, hemp and ivory. (C 199.)

JUTE AND LINEN GOODS.

A Dundee firm is desirous of appointing an agent in India and Burma for the sale of jute and linen goods, canvas, carpets, twines, ropes, etc. (C 200.)

FOOTWEAR.

A London firm is desirous of appointing an agent for the sale of boots and shoes. (C 201.)

BAUXITE.

A Calcutta merchant is desirous of getting into touch with some one who is prepared to work a newly-discovered deposit of bauxite. (C 203.)

PUMIC STONE POWDER.

A firm in Jessore, Eastern Bengal, is desirous of communicating with sellers of Pumic Stone Powder, a ton of which is required monthly. (C 205.)

RAW SILK, WASTE SILK AND COCOONS.

A firm in Milan is desirous of communicating with exporters of raw silk, waste silk and cocoons. (C 206.)

MOTOR VEHICLES.

A firm in New York, U. S. A., is desirous of appointing agents for the sale of motor cycles, bicycles, automobile specialities and accessories, cycle sundries and marine motors. (C 207.)

ORES AND SCRAP METALS.

A firm in Germany desires to act as agent to firms in India which export ores and scrap metals and which import metal goods. (C 209.)

MOTOR CARS AND MOTOR LORRIES.

A firm in Wisconsin, U. S. A., is desirous of appointing an agent for the sale of four and six cylinder cars and motor lorries of three fourths and one ton capacity. (C 210.)

AGRICULTURAL MACHINES.

A firm of manufacturers in New York, U. S. A., is desirous of appointing agents for the sale of all kinds of machines and implements for agricultural purposes. (C 211.)

WOOD-WORKING MACHINES.

A firm of manufacturers in Ohio, U. S. A., is desirous of appointing agents for the sale of wood-working machines specially adapted for carpenters, blacksmiths, wheelwrights and contractors. (C 212.)

MOTOR CARS AND TAXICABS.

A firm of manufacturers in Cleveland, U. S. A., is desirous of appointing agents in Calcutta and Bombay for the sale of gasoline motor cars, trucks, and taxicabs. (C 214.)

ELECTRIC AUTOMOBILES.

An American firm that makes electric automobiles desire to appoint agents in principal centres. (C 215.)

CONCRETE MOULDING MACHINERY.

A firm in St. Louis, U. S. A., is desirous of appointing agents for the sale of concrete moulding machinery and appliances. (C 216.)

FLOUR MILLING MACHINERY.

An American manufacturing firm is desirous of appointing an agent for the sale of flour milling machinery. (C 218.)

PRINTING MACHINERY

A firm in Michigan, U. S. A., is desirous of appointing an agent for the sale of cylinder presses, paper-cutting machines and labour-saving devices for printers. (C 219.)

The Economic World.

The Land Campaign in England.

At Swindon on October 22nd, Mr. Lloyd George made known the decision of the Cabinet as to the lines on which the Liberal Land Policy is to be developed. The proposals include :—

FOR THE BENEFIT OF FARMERS.

The establishment of a Ministry of Lands. The Ministry to take over the present staff and duties of the Board of Agriculture and the machinery for land valuation, and to control all matters relating to the user of land, whether in town or country.

Commissioners are to be appointed under the Ministry of Lands with power to decide whether a notice to quit given by a landlord to a tenant farmer is reasonable or capricious, and in the latter event, to award the tenant exemplary compensation for disturbance of goodwill. If the tenant is disturbed by a sale of the estate, the seller must pay him compensation.

Small farmers to have the right to a revision of existing rents under similar conditions to those provided in the Scottish land courts.

Large farmers to have the right to appeal if the rent is put up, and also if, through any action of the State, wages are increased in the district, or in times of severe agricultural depression.

FOR THE BENEFIT OF LABOURERS.

The principle of a *minimum wage to be established by law for the agricultural labourer*.

The Ministry of Lands will have full powers to acquire at a reasonable price all waste, derelict, and neglected tracts of land, and to take such steps as may be necessary to afforest, reclaim, and develop these waste lands, and it will be a duty incumbent upon them—using the resources of the State for the purpose.

A schedule will be prepared of all districts where housing accommodation is insufficient. The

central authority will then build the houses and let them at an economic rent.

The Commissioners will have power to fix the price of the land required for the purpose.

Every house must have a garden sufficient to supply vegetables for the tenant's use.

The Insurance Reserve Fund will be invested in the housing scheme.

The present staff of the Board of Agriculture and the Valuation Department will do the main work required. The only new appointments will be the Commissioners.

Condition of the Mill Labourer.

Mr. G. K. Devadar, M.A., of the Servants of India Society writes :—

I tried to collect detailed information of 100 mill-hands working in four mills in Bombay situated in two localities distinct from each other, viz., Chinchpokli and Tardeo, and the following summary will be found interesting. The average age of a mill-hand is 32·96 ; 80 of these have come from the Konkan districts, whereas the remaining 20 hailed from the Deccan districts. The average period of his stay in Bombay is 17·37 years ; and during this period they have changed their service only 2·37 times ; but 37 men have stuck to their first service, 41 changed it owing to low pay, and 22 had to change owing to sickness. Out of these 100 mill-hands, 67 are unable to read and write, 8 can only sign their names, but the remaining 25 can both read and write well. Owing to several causes, mill-hands shift their lodgings and every man changes it on an average 2·46 times during the period of 17 years' stay. But there is a large number among them that stick to one service and one abode.

The monthly earnings of these 100 men show an average of Rs. 20·17, while the monthly average expenditure of a mill-hand's family is Rs. 20·31. The members of some mill-hands' families work in the mills. Out of 100 mill-hands' families, only 49 families have additional income, which works to an average of Rs. 15 a

month. Out of this number, 35 mill-hands go to their native place for one month every year; 13 persons go for one month in two years; 14 of them spend a month at their native place in three years; 6 persons go for one month in four years; three persons leave Bombay for one month in five years; while the remaining 29 scarcely go or do not go out of Bombay at all. A mill-hand has an average of 3.77 persons in his family. Out of 100 mill-hands, 45 are total abstainers, 23 drink occasionally, while the remaining 32 are confirmed drunkards. Out of these 100 mill-hands, 25 persons have no debts; but the remaining 75 have borrowed to the extent of Rs. 7,827, or an average of Rs. 104 per mill-hand. This amount of Rs. 7,827 has been borrowed for various purposes—Rs. 1,337 for the maintenance of the family; Rs. 3,795 for marriages; Rs. 120 for agricultural purposes, Rs. 1,200 for paying off ancestral debts, Rs. 1,250 were borrowed during the period of sickness or for performing the last rites of deceased relations, and only Rs. 125 were borrowed for litigation.

The Present Economic Position of India

In a recent issue of the *Monthly Review*, Prof. V. G. Kale reviews the present situation in India with regard to her industries. One by one our old industries connected with sugar, paper, glass, silk, iron have been swamped by fierce foreign competition and are to-day killed or in the process of being killed.

Speaking of agriculture, Mr. Kale thinks that Indians should devote their energies to the development of agriculture, the premier industry of the land, which on account of its supreme importance needs all the attention that can be paid to it.

Our textile industry stands in need of improvement. We want cotton of a finer quality. Our tobacco industry, Mr. Kale says, is also handicapped by the poor quality of the stuff produced. Therefore our efforts should be directed towards the spread of primary education, the establishment of co-operative societies and agricultural banks, the diffusion of useful information regarding improved methods among the ignorant peasants, the

success of better manures, and more extended irrigation works. Mr. Kale wants the educated people and the Zemindars to co-operate with the Government in this matter and not leave the poor and ignorant ryot to his own crude efforts.

Mr. Kale thinks that instead of sending all our raw materials to foreign countries to be manufactured there we may be able to manufacture our own goods and pocket all the profit that goes at present to other people.

But he does not underrate the difficulties of the task. We have not enough indigenous capital. Mr. Kale would invite foreign capital for that purpose; provided that it is handled by our own people. Most of what are called flourishing industries, industries with the growth of which India is usually credited, are in European hands, the fruit of European labour. The profits made from them naturally go out of the country, and India is none the richer for them.

This rather 'dismal' survey of economic India, however, has not led the author to be pessimistic about India's future. The free trade policy of England, the old attitude of people there towards "plantations" and dependencies still survives and it is no wonder, says Mr. Kale, if India is by many looked upon as a rich field for exploitation by European capitalists and manufacturers. "New India is Protectionist and wishes the Government to adopt the same faith. The complete identification of the rulers and the ruled is the key-note of success."

How to Raise the Cost of Living?

An interesting sidelight has been thrown on the problem of the cost of living which, according to Mr. Harold C. Ridgely in the December *Forum*, can be raised, lowered, or kept as it is, and can therefore be studied from three points of view. Taking the above title of the article as his text, Mr. Ridgely humourously launches his theme thus.

To begin with, in a small town, there may not be a food monopoly. Then, get the food men together and have them work towards a common end. Next, the food monopolists

must have a market house. The town council can build that out of the public funds, with rented stalls. That will take care of a large share of the food supply and the board of managers can fix prices better under this concentrated system. If the supply men sell to stores outside the organization, buy nothing from those supply men. Buy out half the shops in town, especially after getting well with the market, and securing much of the trade formerly handled by the small trader.

Make the farmers and hucksters who bring food to town and sell it from house to house pay for a high licence. The political friends in the city council can be induced easily to do that. The more licenses collected, the more funds to advance salaries of city clerks and other officials. It would probably be best, however, to prohibit the selling of vegetables and fruits from house to house, or at any rate to limit it to the owners of farms. Nor should a fellow townsman be allowed to buy from the farmers and then do a peddling business. The argument, in support of this, is that the merchants of the town, who pay taxes, should be protected.

Get the Health Officer to say a few remarks about the desirability of concentrating the food supply into one district. He might state that the microbes can be more readily stamped out under such conditions.

The writer has a fling on this point at New York and says that its many invaluable laws should be studied and copied by those interested in raising the cost of living elsewhere.

In fastening the grip upon a town, see that there is a proper monopoly of transportation. If there are any free roads, turn them into toll roads. The excuse can be that the former will be relieved of the cost of repair.

Once bent upon raising the price of food, allow no sympathies to interfere. The water fronts should be in proper hands; the town docks should be leased to some rail road or steamboat company, with strict injunctions that no outsiders are to make a landing.

Mr. Ridgely following the same vein of writing, mentions one of the most important

items influencing the cost of living that is well calculated to raise house-rent. The item referred to is the municipal debt. Make the debt so enormous that no generation will ever be able to pay it; make it so large that even the interest on it will be a burden, not only to the future generations but to the present.

The result is that the interest on the debt must be paid, and taxes must be collected for that purpose. Property owners must pay the taxes and will raise the rent to defray the expense.

When the rise in the cost of living has been firmly established, which cannot be done all at once, but by slow degrees, 'Professor Bonehead' would deliver his customary lecture on the diminished purchasing power of gold; also, one on the law of supply and demand and its relation to prices.

It will be seen from the above that the author considers the whole question of the cost of living as a manipulation of capitalists' interests.

Land Settlement in the Congress.

At the twenty-eighth Session of the Indian National Congress held at Karachi last month, the Hon'ble Nawab Syed Mohamed, in his presidential speech, dwelt at some length on the land settlement policy of the Government of India. He traced the early official literature on the subject from the year 1793, when Lord Cornwallis gave the Permanent Settlement system to Bengal, to the Despatch of the Secretary of State in 1885 in which, while abandoning the idea of a permanent settlement, he directed that enhancement should be based mainly on considerations of general increase in the value of land.

Settlements and re-settlements are now regulated by the rules laid down in that Despatch. It is admitted that in the prosperity and contentment of the vast agricultural population lies the strength of the administration and that the measure of the ryot's prosperity largely depends on the revenue that he has to pay. Though we have been, said the president, contending for now more than thirty years that the ryot's burden is not susceptible of any

further enhancement, the fiscal side of the question dominates the policy of the Government and they are reluctant to forego the right of enhancing the assessment which they now possess. The English nation is a manufacturing nation, while India is a purely agricultural country. While the great increase in the manufacturing activity of Great Britain has given its inhabitants such extensive scope for employment that the want of land as a field for investment and employment for labour is comparatively little felt there, India has no industries other than agriculture and is under the necessity of exporting her raw products. Her one national industry therefore deserves the fostering care of the Administration. The introduction of a permanent settlement, while securing the contentment and prosperity of the agricultural classes, will also indirectly augment the public revenue.

But the authorities, continued the Nawab do not seem to fully realise in practice that in a prosperous and contented peasantry lies the strength of the Empire. He maintained that Permanent Settlement is the only solution of India's agrarian problem. It behoves Indians as practical men to moderate their demand to the extent to which the Government are likely to yield, never forgetting for a moment the object in view. It behoves them also to ask for the removal of the many serious hardships of re-settlements and the heavy burden of increasing assessments. He said that thirty years is too short a period for settlements and that it should be extended to a period of not less than sixty years in order to give it an appearance at least of quasi-permanency. We should also press on the attention of the Government of India the desirability of confining enhancements solely to a substantial rise in prices and of fixing a maximum limit of $12\frac{1}{2}$ per cent. to enhancements in revisional settlements. It was proposed that the rules for settlement should be embodied in a legislative enactment and this proposal has had the approval of such a high authority as the Decentralisation Commission. While the Local Governments decline to allow the matter to be

discussed in the Provincial Councils, the Government of India are not disposed to take action in the matter. It is therefore our clear duty to press the matter on the Government of India, in order that, in the absence of Permanent Settlement, they may at least in the end, agree to a compromise in the direction proposed on the maxim of "Half a loaf is better than no bread."

Nationalisation of Indian Railways.

The advantages of Government-Ownership and Nationalisation of Railways are set forth, with special reference to India, by Mr. Raicharan Mukerjea in the January number of the *Modern Review*.

The writer says that railways, when they are owned by Companies, go to swell the pockets of private Trusts and individuals, while the State has to provide the land over which the Railway runs and to make many other concessions more or less onerous. The State-ownership of the Railways, on the other hand, by bringing the surplus profits into the National Exchequer, may make the burden of the taxpayers smaller and less heavy.

State-ownership, in the opinion of the writer, is peculiarly needed in India. For, in this country all the capital for the construction and equipment of railways is imported from abroad, and foreign merchants and millionaires carry away out of the country all the profits in addition to what is legitimately their due as interest on the money invested by them.

Mr. Thomas Robertson, in his Report on the administration and working of Indian Railways, submitted to the Secretary of State for India in May 1903, suggested two alternatives. Either that the Railways which are now worked by Companies should be taken over by the Government for working them together with the State lines worked directly through the agency of the State, or the State lines should be handed over to the Companies so that they may be worked together with the lines owned by or leased to the Companies.

Mr. Raicharan Mukerjea, mentions two reasons why the latter alternative should not be adopted. In the first place, in India the

Railway Companies are foreign, and if the existing State lines passed into their hands, a lion's share of the surplus profits arising therefrom would go to fill the coffers of the foreigners, while the Indian rate-payers, for whose benefit India ought, primarily, to be ruled, would be deprived of a large share of such profits, which in justice ought to be theirs. Then, there is another matter which ought not to be allowed to slide into obscurity in discussing this proposed transference of the State Railway properties into private hands. At present, willy nilly, a considerable number of Indians are given employment on the State Railways in the superior ranks of Engineers, and Accounts Officers, and in theory, if not in reality, the superior branches of the State Railway Revenue Service are also open to them. In the event of the State lines passing into the hands of private companies, our countrymen would be deprived of all these appointments.

Railway transport in India is cheaper than in America. Passengers in America travel at the rate of $1\frac{1}{2}$ cent (nine pies) per mile, but in India, at 2 pies per mile over the State Railways and $1\frac{1}{2}$ pies per mile when the distance travelled exceeds a fixed minimum of miles. These beat, says the writer, the record of any country in the West, and America.

This cheapness is most assuredly the result of the low preliminary expenses, cheap labour, abundant travelling and finally the broad-minded and intelligent State management which obtains largely in the Railway administration in this country. All railways in India, however, are not, unfortunately, owned or worked by the State, for in that case still more favourable results might be achieved.

The total length of railways open in India on the 31st December, 1912, was 33,483.74 miles, comprising—

	MILES.
I. State-lines worked by the State ...	7,018.76
II. State-lines worked by Companies ..	18,106.89
III. Lines worked by Guaranteed Companies ...	82.04

	MILES.
IV. Lines worked by Assisted Companies ...	1,696.66
V. Lines owned by Native States worked by Companies ...	2,160.56
VI. Lines owned by Native States worked by State Railway Agency ...	257.59
VII. Lines owned and worked by Native States ...	1,779.64
VIII. Foreign Lines ...	73.60
IX. Branch line Companies, Subsidised lines, &c. ...	2,358.50
Total ..	33,483.74

The above shows that the Government owns well over three-fourths of railway mileage in the country and to this circumstance, says the writer, is due, in a large measure, the successful Railway administration in India.

In conclusion, Mr. Raicharan Mukerjea writes that the State control of the Railways in India, considering its peculiar political conditions, should be the only right policy of Railway management in this country, and it should be pursued by the Government in the interests both of itself and of the tax-payer. Here all the private railways are built, owned and worked by foreign capitalists, and they carry away not only the whole of the profits arising therefrom, but they require from the Government at the outset, to induce them to launch in this country, heavy guarantees of subsidies, besides donation of land and other conveniences free of cost. If, instead of this, the Government built all the railways, and managed them through its own agency, all the profits arising therefrom would go a great way to minimise the burden of an over-taxed people.

Exception from Assessment of Improvement.

In the third meeting of the cold weather session of the Imperial Legislative Council held on the 18th instant, the Hon'ble Rajah Kushalpal Singh moved the following resolution:—

"In all future settlement of revenue, any

increase of assets due to construction (otherwise than at the expense of the State) of wells, tanks or other artificial sources of irrigation be permanently exempted from assessment to revenue."

In doing so, the speaker dwelt upon the importance of safe guarding and increasing agricultural production in India, and said that agricultural improvement involved the problem of adequate water supply. Large irrigation schemes required years to be developed, while the present system of irrigation was far less costly and yielded immediate result. In the Presidencies of Bombay and Madras, exemption of improvements by irrigation taxation was in *perpetuum*.

Then the Hon'ble mover quoted in his favour the recommendations of the Irrigation Commission, the Famine Commissions of 1880 and 1901. Further, in support of his demand, Rajah Kushalpal Singh also quoted the opinions of Lord Ripon and Sir Stewart Bayley, during the debate on the Land Improvement Loans Bill, and said that the landlord secured his own share, but that of the Government in the shape of revenue and cesses, was always larger than his own share. The saving which would accrue to the State in famine expenditure and loss of revenue consequent on famine, would recoup the loss which would result from exempting permanent masonry wells from taxation. Unless the concession asked for in the resolution was made, there could be no sufficient inducement to landholders to construct wells for the improvement of lands. The Hon'ble mover combated the theory that the land belonged to the State, and consequently that Government had the right to take a share of the produce as rent. He said that that theory was absolutely erroneous. The State demand upon land was not a rent, but a land revenue, or in other words a land tax. This view was taken by the East India Company, which in its Despatch of the 17th December, 1856, laid down that the right of Government was not to a rent which consisted of all surplus produce after paying the cost of cultivation and the profits of agricultural stock, but to a land

revenue only. The speaker contended that that was the soundest view that could be taken of the nature of the demand, and in this view, it was nothing more than a tax which was imposed upon the land for the purposes of the State. As a matter of fact, the State was not the owner of the land. The contractual relations of landlord and tenant did not subsist between the Government and the landholder. The subordination of the landlord was that of a subject of the Crown. The landholders' liability to pay a tax levied by Government was undoubted, but it was wrong to assume that the Government had a right to share in proprietary profits. The speaker said there was practical unanimity of opinion that the right of private proprietorship in land was generally recognised by Hindu Rajahs who claimed to receive from the cultivators of the soil not a land rent due to a landowner, but a land tax due to the Government of the country. The land revenue of the Hindu States was, therefore, a sort of tax on the income derivable from land.

Referring to the Government of India's opinion that to exempt a profitable improvement from enhanced assessment would tend to favour the rich as against the poor, Rajah Kushalpal Singh admitted that the landholder, who was rich and who would employ his capital in improving his land, would realise larger profits. There was no reason why his poor neighbours should consider it a grievance.

He finally demanded that perpetual exemption should be granted in respect of both existing and future improvements.

The Hon'ble Sir Edward Maclagan said from his personal experience that no landlord was deterred from improving his land from fear of enhanced assessment. He then discussed the reports of the several Famine Commissions and concluded that the Government would always be prepared to help the landholders but would not be prepared to exempt improvements from assessment.

The Hon'ble the Maharaja of Cossimbazaar, in supporting the resolution, said that it would be an advantage, if a uniform system of land

assessment prevailed throughout the country. The revision of every settlement, followed by an enhancement of assessment had a very disturbing effect on many tracts of land. Finally, he said that there ought to be a reasonable limit beyond which improvements effected by landholders should be exempted from revision and enhancement of assessment.

The Hon'ble Sir Robert Carlyle, speaking on behalf of the Government, opposed the Resolution. He said that, in the first place, if the mover's proposal were accepted, the loss of revenue would not be as some seemed to imagine comparatively small, but very large. He said that he failed to find any justification for the conclusion of the Irrigation Commission. He refused to follow the Hon'ble mover in his discussion on the theory of land revenue. It had been the immemorial custom of every Government in India to take a share of the profits arising out of land improvements. The Hon'ble mover's Resolution was inconsistent with the practice of other countries, and with the immemorial practice of the Government of this country. If, in any tract, the exemption of wells from enhancement was insufficient, it was the Local Governments which should be approached and he was sure that they would give sympathetic consideration to any reasonable proposals advanced.

The Hon'ble Mr. Vijiaraghava Chariar pointed out that the question whether the land revenue was a rent or a tax was an important matter, and a reply to that question was the basis of the Government's demand from the land, and the land holders' request for exemption of improvements from enhancement of revenue. He dwelt upon the incidence of taxation in the country and asked the Government to accept this modest Resolution.

In the end, the resolution was negatived by 35 votes to 17.

The Law of Population Concentration.

The following abridgment in English of an exceedingly important article by Prof. Felix Averbach in a European Journal appears in a recent issue of the *Scientific American Supplement* :—

An important characteristic which we study in population statistics is the density of the population; that is to say, the number of inhabitants per square mile. But it would be a mistake to suppose that a knowledge of the characteristic tells us all that we need to know about the distribution of the population. Another characteristic has been named by me the *concentration* of the population. This term is reserved to describe not merely the density of the population, but its massing together at certain points, with a compensating comparative scarcity at other points. The question arises how we can measure this concentration. I have succeeded not only in obtaining such a measure, but in discovering in this way a very remarkable relation.

Suppose we arrange the cities of a given country, for instance Germany, in order of their population (1910), and give each a number representing its place in the list. Let us then multiply the number attached to each city with the number of its population. Omitting unnecessary zeros and rounding off the last figure, we obtained the following very remarkable table :—

TABLE OF GERMAN CITIES.

Number in Order of Magnitude N_1 .	City.	Number of Inhabitants (Thousands), N_2 .	Product, $N_1 N_2$.
1	Berlin	3,579	36
5	Cologne	593	30
9	Frankfurt	449	40
15	Chemnitz	306	46
20	Stettin	258	52
25	Strasburg	191	48
30	Posen	157	47
35	Brunswick	144	50
40	Kattowitz	128	51
45	Zwickau	118	53
50	Hamborn	103	52
55	Oberhausen	90	50
60	Gorlitz	86	52
65	Wilhelmshaven	78	51
70	Pforzheim	69	48
75	Harburg	67	51
80	Koblenz	65	52
85	Mors	61	51
90	Brandenburg	54	49

TABLE OF AMERICAN CITIES.

Number in Order of Magnitude, N ₁	City.	Number of Inhabitants (Thousands), N ₂	Product, N ₁ N ₂
1	New York...	4,767	48
2	Chicago ...	2,185	44
3	Philadelphia ...	1,549	47
4	St. Louis ...	687	27
5	Boston ...	671	34
6	Cleveland, Ohio ...	561	34
7	Baltimore ...	558	39
8	Pittsburgh...	534	43
9	Detroit, Mich ...	466	42
10	Buffalo ...	423	42
20	Kansas City ...	248	50
30	Toledo, O ...	168	50
40	Paterson ...	126	50
50	Albany ...	100	50
60	Springfield, Mass ...	89	53
70	St. Joseph, Mo ...	77	54
80	Evansville, Md ...	69	55
90	Charleston, S. C. ...	59	53
100	South Bend, Ind ...	54	54

If we neglect the first two items in the table of German cities it will be seen that products in the last column vary but slightly from an approximate value of about 48. Similar remarks apply to the table of American cities, except that the constant here is somewhat higher. We have therefore the law.

The population of a city is inversely proportional to the number indicating its rank among the cities of a given country. Or—

The product of the "rank" of a city into its population is (nearly) constant for a given country.

We may use this product to measure the population concentration of the given country. In the case of Germany it is about 48.

I have extended my investigations to many other States, and have found the law to hold with great exactness in all cases. If we want to compare population concentrations of

different countries, we must allow for the differences in their total population. To do this we divide the product obtained above by the total population of the country in question. We obtain in this way the following numbers for the specific concentration :—

	Absolute concentration,	Specific concentration,
Holland ...	5.3	91
Great Britain ...	39.4	87
Belgium ...	5.8	82
Switzerland ...	2.6	75
Germany ...	47.8	74
United States of America ...	53.0	57
Italy ...	15.9	47
France ...	17.4	44
Spain ...	8.6	43
Austria-Hungary ...	16.8	32
Russia in Europe ...	24.2	19
British India ...	36.0	11

These figures suggest many interesting reflections. Thus for example, the population density is only about twice as great in Great Britain as in India, while the concentration is more than eight times as great: This means that in India only a small proportion of the population lives in the cities, where the population is dense.

It is also interesting to observe the changes in the absolute and specific concentration of the population in Germany, for example, over a period of time extending from 1895 to 1910. The following are the figures obtained :—

	1895.	1900.	1905.	1910.
Absolute concentration.	28.7	34.2	42.2	49.5
Specific concentration.	55	61	70	77

It will be seen that the actual concentration has increased by 72 per cent. the specific concentration only by 40 per cent. in the period of time indicated.

The law which has here been exposed was discovered by purely empirical observation. The problem remains to determine the causes which lie at the bottom of the phenomenon observed. But on this point there is at present no definite information available.

The Financial World.

The Proposed Banking Legislation.

Our readers are no doubt aware that a few months ago, the Government of India addressed all the Local Governments as to the desirability of undertaking legislation in connection with the use of the term 'Bank' in this country. The circular of the Government of India was published *in extenso* in the September issue of the *Wealth of India*, page 643.

In the opinion of the Government of India, legal restrictions would appear to be specially desirable in regard to the following matters :—

(1) The prescription of a minimum amount of subscribed capital.

(2) A stipulation that an adequate portion of such capital should be duly paid up within a reasonable period from the starting of the business.

(3) A restriction on the full allocation of profits to dividends until an adequate reserve is built up.

(4) A restriction as to the taking up by a 'bank' of business outside that of banking in which the banking profits might be lost.

The various Local Governments referred the questions to the respective Chambers of Commerce and the opinions of these bodies have been published from time to time.

GENERAL ATTITUDE.

All the Chambers, who have given their opinion hitherto, are unanimous in thinking that it is desirable to legislate with a view to restrict the indiscriminate use of the terms "Bank" and "Bankers." The Madras and Karachi Chambers of Commerce have approved of the proposed legislation generally. The Committee of the Bombay Chamber of Commerce, which discussed the question also with the Hon'ble Mr. W. H. Clark, Member for Commerce and Industry, favoured the introduction of a Bill of a simple character which in some measure would give protection to shareholders and depositors; for, in their opinion,

successful banking was really a question of experience and good management in matters pertaining to banking and the safe custody of other people's money, and if this was assured and if the Directors were competent and thoroughly understood their business, there was really no necessity for legislation of a stringent character which might retard development and, in some degree, hamper the success of sound and well managed banking institutions. The Indian Merchants' Chamber and Bureau, while generally approving the proposed restrictions as to the use of the term 'Bank,' say that restrictions should be imposed not only on all concerns in the future, but also on concerns working now. The committee say, however, that they are not very sanguine of the results of Government's interference in the relations of trade and commerce. The proposed remedy for both shareholders and depositors, is education and experience, as it is not possible, according to the committee, to devise such legislation as cannot be over-reached by wilful ill-doers. Further, the committee presume that the proposed legislation will apply to banks and bankers registered in Great Britain and foreign countries as well, doing a large banking business in India.

The suggestions made by the Upper India Chamber of Commerce are that legislation restricting the use of the term 'Bank,' and regulating the conduct of the Banks in general is urgently needed and that all Banking concerns should be registered under the Indian Banks Act. No company should be allowed to register under this Act which may or can undertake any business other than Banking.

Marwari and other firms trade principally on their own money in most of the important centres of India, without inviting or accepting deposits from the public, and fulfil a most important function in providing finance for the agriculture and trade of the country. The Chamber would allow these to retain the title of 'Banker,' though not permitted to style

themselves as Bankers. The Bankers of this type need not be required to register under any Banking regulation as regards the indiscriminate use of the term of 'Bank'

The proposed legislation seems to have found favour everywhere.

PRESCRIPTION OF SUBSCRIBED CAPITAL.

There seem to be two opposite views on this point. The Committee of the Punjab Chamber of Commerce agree to the suggested restriction that a minimum amount of subscribed capital should be prescribed. The Bombay Chamber of Commerce have reported that a minimum subscribed capital should not be fixed; that at least 50 per cent. of the subscribed capital should be paid up within one year, or before the first statutory meeting; that there should be some limitation or check on authorised capital and that there should be some fixed reasonable proportion between the authorised, subscribed and paid up capitals; and, further, that a clause be inserted in the Bill to the effect that, when any advertisement, etc., of a bank or banking company contains a statement of the amount of any capital, such advertisement, etc., must show the amount of capital authorised, subscribed and paid up.

The Upper India Chamber of Commerce have reported that no Bank should be registered with less than three lakhs of authorised capital. It should not be permitted to commence business until at least one-half, or better still two thirds of its capital, has been fully paid up, and payments made on cash capital and reserve combined must be at least equal to ten per cent. of the Bank's deposits.

PAID UP CAPITAL.

In the opinion of the Punjab Chamber of Commerce, a stipulation that an adequate portion of such capital should be paid up within a reasonable time from the starting of the business would seem open to modification. In the opinion of the Chamber, it would be better to withhold sanction to the starting of the business until an adequate portion of capital has actually been paid up, for the reason that if a Bank should be once started as a Registered Company, a prejudice detrimental

to the interest of the concern might be set up were a cessation of its activities to be threatened by official restrictions as to its title owing to the tardy accumulation of the necessary capital. The Committee of the Indian Merchants' Chamber and Bureau say that there should be, no minimum for subscribed capital, and hold that it would be advisable to legislate that one-third of the subscribed capital must be paid up within one year of the registration of the bank.

THE BUILDING UP OF RESERVE.

The Government of India suggested that a restriction should be imposed on the full allocation of profits to dividends pending the building up of an adequate reserve. Strong opinions are expressed on this point by the Chambers. The Punjab Chamber of Commerce replied that the building up of an adequate reserve is already recognised as prudent by most Bank Directorates; but the Chamber doubt whether the legislature could with advantage to Bank managements, depositors and shareholders make the allocation of profits to the reserve fund the subject of State control. The Burma Chamber also doubt the practicability of the proposals to place a restriction on the full allocation of profits to dividends, pending the building up of an adequate reserve. The Committee of the Bombay Chamber of Commerce put forward the suggestion that there should be no restriction of capital and reserves to total commitments; and that there should be no restriction confining investments of reserve funds to trust securities. The Indian Merchants' Chamber and Bureau oppose legislation as to sanction for the declaration of dividends.

BUSINESS OUTSIDE BANKING.

On this point that there should be a restriction as to taking up by a bank of business outside that of banking in which the banking "profits" might be lost, the *Times of India* remarks that however excellent the sentiment and intention of this restriction may be, it is not possible to attain it. Who shall define exactly what is banking business, where it begins and ends and who shall define the sort

of business in which banking "profits" might be lost?

The Chambers are not agreed as to the suggested restriction. The Burma Chamber of Commerce doubt the wisdom of the restriction as to taking up by a bank of any business outside that of banking in which banking profits might be lost, because any interference with the internal economy of trading institutions is to be deprecated and might very well lead to worse evils than those which the remedies are intended to eradicate.

The Committee of the Bombay Chamber of Commerce have suggested that the Registrar, subject to a right of appeal, should refuse a certificate to a company whose Memorandum and (or) Articles of Association showed clearly that it intended to engage in business such as ordinary trading, insurance, shipping and so forth, in addition to the business of banking. Excepting as mentioned above, there should be no restrictions as to the business a Bank or Banking Company might engage in. The Bombay Chamber have further suggested that banks should not be allowed to advance money on their own shares; or, to their own officers or staff. The Indian Merchants' Chamber and Bureau have also suggested legislation to prevent advances by a bank on its own shares, or on the shares of other companies which are not fully paid up.

SAVINGS BANKS.

The Committee of the Bombay Chamber of Commerce suggest that the words, "Savings Bank" should, if possible, be reserved for Post Office and Presidency Banks Savings Banks, but if this is not possible, Savings Banks should be brought under strict control. The Indian Merchants' Chamber and Bureau suggest that it is imperatively necessary to restrict the use of the term "Savings Bank" and that none but Presidency Banks and the Government Postal Department should be allowed to run Savings Banks.

BALANCE SHEET AND AUDITING.

Anent this proposed banking legislation, the *Times of India* states that all banks whether Private, Joint Stock, or Native, should publish

at stated periods a balance sheet, that such balance sheet should show separately cash, money at short notice, investments and securities, and loans to customers, and that such balance sheet should be certified by a public accountant, who should be required to state in his certificate that in his opinion the value of the securities, etc., at the date of the balance sheet fully represents the value set out thereon. The public accountant should also certify that the total of banking accounts and the assets held against the same and their value are as set out.

The Chambers of Commerce have expressed the same opinion. The Committee of the Punjab Chamber of Commerce reported that all banks should be compelled to publish a duly audited balance sheet each half-year, not only for the information of their shareholders and depositors, but also for that of the general public. The Burma Chamber of Commerce suggest that the public should be able to look for protection rather to the fact that all banking institutions are compelled by law to issue balance sheets at stated intervals under close inspection by qualified auditors, than from an interference in the actual transactions of Banks or Companies. More importance should be attached to the qualifications of auditors and it should be necessary that the audit be conducted either by a chartered accountant or by persons registered by the Governor, as having sufficient qualifications and position to guarantee that his inspection is sufficient to protect the public against intentional fraud or other irregularities. It should be necessary for the auditor to file a signed copy of the certificate supplied to the company with the Registrar, and to this should be attached any special report he might have made to the Directors. These certificates and reports should, in the opinion of the Chamber, be published in the respective Provincial Government *Gazettes* for the information of the public. The Committee of the Bombay Chamber of Commerce opined that so far as items in balance sheets are concerned, Form F in the Indian Companies Act, 1913, was sufficient.

that the Banking Bill should contain a clause similar to clause 277 of the Indian Companies Act, 1913, and that, if possible, the auditing or Bank's accounts should be done by Chartered and (or) Incorporated Accountants. The Indian Merchants' Chamber and Bureau also suggest that all banks or bankers should be required to publish monthly statements of assets and liabilities, as is done by the Presidency Banks every week. The Upper India Chamber propose that banks should be compelled to submit to the Registrar a weekly return, showing the percentage of cash on hand, and the amount deposited in the Presidency Banks. In the Chamber's opinion, reserve moneys should be invested in Government of India or other authorised trusts, and a statement of such investment should be published half-yearly. Further, a copy of such accounts should be supplied to the shareholders and depositors. Chartered Accountants or a member of the firm of the Chartered Accountants or a Government Auditor should be employed as auditor by the banks. The details in the balance sheets should include the following, in addition to those already prescribed by law:—(a) Amount of advances repayable on demand; (b) amount repayable otherwise than on demand; (c) amount advanced on security of immovable property; (d) amount advanced on security of movable property, viz., on (1) Government and Trust securities, life policies and shares, freely dealt with in the Calcutta, Bombay, Madras and Rangoon markets; (2) other shares; (3) goods and merchandise; (4) bills and hundies.

The Chamber finally recommend that coincident with the introduction of such legislation, the Government should appoint Registrars of Joint-Stock Companies, one for each province, and a Chief Registrar for all India.

In this connection, the following resolutions passed by the Ninth Session of the Indian Industrial Conference are pertinent to the point:—

"With reference to the questions raised by the Government of India on which opinions are invited as to whether there should be

restrictions about the use of the terms 'banks' and 'bankers' and as to whether there should be any legislation in regard to banking, this conference is of opinion (a) that the use of the term 'bank' should be restricted only to companies registered under the new Joint-Stock Companies Act; (b) that all banks not registered in British India having an office or branch in British India should be registered under the proposed new Companies Act save and except banks which are created by a statute; (c) that there need be no subscribed minimum capital, but that paid-up capital should be one-third of subscribed capital and that it should be paid up within six months of registration; (d) that the Registrar of Joint-Stock Companies be authorised to refuse to register as banks such companies whose memoranda of association provide for and warrant business other than banking business in the ordinary sense of the term and that an appeal against the Registrar's decision should be allowed to the highest judicial authorities of the place where the Registrar's office is situated; (e) that no banks shall be allowed to use the term 'Savings Bank' to a department of a newly started bank except the Presidency Banks and Government Postal Department unless the said department of the said newly started bank is made to invest two-thirds of the deposits in securities sanctioned by the Trust Act and are earmarked for that purpose; (f) no banks shall be allowed to advance monies against their own shares unless they are fully paid up."

The Viceroy on the Banking Crisis.

There is nothing unusual in Bank failures, but the too credulous are apt to be carried away by hysterics, both by the nearness of the disaster and the probable provocation of an immediate loss. In view of the panic which has seized the investing public, the following speech delivered by His Excellency the Viceroy in replying to the address of the Madras Chamber of Commerce will be read with satisfaction. His Excellency referring to the severe banking and commercial crisis through which the country is now passing

said:—The disturbance of credit which originated in the first banking failures in the Punjab has extended in some degree to Northern India generally, while in the storm centre at Bombay, the crisis has already produced calamitous results. I shall not attempt to indicate the causes to which these troubles may be attributed, but I wish to emphasise two points. In the first place, we have felt that, in these exceptional conditions, the Government of India ought not to take up an attitude of entire aloofness and detachment. We have closely followed the course of the events, and where it has been possible and legitimate to do so, we have given timely assistance. I am glad to say that there has been no undue disposition to look to Government for help. Such help as we can properly give is limited in extent and necessarily subject to conditions and safeguards. But what we could do has been done and will continue to be done.

Secondly, I wish to say a word about the future. These failures have inevitably aroused some distrust in Indian banking institutions and the feeling of disquiet is not likely to be quickly removed. We must all deplore the setback with these events must be expected to give to the tendency which has been so pronounced in recent years for the savings of the people to be increasingly applied in investment, and industrial enterprise, in spite of inexperience or recklessness. The movement was sound in itself. It is a necessary condition of India's development and prosperity, and I am convinced that it will be maintained in spite of temporary checks. If the Indian investor is taught by these events to be more careful to distinguish between sound and unsound undertakings, or if they pave the way for some better system of regulation and protection, they will not have been unfruitful of beneficial result. Meanwhile, I earnestly hope that the legitimate caution which these misfortunes inspire will not degenerate into unreasoning dismay, the only outcome of which must be to confound the good with the bad and bring heavy loss upon investors and depositors whose money

is lodged with inherently sound institutions."

British Capital in Foreign Investments.

In the November number of the *Wealth of India*, we pointed out the flight of capital from British shores consequent on the risky nature of investing at home owing to the labour and other troubles. Official statistics recently published by the Commissioners of Inland Revenue show, declares the *Financier*, "that in the past twenty-five years there has been an enormous growth in the income received from British investments in the colonies and in foreign countries, while at the same time the revenue derived from British Government securities has shown an actual shrinkage in the same series of years." "Bearing in mind the fact that the quarter-century covered has been a period of steady expansion in the foreign trade of these islands," continues the *Financier*, "it is, we think, a fair assumption that the growth of our overseas trade has been immensely stimulated by the great volume of British capital employed in foreign countries, whose development has thereby been accelerated, and who have consequently become better customers to the British manufacturer and merchant."

"The investment of capital abroad," proceeds our contemporary, "has notoriously received a pronounced stimulus during recent years, owing to the decline in the popularity of British Government stocks, Home Railways, Breweries, and other securities which, for a variety of reasons, have ceased to make their former appeal to the capitalist. A still more potent factor has been the creation of a large and steadily growing mass of colonial and foreign securities bearing higher rates of interest than those to which the British investor had previously been accustomed." From a tabular statement prepared by our contemporary from the official statistics, it appears that the total amount of income (so far as it is identified) received upon British capital in foreign investments has increased from £44,508,002 for the fiscal year 1886-87 to £103,894,667 for the fiscal year 1911-12, that

is to say, is more than $2\frac{1}{2}$ times as great as it was a quarter of a century ago. It is undoubtedly a fact that the constantly increasing popularity among British investors of the system of Geographical Distribution of Capital is playing a very definite part in helping on this phenomenal development of foreign investments. Capitalists to-day are learning to realise the danger of placing the whole of their money in home securities, and prefer, by prudent distribution of part of their capital in the enterprises of various countries, to obtain a higher total return on their money and to minimise the risks incidental to all investment—a result which can be secured by placing their capital scientifically on that plan.

The Recent Bank Failures.

A good portion of the presidential address of the Hon'ble Mr. Lalubhai Samaldas at the ninth Session of the Indian Industrial Conference held at Karachi was taken up by the recent disturbance in the Indian financial atmosphere. The President said that the prime cause of these failures appears to be either vast speculation or locking up of an unduly large amount of call and short notice deposit money in long period loans, which could not be called up when the depositors required the repayment of their monies. The natural result of these failures must be that the public will lose their faith to some extent in Joint Stock concerns, and that a feeling of despondency will be created in the public mind about the success of similar institutions especially as it is constantly dinned into their ears that Indians are inherently incapable of managing banking institutions on modern lines, and that they must restrict themselves to their old "Shroff's" methods of banking.

The Indian Banking movement on the present extensive scale started in 1906, and, in a way, it owed its inception and growth to the wave of Swadeshim that was then passing over the country. One of the first large banks promoted by Indian capitalists and restricted by its articles of association to doing

practically the same kind of business as the Presidency Banks, was the Bank of India. Its promoters included level-headed financiers like the Tatas, Sir Sasson David and Mr. Gordhandas Khatau, and they were all anxious not so much for large returns as for safe and sound banking business. About one-half the share capital was subscribed by the promoters themselves and the public were invited to subscribe the other half. On the day on which the list was closed, the capital was oversubscribed and the Directors had to cut down the number of shares applied for at the time of allotment. Having got the money, the next thing to do was to select a well-qualified man to manage the affairs of the bank. The President here referred to the details of the promotion of this bank. There must be expert, efficient and honest management under the active control of the Directors, in all safe and sound banking business, even though accompanied by moderate profits in the beginning. Neither the Manager nor the Directors should have any personal interest in inflating the profits of the company beyond a reasonable increase in remuneration of the former, when his management results in increased profits. The fees of the Directors are much lower than in England, and it is generally recognized that the Directors here can only guide the policy of the institution and keep a general control over it. He laid stress on expert, efficient management, and it is here that he said that our difficulties began. Till the starting of the present Swadeshi Banking Institutions, the management of the Presidency Banks and their branches as well as of the branches of European Banks, was always in the hands of Europeans. The highest posts to which Indians could aspire were those of Shroff or bill-keeper. No responsible post was given to an Indian, and consequently there were no capable Indians trained in modern methods of banking. We had either to get men from the existing banks who had only an experience in the book-keeping or intelligence department, or to appoint a trained banker to whatever

nationality he belonged, and then to train our men under him. The adoption of the former procedure leads to inefficient management, unless by good luck the person selected proves to be an exceptionally clever man, who picks up the necessary administrative knowledge in the course of his experience as a Manager. Even then the Manager being promoted from the ranks of clerks may not have a social position to command the confidence of the Directors or of the investing public, and he may not be able to give his opinion as freely and fearlessly as he is expected to do. The second procedure, although it led to efficient management, is not likely to help us to train a sufficiency of experienced men as quickly as they may be needed. The Manager naturally attaches greater importance to the successful management of the bank than to the training of his successors and subordinates. He says rightly enough, that if a man wants to get experience as a banker he must do what an English boy of his age would do, that is, begin at the lowest rung, learn all the details of the various departments and then after many years of careful training he may expect to be appointed to a responsible post. Our best educated young men cannot afford to do this as they expect a better start in life than the English boys who go to the bank from the public schools. These difficulties, the president hoped, would disappear in course of time as our educated young men find that by dint of hard work and strict integrity they can rise to almost as high a place as they might attain in the various branches of the public service.

As regards the next important item that leads to the successful working of a bank—the efficient control of directors—the difficulties of the first English joint stock banks repeated themselves in the Swadeshi Banks of to-day. "Joint stock banking did not grow up gradually in England as in Scotland. On the introduction of this system in England, the directors were necessarily unacquainted with the practical operations of banking. For, all the practice and experience were confined to the private bankers

whom the new system was intended to subvert. In some places there was a prejudice against directors who were in business. Hence officers in the army, barristers, solicitors, medical men, retired tradesmen and country gentlemen were considered as the most eligible directors. These boards of directors, all of whom were unacquainted with banking, and some of whom were destitute of business habits had to encounter difficulties which would have tried the most experienced bankers." These difficulties we have to face with, are not in any way unique or due to national or racial disqualifications. It is no use, however, deriving consolation from the fact that the same mistakes were made by people in other countries, and remaining inactive in the face of present difficulties. What we should do is to find out how they met their difficulties, and to adopt their methods as far as practicable. "The want of experience in a Board of Directors," says Gilbert, "did not, however, produce any dangerous consequences when they appointed an efficient manager. He prudently advised and instructed them. They gradually increased their knowledge and adopted his principles, and were guided by his counsels. By their daily intercourse with him, by their own reflections by the directions given to their thoughts and by the experience they acquired, they became in a few years as conversant with their duties as the manager himself." Later on he says, "But sometimes the case was reversed. The manager was inefficient, the directors inexperienced, and then the effects were disastrous." The effects would necessarily be much more so if the management was dishonest also. Fortunately such cases are rare in Swadeshi Banks as they are in English Banks.

Another reason for the failure of some of the Swadeshi Banks is, the President continued, that they desired to show higher profits than one another and to do this they had to take up unsound business or to do business which was not pure banking. This also is not a special feature of Indian pioneer banks; English Banks committed the same

mistake when a large number of joint stock banks were started for the first time.

He then referred to the necessity of banks holding a fairly large percentage of their current deposits in cash or gilt-edged securities, of their not confining their advances to one or two trades only, but distributing them amongst persons engaged in different trades and industries, and of their not locking up a great portion of their capital in unmarketable or inconvertible securities. All these points come under prudent management, and an expert controlled by capable directors will always bear these points in mind. At a time like that of the present crisis, there is usually a demand for legislation to protect the interests of the shareholders and the investing public. Although it is true that no amount of legislative control can compensate for the absence of ordinary business prudence, yet there are some matters in which the Legislature may be better able to protect the interests of the investing public than at present.

In this connection, he said that as the law stands, even one shareholder may by seeking the intervention of the Court on flimsy grounds, temporarily dislocate and discredit even a well-managed institution. Shareholders have their rights under the Indian Companies Act and the Articles of Association of their companies. Except in rare cases when the delay in having recourse to the ordinary procedure may mean heavy loss to the company or undue preference being given to some parties, they should not be allowed to go to Court in the first instance. In the instances mentioned above the majority of shareholders will naturally combine to protect their own interests, hence a rule providing that Courts should not entertain applications for winding up of companies unless they are supported by

persons holding a sufficiently large number of shares, will not in any way affect the real interests of the shareholders and it will protect the interests of companies, a large majority of whose shareholders have sufficient faith in the management to allow the concern to go on.

There is one more point of law. The carriage of proceedings in the winding up of a company is given to the solicitors of the first applicant. This is said to be a great temptation to solicitors to discover reasons for making such an application where none may exist; and aspersions are sometimes cast on them for a scramble to get first to the Court. In the interests of the reputation and good name of the profession, if for nothing else, the proposal to amend this rule is worth consideration.

The president concluded by saying that even if all these amendments are carried out, the millenium in banking will not be reached. There are no panaceas to replace prudent management. As long as there are shareholders indifferent to their real interests and clamouring for larger dividends, depositors who will not make inquiries into the stability of a concern if they get a larger percentage of interest, and Bank Managers either weak enough to submit to the siren of ambition and invest their funds in second or third class securities, or entirely careless of the interests of the shareholders, banks will continue to fail and spread misery all round. What is required is not merely the training of men as Directors and Managers, but educating the general investing public as to their rights and responsibilities. When this is done, banks will be able to stand the strain of slumps in trade and industries, and will by gaining the confidence of the investors attract deposits and slowly increase their profits.

The Educational World.

The Texas School of Economics.

A 20 million dollar endowment rice institute has been just opened at Houston, Texas. The rice industry of the South-western United States has grown to such tremendous proportions that it is now thought necessary that the Government, or at least the separate States, should take a hand in the matter, especially along lines of the more scientific and technical sides of the industry. The new institutes, it is reported, will be fitted with special laboratories for physical, chemical, and biological investigations, and it will also have an instruction section for the application of these sciences to the agronomic and commercial sides of the question.

Technical Education in Behar.

The number of technical and industrial schools in Behar during the year 1912-13 declined from 36 to 34 and that of their pupils from 898 to 822. The decrease is due to the disappearance of one aided and one unaided school in the Chota Nagpur division. Five of the schools are maintained by Government, namely the Ranchi Industrial School, the Weaving Schools at Behar, Sambalpur, and Cuttack, and the "B" classes attached to the Bhagalpur Zilla School. There are also "B" classes attached to the Ranchi Industrial School and to the Patna Collegiate School.

Education in the Central Provinces.

The report for the year 1912-13, of educational progress in the Central Provinces shows an increase of 257 schools and 20,982 scholars. The application of the Durbar grant to the extension of Vernacular education is chiefly responsible for the advance, accounting for the opening of 209 schools with about 18,000 pupils. The total expenditure on education rose from Rs. 31,31,472 in 1911-12 to Rs. 36,58,881. The percentage of total number of scholars to total population of school-going age has risen from 13.85 to 14.85.

The number of students undergoing collegiate education rose by 164. The number of high schools for boys rose during the year from 28 to 32 and the number of pupils from 2,949 to 3,883.

Manual Labour.

Mr. G. W. E. Russel writing in the "*Manchester Guardian*," draws attention to the fact that to the vulgar mind all labour seems undignified, but the notion of manual labour is peculiarly abhorrent. Happily for the world, the artists have never been the victims of this strang delusion. To see a great sculptor or a great painter at his work is to see manual labour under glorified conditions. A surgical operation is the triumph of dexterity. In an age which becomes year by year more dependent on mechanical skill, it is well to remember that "a gentleman's first characteristic is that fineness of structure of the body which renders it capable of the most delicate sensation."

Education from Moving Pictures.

According to an article appearing in *The Country Gentleman*, the United States Department of Agriculture is preparing to use moving pictures as a means for educating the people in the matter of how and why they are spending 50 million dollars annually in teaching the farming public modern methods and improved technic in agricultural practice.

The Missouri attitude of "show me" is credited with being responsible for the move to meet the insistent demand for practicable demonstration of new ideas and great hopes are being entertained for the ultimate success of this innovation.

It is planned to release films of a general character through the regular exchanges thereby teaching a large percentage of the people living in cities and towns and educating them to the point where they will have an intelligent idea of standard products and the

methods by which they are secured ; thus establishing a more harmonious basis on which to bring the producer and consumer together. Other films will be exhibited in the demonstration and extension work and will be of a more specific nature particularly interesting to the producer.

That a picture conveys a more graphic and intelligible impression than the most detailed verbal description has long been recognized ; furthermore, the picture speaks in a universal language.

The last-mentioned feature has a particular application in this country where as yet no common language obtains among the masses.

The London Evening Schools.

The Education Committee of the London County Council has undertaken to reorganise their evening schools. It was felt that teachers and pupils were tired after the day's work, the aims of the schools were indefinite, and the work done was in general desultory and unsatisfactory. The essential features of the new system include a thorough classification of the schools or "Institutes," Co-ordination with higher institutions and the teaching of the humanities in the schools. The Education Committee attaches great importance to the wider and better teaching of literary subjects in all types of their evening schools.

"The first and last task of the teacher is to arouse and hold the interest of the students. The degree to which the institute library is used will serve as an index to the influence of the teacher of English." The use of the daily or weekly illustrated papers as text-books is suggested for classes of the poorest literary attainments. From these papers the teacher may find the subjects for lessons in geography and history. Classes of higher attainments would find much interesting matter in the weekly edition of *The Times*. Lessons should be given in grammar and composition, and opportunities afforded for dramatic reading and recitation. At some of the more advanced centres it may be found practicable, suggests the *School world*, to hold some of the "cycle" literature courses, or other

specialised English teaching. In the memorandum on the teaching of humane subjects in women's institutes, suggestions are given for courses arranged "to stimulate interest in the events of the outside world, and understanding of how these affect directly or indirectly the lives of the students. The value of the social legislation to the people is enhanced by the housewife's understanding of its use." Interesting outline syllabuses are given in industrial history, social history, the laws affecting the housewife, and how they are enforced, geography, literature, art, music, and arithmetic of everyday life. The memorandum on the teaching of foreign languages urges the need for "closer co-ordination and co-operation among the teachers," for differentiation of the work, where possible, according to the individual needs of the pupils, for a great uniformity of text books and methods, and for the formation of French and German clubs and circles in the institutes.

School Gardens.

School gardens are universally recognised as one of the most useful and practical methods of giving the children of a country a bent towards agricultural pursuits. Apart from that, it has other advantages, psychologically. Not only do the children acquire technical knowledge and manual skill in the gardening classes, but they are introduced to an entirely new set of ideas. They begin to learn to appreciate natural beauty ; their interest in nature study and in natural phenomena is aroused, and an opportunity is given them of carrying out some practical work, such as always appeals to children. At the same time their powers of observation are cultivated—a valuable factor in the training of children.

It may be a little difficult to bring school gardens within the reach of town schools where suitable land is often not available or is prohibitive in price. It is reported that English Schools feel this difficulty utmost. To meet this, however, many authorities have adopted schemes for encouraging the growing of plants by children in their own homes or in

the schools ; and in Manchester this plan has met with much success. The annual report of the Manchester Education Committee for 1911-12 states that during the summer of 1912, 25,000 plants, chiefly geraniums and fuchsias were supplied to the children in the elementary schools for home cultivation at a charge of 2d. each. When examined later by the head teachers, it was found that 9,000 plants had been grown satisfactorily, and 2,500 of these were chosen to enter for the annual competition in August. The selected plants were placed on view in the city and were visited by about 6,000 persons. As an encouragement to the children, certificates of merit were awarded to each of the 9,000 successful growers, as well as 20 first-class and 80 second-class prizes.

In addition to the plants supplied by the Education Committee the Manchester Children's Flower Guild has done admirable work in supplying seeds, plants, and bulbs to the schools, at appropriate times of the year, for growing in the school gardens, in the school-rooms, and at the homes of the scholars. Teachers and children alike are enthusiastic in tending the plants, and it is found that many of the children are induced to take up, as far as is practicable, the hobby of plant-growing and gardening at their own homes.

The movement for school gardens has more facilities in India, and, what is more, has a double claim upon our attention. In this connection, it will be interesting to learn that the Madras Government have approved of the proposal of the Director of Public Instruction to distribute a subsidy of Rs. 20,000 among District Boards, for the improvement of Elementary school gardens. The Director suggests that the Boards may be asked to utilise the subsidy on all or, for any of the following objects :—purchase of garden tools, sinking or repairing of wells, erection of compound walls, construction of reservoirs and purchase of seeds, plants, manure, etc.

In Burma, in several schools, this is already done and Burman teachers have taken up the task with alacrity.

Agricultural Education in Burma.

The following extract taken from the latest Burma Agricultural Report sums up the difficulties encountered in spreading agricultural education in the land. The remedy must be to give an agricultural bent in the early education of boys in the public schools and with the co-operation of the education authorities this can be done. We read :—

The question of agricultural education is an important one and the time has perhaps come when it should be seriously considered. Lack of funds has hitherto prevented the erection of the Agricultural College and will probably continue to do so. There is, however, little sign that there is any demand for the higher education in agriculture which such an institution would provide. Burma is a country of small holders and there are very few of those dependant on agriculture for a living in the Province to whom the expenditure of time and money involved by a residence of two or three years at an Agricultural College would be a sound investment. Students at the present time would in all probability be confined almost entirely to candidates for the higher appointments in the Department. The number of these posts is not large and it is possible to make arrangements for the necessary training of probationers elsewhere at much less cost. It is noticeable that the private students at the district agriculturists' course who numbered thirteen at its commencement had dwindled to seven before its close, in spite of the fact that the instruction given was of a much more simple and practical character than would ordinarily be the case at an Agricultural College.

Higher education in agriculture will no doubt in time be necessary and should not be lost sight of, but at the present time it is the educational requirements of the working cultivators holding from 10 to 50 acres of land which have the first claim upon the attention of the Department. These men are the backbone of the country and the alacrity with which they are organising themselves into Co-operative Societies and the business capacity which they are displaying in the administration

of these institutions indicate that the Department has here a very receptive soil for the inculcation of improved methods of agriculture.

Few of these working cultivators continue their education beyond the primary standards, and it is therefore in the primary schools of the province that agricultural education should begin. The education imparted in these schools should be given as far as possible by means of agricultural and rural subjects and should be directed to rousing the children's interest in the agricultural processes going on about them and giving them a definite bent towards a life on the land. A slight modification of the existing curricula of primary and middle vernacular schools would probably go far to achieve this result. On the initiative of Mr. A. E. Potter, Inspector of Schools, Mandalay, the subject was discussed at the last half-yearly Conference of the Department and his proposals which have been submitted to the Director of Public Instruction met with unanimous approval. Should the change be carried out the Department would be glad to co-operate to the utmost of its power. There is reason to believe that such a modification of the curricula would be welcomed by the teachers generally and in particular by those in charge of the monastic schools where a large proportion of the agriculturists of the province obtain their education. Equipped by a sound knowledge of the three R's and taught to take an intelligent interest in plant life and the agricultural methods in practice in his village the cultivator would, on reaching years of discretion, be in a position to take full advantage of such improved crops or improved methods of cultivation as the Department might bring to his notice.

For the adult population most of whom are already engaged in agriculture a few months spent on one of the experimental farms would probably be the best method of dealing with the problem.

Feeding the Brain Through the Body.

The greatest enemy of early education, it would seem, is not stupidity but starvation,

The little ones require plenty of food, especially when, in addition to their physical growth, we are trying to shape and develop their brains. We are told that pupils in some public schools can not study properly, simply because they do not have enough to eat.

This is shown strikingly by an experiment tried in the Wood School at Philadelphia by Dr. Walter W. Roach and reported by him in *School Progress* (Philadelphia). In this school there were numerous physically deficient children who were also back-ward in their studies. Proper feeding for only four weeks increased the total weight of 113 children by over 250 pounds and improved their standing in their classes proportionately. Writes Dr. Roach:—

"Many children were found to be coming to school with insufficient breakfasts, and some with no breakfast at all. The clinic was organized and the nutriment was administered during a period of four school weeks of five days each. . .

"The 'Food Clinic' was authorized by the District Superintendent and the school principal, and the food has been served under the direction of the school medical inspector. The children were weighed each Friday, and careful notes made concerning their school progress. These children were given a nourishing ration of properly cooked cereal, and milk each morning at recess period (10-30 A.M.).

"The form of the cereal was changed each day—corn mush one morning, oatmeal the next; rice next day, with zwieback and hot milk the next, thus interesting them in a change every morning. Fifty quarts of milk were consumed each day by 113 children, each child receiving nearly a pint as its quota. On Mondays, rice was prepared by boiling. For each of the other days the cereal was cooked over night in a fireless cooker, securing all the benefits of the slow application of heat with thorough chemical change.

These children not only gained in weight, but improved in color, showing that their blood had become richer; they gained in spirits and activity; were less nervous, not so

irritable, and carried the atmosphere of cordiality from the luncheon tables back into their class-rooms.

"They were able to study better, as shown by a comparison of their work before the clinic began, and week by week as it progressed.

It looks as though the education question were an economic problem, at least in its earlier stages.

A School of Country Life.

The West is confronted, to-day, with the grim problem of the depopulation of rural areas. The big cities have lured the countryside, to the infinite danger of both town and country. The Knapp School of country life, at the George Peabody College for teachers in Nashville, America, is, we are told, "the first attempt in America to build an institution devoted exclusively to the side of the problems of rural life."

What will differentiate this school from the ordinary agricultural college, explain its founders, will be its attempt to solve the big social and economic problems of country life, to show the farmer the possibilities of a career and a happy life without going to the city.

The school, evidently, has evoked much enthusiasm, in the Southern States of America.

"The school will teach farmers and their sons the principles of better farming, better business methods on the farm, and better living in the country, and thus promote the agricultural interests of the South.

"The school will maintain courses on the college campus and make demonstrations on the Knapp farm. The Knapp farm will be established as an object of interest and imitation for the entire South, a model of its kind. The school will offer co operation to help to convert part of the grounds of country schools in all sections of the South into similar models for their respective communities. It will also help to convert the farms of its friends into such models.

"Everything that makes for advance toward a larger and more accurate knowledge of the cultivation of the soil, especially in the

South, is very welcome to all persons who are interested in Southern agricultural development. The Knapp school and farm promise to be of material aid, and to make farming not simply more profitable but more cheerful for those who are engaged in it."

The farm will contain about two hundred acres. Pure-bred seed and animals will be developed. The best devices and implements will be used. Crop rotations will be worked out for different Southern conditions. Demonstration agents, rural school supervisors, State and county superintendents of education, and other workers will make this farm a rallying-point, in order to carry back to their States the benefits of the work done there. Corn-club boys and canning-club girls will also make occasional trips to this agricultural Mecca for inspiration and instruction. The pure-bred products of the Knapp farm will be offered as prizes to the boys and girls who do the best work."

Farmers will be taught "to become more efficient producers, and economic citizens." But something more than the economic aspect will be considered, since "living in the country must be made more convenient and interesting before men and women, boys and girls, will be content to remain on the farm. Knapp School, by promoting health and sanitation in the country, by teaching improved methods of road-building, by promoting co operation in providing highways and modern facilities for transportation, will contribute toward the desired end." Finally:—

"This school of country life will become a clearing-house for the rural communities of the South, a centre for the exchange of valuable ideas and information practically tested. The farm demonstrators will live upon the farm for several weeks in the summer. The faculty of the college will work out their ideas here for the twelve months in the year. The teachers of the South who come to George Peabody College for Teachers for training will co-operate in studying and in meeting the needs of an ideal country community. They will be allowed to carry back home no theory which

they have not first worked out and tested in practical life.

"Thus those who teach the adult farmers and their wives will come to understand those who teach the children, the prospective farmers and prospective housewives. The teacher and the farmers will work together. The school and farm will, in other words, be a storehouse to which the practical farmer and his wife will come for tested knowledge, and at the same time a practise school to which the maker of citizens, the teacher, or demonstrator, will come to try out his theories before being allowed to apply them."

This rather ambitious programme, if carried out in the spirit in which it is conceived, will surely lead to the much desired results.

Farmwomen's Institutes in America.

One of the most striking features of secondary agricultural instruction in America is, says the *Journal of the Irish Department of Agriculture*, the growth and development of what is known as the "extension work" of the various agricultural colleges and other educational institutions of the kind. This side of their work is of a non-academic character; it is done largely outside the institution, and its aim is to educate the people on their own ground; to bring to the farmer, on his farm, the latest and most authoritative information upon technical matters connected with his profession. This is done in various ways: by the organisation of lectures and courses of instruction, by itinerant schools, by summer schools, by rural libraries, by boys' and girls' clubs, and by many other forms of educational activity. For all these there seems to be a ready welcome in rural America; in the words of a recent official report:—"the awakening of country people to the need of agricultural instruction and to the possibilities of extension teaching has created a demand for this instruction far beyond the power of the States to supply."

One way in which it is sought to supply that demand is by organising winter courses of lectures, to which has been given the rather curious title of Farmers' Institutes.

The Farmers' Institutes movement is only in

part connected with the agricultural colleges. In about half the States the institutes are under governmental control, and in the other half mostly under college control. The institute may thus be administered directly under Government auspices, or it may be in the hands of some educational institution. If under the former, it may be in charge of a State Department of Agriculture or of a State official, or, again, it may be worked by county organisations or rural societies which are in receipt of State or Provincial bounties.

The extent of the movement may be gathered from the fact that the institute attendance registered in 1911 numbered 2,291,857. In that year 5,889 institutes were held, comprising 16,741 sessions, at each of which the average attendance was 188. The grants allocated for institute purposes by the State legislatures amounted to something like £75,641 and the total amount from all sources expended upon institute work was £90,144. The teaching staff comprises over 1,000 lecturers employed by the States, and, in addition, fully three times that number of local lecturers and speakers.

The function of the institutes is to carry education to the rural community; it is a phase of extension work which deals less with individual men on their farms than with small communities or groups of men. It falls, therefore, into two main categories—instruction in technical agriculture and the developing of a community sense, and these two standpoints are kept in view when arranging the programme of instruction, whether it be in the form of lectures, or of object-teaching, or of itinerant schools.

So much importance does the Government attach to the movement that a special division of the Office of Experiment Stations was created in 1903, under the direction of a farmers' institute specialist, whose duty it is to "investigate and report upon the organization and progress of Farmers' Institutes in foreign countries, with special suggestions of plans and methods for making such organisations more effective for the dissemination of the

the Experiment Stations, and of improved methods of agricultural practice." This Government office also issues bulletins of information, collects and publishes laws under which institutes are held in the various States and secures lists of names of State directors, lecturers and local managers of Farmers' Institutes. It also prepares courses of study and compiles and publishes illustrated lectures suitable for delivery in institutes. The nature and scope of these lectures may be judged by the following specimen titles: Care of milk—Potato diseases—Silage and silo construction for the South—Tobacco-growing—Wheat culture—Farm-homse—Production and marketing of eggs and poultry.

Another organisation which aims at furthering the institute movement, and which works in direct collaboration with the Government office already described, is the American Association of Farmers' Institute Workers. To its last annual meeting, the sixteenth, delegates were sent from 40 States and from 8 Canadian Provinces. At that meeting the delegates present represented an attendance at institute instruction during the year of no less than 4 millions of people. A great number of matters connected with institute work were dealt with by the meeting, and it is worth while to quote the summarised statement of the reports handed in by the various standing committees, as they exhibit the nature and progress of the movement and, as it were, give a sort of bird's eye view of its present position. The reports were to the following effect:—

(1) That an efficient, permanent, local institute organisation in each county is essential to the best conduct of the work.

(2) That lecturers equipped with practical experience as well as scientific knowledge are most appreciated and accomplish the best results.

(3) That the institute is the field agent for the spread of information which other organisations wish to have the public to understand and to put into practice. Consequently, the institute is under obligation to co-operate with

all other agricultural institutions and societies that it may serve them most efficiently.

(4) That the movable school of agriculture is no longer an experiment, but a method of education to be generally adopted and extended.

(5) That institutes for young people, particularly those between the ages of 14 and 18, are recommended to all institute directors for organisation, and

(6) That institutes for women have been successful wherever tried and that they should be established in all the States upon equality with those organised for men, both in regard to financial support and lecture service. In reality the women's institutes are an offshoot of the men's associations as recognition began to be marked that both their interests, in rural economy, are identical.

Technological Training for Indians.

In his presidential address to the Ninth Session of the Indian Industrial Conference held at Karachi, the Hon'ble Mr. Lalubhai Samaldas pointed out that one of the most important factors in the progress of industrialism is the training of young men in technological and managerial lines. According to Sir Theodore Morrison's Committee's report, up to 1922, 66 students had taken advantage of the scholarships granted by the Government of India. The Association for the Advancement of Scientific and Industrial education for Indians has assisted 222 of our young men to go to various countries for technical education. Bengal has every reason to be proud of having done so much in the furtherance of the cause. Some students have been sent by the South Indian Association fund and the Malvi Technical scholarship fund. The Universities of Bombay and Calcutta and the Native States of Baroda, Hyderabad and Mysore have also been sending scholars for a similar purpose. The progress in this direction has, said the president, so far been satisfactory. With regard to the fact that the presence of Indian Students in England is not looked upon in that country with the favour that it used to be formerly, and that they find difficulty in

getting entrance into factories and even in some Universities and Colleges, which now fix the number or proportion of Indian students they will take. Mr. Lalubhai expressed the view that the appointment of the Advisory committee consisting of Sir Theodore Morrison and Sir Krishna Gupta and others was a step in the right direction. He said that on their return to this country, such young men who had any connection with the industry which they had gone to foreign countries to learn, did not find it very difficult to get employment in the existing industries in some capacity or other, or in assisting industrialists in starting a new concern under their supervision. Others who have not had the advantage of such connections, have not fared equally well. The best thing is to require that the student proceeding to a foreign country for further studies should have received some practical training in the subject he is going to study, for that is the only way in which he can be, partially at least, given a taste for that particular industry. There is no other way to select a man for a particular industry.

The Indian Guild of Science and Technology, the President continued, which has been recently established and has several branches in England and India is doing some useful work in this direction. The Morrison Committee recommends that the existing provincial Advisory Committees might act as appointment boards. With this end in view, the leading business men of Bombay have latterly been nominated to the advisory Committee. He however preferred the existing commercial bureaux and similar other institutions taking upon themselves this duty. If they kept themselves in touch with these Indian students both while they are studying abroad and after their return they will be in a better position to help them in securing work suitable to them. The

knowledge and abilities of these young men will then be utilised in developing the industries of their country and not be merely wasted.

He said that a difference of opinion exists as to whether they should have at least one fully equipped polytechnic college in the country, or a technical institute in each Presidency and Province equipped with special reference to the important industries therein. Personally he was of opinion that an institute whether educational or technical must have a suitable environment if it is to make any progress and be a living institution. If a technical institution is started amidst industries for which it is equipped it will not only be able to assist the industries but will continue to prosper. Moreover, the promoters of the several industries, knowing what class of men they want, will be in a better position to exercise a healthy influence on the institution. They will also be able to make themselves heard in respect of the scope and methods of the institution, either through their own associations or through their representatives in the Local Legislative Councils. The other idea which naturally appeals to patriotic feeling can well be carried out when they had a large number of institutions suited to the requirements of the various provinces. As regards one branch of technology, chemical industries, we already have an All India Institute at Bangalore. Unfortunately the Tata Research Institute has not been able to do all the good which its generous founder expected it to do. The next important thing is to have men trained up for external, that is, economic and commercial management of industrial concerns. The theoretical training can be given by commercial schools and colleges, and practical training can be had as apprentices in large offices.

Departmental Notes.

INSURANCE.

Ten Vital Points.

According to a writer in one of our contemporaries, the ten points always to be borne in mind in the investment of a life company's funds are :—

(1) Most important, the safety of the capital invested.

(2) The obtaining of a good yield on the investment.

(3) The major portion of a company's funds do not mature for many years, and consequently the larger proportion of the funds should be invested in securities which are not readily realizable. A superior rate of interest is thus obtained. For the same reasons, and also to save trouble of frequent re-investment, they should be invested in securities where the repayments are deferred for a considerable time.

(4) "Do not put all your eggs in one basket." The number of classes of investment should not be too few, and the company should consider carefully the proportion of funds invested in each class. Investments should not be too centralized.

(5) Constant and intelligent watchfulness is imperative in order that changing conditions may be noted, and any necessary re-adjustment of holdings made.

(6) Young states : "The investments should, as far as practicable, be helpful to the increase of the life business, so that a possible two-fold profit may be realized—a profit in the rate of interest and a benefit in the reduction of administrative charges." In the case of a mortgage loan, however, care should be taken that the premium required is not so large as to seriously embarrass the mortgagor.

(7) Securities should be chosen where there is a possibility of appreciation without wide fluctuations in the market price.

(8) Sufficient funds to meet any sudden demands upon the company should be kept in readily convertible securities.

(9) It is a mistake for young or small companies to invest in an expensive head office building.

(10) The funds of a life company cannot be used to help out otherwise unsuccessful enterprises.

ECONOMIC PRODUCTS.

Sudan Jute.

A sample of jute grown in the Sudan was recently sent to the Imperial Institute for examination, and the report states that it was well prepared jute of good strength with an average length of 4ft. 6 in. Bengal jute growers to note.

Yield of Copra.

100 selected cocoanuts on an average weigh 150 pounds. The outer shell removed, and the water let out, the nuts will yield about 66 pounds of wet meat. The nuts are then peeled at a loss of 6 pounds, leaving 60 pounds for desiccating. These 60 pounds dried at a further loss of 45 per cent. moisture will produce 33 pounds of dry meat.

Sheep Intestines for Violin Strings.

The intestines of small sheep are used for the manufacture of violin strings. They are simply spun like ordinary cord to different thicknesses according to the pitch required. Residual intestines, which cannot be used for the finer violin strings, are generally spun into larger cords and used for the making of belts for transmitting the power in sewing machines or even larger machines.

Perfumes.

The difference between the Indian art of perfumery and the modern western art is that our odours are extracted with fixed oils (oil of sesamum) while the European perfumes are extracted with spirits generally or if they are not extracted with volatile liquids at first, they are sold in the markets mixed with volatile liquids. And therefore the difference between attars and the European perfumes is that the attars leave an oily spot when they are applied to the clothes, while the European scents do not. Of course, the perfume of attars is more lasting than that of the modern scents, still, the latter have one advantage over the attars, viz., their smell while it lasts is more powerful than that of the attars.

MACHINERY AND APPLIANCES.

A New Rice-Reaping Machine.

We gather from the *Indian Trade Journal*, that a new rice-reaping machine has given highly satisfactory results in Italy and was awarded a prize of 5,000 lire in the international competition for rice reaping machines promoted by the Farmers' Association of Vercelli. It consists essentially of a reaping mechanism driven by a small gasoline engine and mounted on a large wooden wheel and on a hollow cast-iron skid. The mechanism is so ingeniously made that any tendency of the wheel to sink in soft earth is checked. The reaper has amply demonstrated, it is stated, its ability to reap over $7\frac{1}{2}$ acres of rice in ten hours.

Penny-in-the-slot Typewriters.

This automatic machine is found in many American hotels. Any resident in a hotel can secure the exclusive use of the penny-in-the-slot typewriter in a private room by the insertion of the requisite coin. Clockwork mechanism governs the time paid for, and upon its expiry, or when the machine is left unused, the typewriter becomes automatically locked, and cannot be operated upon until another coin is inserted. The system enables the machine to be installed in public places, such as railway stations, theatres, restaurants, and upon trains, boats, &c., the company owning the patent machines maintaining them and collecting the money paid.

Lifting Magnets.

Experiments recently made at the Zenith furnace in Minnesota have resulted in practically doubling the capacity of the lifting magnets employed for handling pig iron. In these experiments, the pigs were stacked vertically by standing each erect on its end instead of being laid flat. This arrangement allows a greater number of pieces to make direct contact with the magnet pole-pieces, and the lifting capacity of the magnet is correspondingly increased. The increased lifting capacity was obtained with only a slight additional expenditure of labour in the stacking of the

SCIENCE AND INVENTION.

Paper Cloth.

A new paper cloth is said to have been invented in Germany. A thin sheet of pulp having been deposited on a felt, a piece of cotton or linen cloth of the same size is laid thereon, and this again is covered by a second sheet of pulp, with which the cloth mixes so intimately that the whole forms one solid and compact sheet. The process is not costly, while the applicability of paper cloth thus made to a variety of purposes must be obvious. It might, remarks a contemporary, appropriately be called "sandwich paper."

The Ten Greatest Inventions of Our Time.

The *Scientific American* some time ago instituted a prize contest in which prizes of varying values were awarded to those who wrote of the ten greatest inventions of our time.

The importance of an invention was judged, by considering whether it has aided in production, in transportation, or in communication, for unless man can procure his prime necessities and transport them, without using up all his strength and all his time, he would have no opportunity to develop the fine arts, literature or science, and the civilization of our own time would not be possible.

Based on the foregoing considerations, the ten inventions selected as of the greatest importance are as follows:—

Electrical Fixation of Atmospheric Nitrogen.	Aid in Production.
Preservation of Sugar-producing Plants.	
High Speed Steel.	
Tungsten Filament.	
Aeroplane.	Aid in Transportation.
Steam Turbine.	
Internal Combustion Motor Vehicle.	
Pneumatic Tire.	
Wireless.	Aid in Communication.
Composing Machines.	

HEALTH AND HYGIENE.

Food Fever.

Recurring attacks of high temperature in children are sometimes due to excess of carbohydrate food; at least, they cease when starchy and saccharine materials are reduced to a minimum and the child is given broths, flesh, meat, etc.,. An occasional dose of calomel is also a useful measure.

Bleeding at the Nose.

Have the patient sit erect and apply ice or something cold, such as a large key, to the nape of the neck. Press the finger firmly against the patient's upper lip. Apply pressure to the lower edge of the jaw-bone about 1 in. in front of the angle of the jaw, thus compressing the facial artery, which supplies the nose. Soak a strip of gauze in vinegar, and apply to the nose if the bleeding continues.—*Farm and Home.*

Secret of Long Life.

A very famous doctor summaries the secret of longevity in the following nineteen rules:—

1. Eight hours' sleep;
2. Sleep on the right side;
3. Keep the bed-room window open all night;
4. Have a mat to the bed-room door;
5. Do not have the bedstead against the wall;
6. No cold tub in the morning; but a bath at the temperature of the body;
7. Exercise before breakfast;
8. Eat little meat, and see that it is well cooked;
9. (For adults) Drink no milk;
10. Eat plenty of fat, to feed the cells which destroy disease germs;
11. Avoid intoxicants, which destroy those cells;
12. Daily exercise in the open air;
13. Allow no pet animals in living rooms—they are apt to carry about disease germs;
14. Live in the country if possible;
15. Watch the three D's—drinking water, damp, and drains;
16. Change of occupation;
17. Take frequent and short holidays;
18. Limit your ambitions; and
19. Keep your temper.

HINTS AND RECIPES.

A Good Furniture Polish.

A good furniture polish, which is black and which will remain soft in the container, is made as follows:—Three ounces of wax, two ounces of pearl-ash and six ounces of water are heated together, and when thoroughly mixed, add four ounces of boiled oil and five ounces of turpentine. This should be poured in wide mouth containers, where it will keep indefinitely.

Stained Linen.

To clean coffee stained linen, soak it in cold water to which has been added a little borax. All coffee, chocolate, tea, and fruit stains will disappear if boiling water be poured over and through the spot before the linen is washed. It is best to do this while the stain is fresh and damp.

Adulterated Leather.

A sure way of detecting adulteration in leather is to see if the flesh side is very dark in colour and if the strips cut out look dark and wet. Then it is overweighted. In some cases, when a piece has been in water over-night, the top of the water will be found covered with oil.

Fish Oil for Flies.

Fish oil is a good repellent for flies and similar insects, and may be used in the following mixtures:—(1) Fish oil, 3 parts; kerosene, 1 part. (2) Fish oil, 100 parts; oil of tar, 50 parts; crude carbolic acid, 1 part. (3) Fish oil, $1\frac{1}{2}$ pints; kerosene, $1\frac{1}{2}$ pints; resin, $1\frac{1}{2}$ lb.; laundry soap, 2 cakes. Mix thoroughly, and add enough water to make 3 gallons. (4) Fish oil, linseed oil or kerosene, 1 pint; coal tar dip, 1 pint; laundry soap, $\frac{1}{4}$ bar; hot water, 15 pints. Mix thoroughly so as to form an emulsion. Any of these mixtures may be applied thinly to the animals with such a brush as can be purchased for 10 or 15 cents, or they may be sprayed on with a small hand-sprayer such as can be purchased for 40 or 50 cents.—C. C. Lipp, Assistant Veterinarian, University Farm, St. Paul.

LITERATURE.

Statistics.

This is the title of a posthumous work by the late Sir Robert Giffen written about the years 1898-1900. Giffen's idea was to write a popular hand-book on statistics but he worked by fits and starts with the result that when he died, only the chapters included in the book had been written. In matters of Statistics, there is no one yet who may be said to be a superior authority to Giffen. Statistics when they are compiled are intended for definite purposes and one may not be too careful in employing them for other ends. The sagacity with which Giffen saw and avoided the pitfalls in interpreting statistics amounted almost to an instinct in him. The 19 chapters contained in the volume have been published as they were left by Giffen and they are invaluable to students of economics as explaining the scope of the different kinds of statistics, their limitations, the methods of arranging and interpreting them.—*Messrs. Macmillan & Co., London, 12/6 net.*

Bombay Municipal Government.

Municipal Government, when simply stated, is a corporate attempt at raising the habitable conditions of the locality concerned; hence the many sanitary reforms taken in hand by such an association. The historian who describes these and the other varied operations usually undertaken by a municipality must be possessed of considerable knowledge touching almost every department of human life. That Mr. Wacha is peculiarly fitted for such a task is evident from his book before us on the "Rise and Growth of Bombay Municipal Government" in the administration of which he has had no inconsiderable share. The book traces the history of Bombay Municipal Government from the year 1792 up to date and Mr. Wacha's brilliant style and vivid flashes of historical reminiscences light up alternately the dry bones of dusty records and the dim corners of a half-forgotten history. The book is eminently readable. It is priced Rs. 2 and can be had of the publishers, Messrs. G. A. Natesan and Co., 8, 4, Sunkurama Chetty Street, Georgetown, Madras.

MISCELLANEA.

Tariff in U.S.A.

On October 4th, 1913, the Underwood-Simmons' Tariff Bill became law in the United States, the prominent features of the Act being lower duties, provision for a graduated income-tax on individuals and a uniform tax on corporations. Opinion on the new law tends to show that the Tariff wall was broken as a concession to the rise in the cost of living.

The International Rubber Congress.

The International Rubber Congress and Exhibition will be held in the island of Batavia from September 8th to October 10th, 1914.

Motor Omnibuses in Calcutta.

Arrangements are being made for starting a Company affiliated to the London General Omnibus Company, for placing a large fleet of Motor Omnibuses on the streets of Calcutta.

Indo-Ceylon Railway.

The opening date of the new Indo-Ceylon Railway connection is now definitely fixed for the 24th February H. E. the Governor of Madras and H. E. the Governor of Ceylon, will simultaneously perform the inaugural ceremonies at Dhanishkodi and Pamban, respectively.

Indian Railway Earnings.

The earnings of the Indian Railways are still on the upward trend, and the net increase from 1st April to 20th December 1913, shows a further advance, being almost 29 lakhs better than the corresponding period of last year.

Currency Reform in U.S.A.

A Reuter message from Washington, dated 24th December, says that the United States Senate has approved the Currency Bill and that the President has signed it. The President said that it was the first of a series of measures to benefit the country's business. The reform in the Currency which this legislation would usher in the Republic was referred to on page 565 of the *Wealth of India* for August, 1913.

Scavenger's Co-operative Society.

The scavengers of the city of Bombay have formed a Co-operative Credit Society for themselves and it is working satisfactorily. The society is under the guidance of the Bombay Depressed Classes Mission.



THE WEALTH OF INDIA.

A Monthly Magazine of Practical Information and Useful Discussions

EDITED BY MR. G. A. VAIDYARAMAN, B.A.

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The Wealth of India. Current Topics

BY ECONOMICUS.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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For a long time the supply and circulation of silver continued to dominate all currency discussions. The steady fall in the price of the white metal—at once the cause and effect of its dethronement from a position of predominance—invested gold with larger potential influence and latterly, nations have been engaged in a kind of race for the possession of that metal. Problems about the production and utilization of the precious metals have ever engaged the anxious attention of financiers and statesmen, and the history of English currency, for instance, is peculiarly instructive to the student owing to the important lessons it furnishes in connection with such questions as those of a single silver standard, a double standard—rated and unrated bimetallism—depreciation and debasement and the adoption of gold monometallism. The history of Indian currency largely shaped by the policy pursued by countries of the west is no less instructive. We had for many years our own silver problem but the white metal having been now discarded by almost all the leading countries except for purposes of subsidiary coinage, the world is confronted with the gold question—the adequacy or otherwise of the supplies of the yellow metal, existing and prospective, being the most important subject of thought and discussion. Those who do not believe in the Quantity Theory of Money notwithstanding, while the prevailing high prices throughout the

world are attributed to the large quantities of gold which have been unearthed during recent years and the more extended and even circulation of gold is being suggested as the proper remedy to meet the difficulty, the existing and potential supply of gold is regarded as inadequate by many thinkers and a gloomy currency future is being prognosticated. Every nation in the West is adding or thinking of adding to its reserve of gold and the advent of India in this race for gold absorption has caused a serious flutter in the financial circles of London. The question of a gold mint or a more extensive circulation of gold coins in India apart, the imports of large quantities of the yellow metal into this country year after year, means to the London banks a diminution of the supply available for credit operations, and British financiers have been complaining—without any justification—of our gold absorption. The situation is further complicated by the intimate financial relations between England and India and the financial management of the India Office. Whatever opinion one may hold as to the comparative merits and defects of a real gold currency and its advantages and disadvantages in India, the Government in this country is practically committed to a policy not only of a gold exchange standard but also of the gradual adoption of a gold currency. A steady pursuit of this policy in India and the overhauling of the currency systems of other countries on the same principle, would mean more extensive inroads upon the available supply of gold and the world's currency position would become embarrassing. We are already hearing a talk of the tendency of the world's gold production towards a falling off. It is calculated, for example, that after the next few years, the cost of gold extraction in the South African mines—the largest source in the world—will become prohibitive and the production there would no longer be a business proposition. If that contingency occurs—as we are told it is bound to occur in the near future—how are things going to be adjusted? For ourselves, we can face the situation with equanimity thinking as we do that the develop-

ment will pave the way for the adoption of international bimetallism. By sticking to its policy of gold monometallism, England has, so to say, forced other nations to imitate her, but in time she may be called upon directly to co-operate in bringing about the universal adoption of a double standard which is calculated to prove more stable. That is, however, a matter of probability. As things stand at the present moment, the gold question is becoming the subject of the most absorbing and perennial interest.

Whenever London financiers discuss the **Sir Edward Holden on the gold problem, they cannot but refer to the position of India with regard to it.** Sir Edward Holden, Chairman of the London City and Midland Bank, has repeatedly called attention to the dangerous inadequacy of the gold reserves maintained by the British Joint Stock Banks and such is the deep anxiety he feels on the subject that, at a meeting of his bank the other day, he urged the Chancellor of the Exchequer to appoint a Royal Commission to consider the whole gold question, including a scheme for the issue of emergency currency.

This indicates how delicate the financial situation in London has become. The Joint Stock Banks in England have reared such colossal edifices of credit upon slender foundations of gold that the gentlest breath of a monetary panic is likely to shake them to their foundations. Sir Edward is of opinion that if the banks hold at least six per cent. of their liabilities in gold it will increase confidence and greatly assist in preventing any crisis. But, in their anxiety to make as much as they can of their gold, the Joint Stock Banks do not seem to realize the risks pointed out to them, and are in no mood to follow the counsel given. Under the circumstances, we do not know what a Royal Commission will be able to do. The facts are potent and without any inquiry, they ought to give a serious warning.

The position of the London money market, however, becomes more interesting when its connection with India is taken into consideration. Sir Edward grumbled about the large gold absorption of India and defended

the location of the Indian Gold Standard Reserve in London on the ground that the system has the same reason behind it as that of the State Banks in other countries which either have credit balances or hold bills on London in their portfolios. He explained the exchange difficulty which would arise if on account of the balance of trade going against India in any particular year, the Government of India had to draw artificial bills on the Gold Standard Reserve in London and the securities there had to be realized or borrowed upon. Such a crisis did occur in 1908, but fortunately the London money market was easy at the time. But if a crisis were to take place simultaneously in India and London, says Sir Edward, the resources of the London market would have to be used to support India when they would be badly required for the city itself. He therefore advocates the holding of a large reserve in liquid gold in London, so that, in a time of crisis, bills drawn against gold could be paid in gold and the market would be benefited by the relief thus given. There is little novelty in this suggestion as the danger of locking up India's gold in securities in London has been often pointed out before this and to some extent it has been realized by the India Office also.

It is curious to notice that the example of **Mr. Montague on the Indian Land Tenures.** the Indian Administration and of our land revenue policy should be held up to admiration and imitation by the British people. But that is what Mr. Montague did when he spoke the other day at a dinner given to him by the Liberal Colonial Club on 'Land Problems in India.'

British politicians of all parties and all ways of thinking find in India a convenient illustration to enforce their own pet views and theories on all manner of subjects. Free traders will point to India to emphasise the beneficial results of a policy of an open door on the economic condition of the mass of the people, who, it is alleged, are able under the free trade regime to obtain the necessities of life and even luxuries, very cheap. Tariff reformers will invite their opponents to follow the lead given by India in expressing her

willingness to enter into a scheme of Imperial Preference. Just now the land problem is exercising the minds of the people in Great Britain and the question has been taken up in right earnest by the Chancellor of the Exchequer with the full support of his colleagues. That the land policy of Britain calls for serious consideration and State action of one kind or another is a matter of agreement with both the great parties who have evolved their own schemes of land reform. The Liberals are anxious to break the monopoly of the big landlords who have fattened upon the unearned increment they receive from their extensive estates while vast numbers of the landless and the farm labourers are living a life of poverty and squalor. In the various measures which the present Ministry has taken in the direction of economic reform, it has been guided, more or less, by socialistic principles, Old Age Pensions, the Insurance Act and other labour enactments being prominent illustrations of this tendency. Wedded as they are to the doctrines of free trade, free competition and *laissez faire*, the Liberals have, nevertheless, been enlarging the sphere of State activity and interference in many directions,—breaking up the monopoly of the landlords is, however, perfectly conformable to their cherished doctrines—and the present land reform movement is conceived in the same radical spirit. In his *Economic Transition in India*, Sir Theodore Morison has brought out the fact that the British Government in this country has departed from its traditional economic policy of *laissez faire* and has pursued a line of action which is more in consonance with the attitude of continental and other nations than the State in Great Britain. The State in India owns the railways, the canals, the forests, the posts and the telegraphs and has a monopoly in the production of liquor and other commodities. It is largely a socialistic organization doing and interfering in, a variety of things which elsewhere are left to private enterprise. The late Mr. Justice Ranade also tells us in his essay on Indian Political Economy, that the State in India has enlarged its functions with advantage on the lines indicated

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by the advanced economic thought of the West, and calls upon the Government to push this policy still further in the interests of the economic development of this backward country. The contrast between the attitude of the British Government in Great Britain and its policy in India is striking and it is not astonishing if Mr. Montague should have seized hold of it to point a moral and adorn a tale in his recent speech advocating land reform in his own country. It was striking, he said, how young Englishmen mostly trained in the strongest traditions of conservatism, took their places in India without a tremor in a scheme of Government in which socialistic interference was carried to most horrifying lengths. Our complaint in India is that the State here is not sufficiently national and does not, in the economic sphere, perform its functions in the way they are performed in other countries for the conservation and proper exploitation of India's resources. Mr. Montague described in detail the whole system of land tenure in this country pointedly referring to the State's inherited immemorial claim of the ruler to part of the proceeds of land cultivation and asked if there was no lesson that Englishmen could learn from the way in which the Government of India, 'freed from the remorseless grip of hallowed catchwords, secured its just share of the profits it had created' and intervened, if necessary, to protect the weaker interests against the stronger. Mr. Montague wants the British people to 'turn aside from immemorial phrases' and to get rid of the remorseless grip of hallowed phrases; but would he allow the Govern-

ment of India to take him at his word and go in for protection in the interests of Indian industries? Or, is the example of India to be held up to the imitation of his countrymen only so far as is convenient for the immediate purpose in hand? While appreciating fully the spirit of the Tenancy Laws, and their effects upon the condition of the tenant class and the interference of the State in other matters, we do not want the principle of State landlordism established in this country. Mr. Montague speaks of the State in India securing its just share of the profits it has created, but we object to the theory which makes out the land revenue in this country to be economic rent and want fixity of assessment for the cultivator who is the proprietor of the soil subject to the payment of the land tax. The system of land tenure in Great Britain may be in need of modification but there is no analogy between the two cases as he points out. There is great scope for land reform in India itself and the claims of our cultivators are even more pressing than those of their British brethren. This land does not overflow with milk and honey and its agrarian condition is not a model to be pointed to the British people. Sir William Holderness who followed Mr. Montague was sober in his utterance and remarked that owing to the great variety of systems in India it was very difficult without taking all the circumstances into account to discuss the points which Mr. Montague had raised. They were, in his opinion, to be regarded as of great interest, probably providing lines of thought which might be useful.

Special Articles.

THE INDIAN MINING INDUSTRIES.

By PROF. P. G. SHAH, M.A., B.Sc., M.S.C.I., *Forman, Christian College, Lahore.*

The recent development of the Mineral Industries of India stands second only to that of the Textile Industries in the rapidity of the progress, though the former take the lead in

the transition towards the modern methods of production. The striking growth and expansion of the mining industries bear testimony to the immense resources of the country, which

now produces coal, gold, petroleum, manganese, iron, mica, rubies, and sapphires. It may be pointed out at the outset that a significant feature of this expansion is the prominent help from British Capitalists and the Government; but for these two factors the industry could not have progressed at all. It is only a pity that nothing substantial was done even in this direction earlier than the last quarter of the last century.

In what follows, an attempt will be made to describe the broader general features of the growth of the mining industries, leaving the details of the individual industries for other occasions.

METALLURGY IN ANCIENT INDIA.

There is evidence to show that the arts of mining and metallurgy were known in India from ancient times. The large pillar, at the Kutub Minar near Delhi, which is a solid shaft about 24 feet high and weighing over 17 tons, and which is supposed to have been placed there by the Hindus as early as in A.D. 319, is made "from an alloy of iron, copper and zinc," and is a matter of difficulty even from the standpoint of the present day manufacturer in Europe. There would seem to be "no doubt that the existing manufacture of wrought iron was widespread in the country before the date of the most ancient historic records, while the manufacture of the ancient *wool* anticipated by many centuries the cementation process, developed in Europe, for the manufacture of the finest qualities of steel." The art of *dama-scening* steel was practised in India to a high stage of perfection long before the Damascus swords were known in Europe. Smelting of various other metals like copper, tin and zinc was also known as indicated by the workings of ancient mines discovered recently in the Punjab and in Bengal.

IMPORTS OF EUROPEAN PRODUCTS.

Even till the beginning of the last century, iron used to be smelted in India. The iron and steel produced were of sufficiently good quality to be used for making articles like kitchen utensils, knives, daggers, swords, and armour

plates, and for the manufacture of crude machinery. However towards the latter part of the century, the indigenous manufacture of the metals was in a depressed condition and was being rapidly displaced by the imported metals. "In this respect India of today stands in contrast to the India of a century ago. The European chemist armed with cheap supplies of sulphuric acid and alkali, aided by low sea freights and increased facilities for internal distribution by the spreading network of railways has been enabled to stamp out in all but remote localities the once flourishing native manufacture of alum, the various alkaline compounds, blue vitriol, copperas, copper, lead, iron, and steel and seriously to curtail the export trade in nitre and borax. The high quality of the native made iron, the early anticipations of the processes now employed in Europe for the manufacture of high class steels and the artistic products in copper and brass gave the country a prominent position in the ancient metallurgical world, while as a chief source of nitre, India held a position of peculiar political importance until less than fifty years ago, the chemical manufacturer of Europe found among his by-products cheaper and more effective compounds for the manufacture of explosives."*

PRESENT POSITION.

Compared to the above account of the past greatness of the Indian Metallurgical Industries our position at present may be summed up by saying that we have to depend upon other countries for all our wants in metals and products obtained from minerals. Thus, the little nails on which hang the pictures on our walls as well as the huge girders which support our roofs, the metal utensils used in the kitchen as well as the iron cots in our bed room, the little pins that fasten our papers as well as the pens with which we write, the salt and vinegar on our dining tables as well as the medicines in the sickroom—all have to be imported.

CAUSES OF THE DECLINE.

It is not quite easy to describe how the Indian Mining and Metallurgical Industries de-

* Imperial Gazetteer of India, Vol. III, page 128.

clined but among the causes that led to this condition may be mentioned :—(1) the low intelligence of the people engaged in the industry, the workers being generally Kols, Gonds, Bhi's and similar aboriginal races, (2) the absence of systematic help from capitalists or the State, (3) the primitive methods of extraction of the ore, (4) the absence of the requisite knowledge of machinery and appliances for working at depths, e.g., for dredging, boring, pumping, etc., (5) limited demand for the costly metallic vessels, the poverty of the people compelling them to use earthen vessels.

WORKERS IN THE MINERAL INDUSTRIES.

The following* list of the workers in industries connected with minerals would show that the Metallurgical Industry directly supports a very small proportion of the total population of the country :—

Gold washers	...	1,301
Jade and diamond miners	...	1,271
Brass, copper, bellmetal workers.	261,622	
Tin, zinc and lead workers	60,742	
Workers in iron and hardware.	1,325,256	

* Census Report for 1901.

TABLE (A).

Value of Production of the most important Minerals in India in Lakhs of Rs.

	1890.	1895.	1898.	1903.	1907.	1908.	1910.	1912.
Gold	5.7	172.3	241.9	345.4	320.0	326.6	330.3	340.8
Coal	73.4	129.3	143.5	194.9	391.4	503.4	368.3	496.5
Salt	58.7	61.5	53.8	50.1	65.1	76.6	84.7	76.5
Saltpetre	28.2	53.5	34.9	40.7	41.8	45.3	35.3	31.5
Petroleum	2.8	15.3	11.5	53.1	91.5	105.3	125.3	145.5
Rubies, Sapphires, &c.	1.7	4.7	8.2	13.3	14.2	16.6	8.8	10.1
Mica	1.4	10.7	8.0	6.6	15.8	11.0	8.1	42.1
Manganese Ore	...	1.0	4.1	20.8	115.4	104.7	127.4	132.2
Jadestone	...	5.7	6.8	8.9	11.1	12.6	14.9	1.5
Iron Ore	1.9	2.7	1.4	1.6	1.8	2.2	1.4	6.1
Graphite	...	...	...	2.7	1.1	2.1	3.0	...
Diamonds	...	...	...	...	...	...	...	...
Tin Ore	...	...	...	...	...	...	...	...
Chromite	...	...	...	...	...	...	...	...
Magnesite	...	...	...	...	...	...	...	...

This table is adapted from those in Statistics of British India, Part I: Mineral Production, table No. 1. Figures for 1910 are obtained from Rec. Geol. Sur. India, Vol. XLI, p. 147; and for 1912 from Vol. XLVIII, p. 7-9.

Kife and tool makers	...	7,183
Agricultural implement makers	216,931	
Glass makers	...	78,152
Workers in gold, silver and precious stones.	...	1,572,249
Total	...	3,538,707

PRODUCTION AND IMPORTS OF MINERAL PRODUCTS.

No data are available for the production or export of minerals except for the last few years. However, the study does not lose any of its value by this treatment, because, the exploitation of the mineral resources of India was not commenced in the case of the majority of the minerals till the eighties and nineties in many cases. The working of these deposits received an impetus from the spread of railways, the development of the cotton, and jute manufactures, and the gradually extending use of electricity in the country. The following tables show the output of the different minerals and the total demand of India for the articles directly obtained from minerals as judged from their imports.

TABLE (B).

Value of Imports into India of Minerals and Products obtained directly from Minerals in 1,000 £.

Articles	1879-80.	Average of 1901 to 1903.	Average of 1904 to 1908.	1909-10.	1911-12.
Petroleum and Mineral Oils	481	2,456	2,000	2,097	2,818
Iron	1,229	2,244	2,945	3,313	3,671
Steel	...	1,517	2,517	2,581	3,045
Copper	1,620	1,090	1,485	1,762	1,853
Precious Stones and Pearls	155	835	695	537	596
Salt	762	451	480	459	560
Inorganic Chemicals	...	377	461	536	643
Coke, Coal and Patent Fuel	1,174	302	350	484	341
Tin	98	187	239	294	354
Building Materials	102	174	341	381	430
Lead	106	136	140	122	112
German Silver	...	127	131	120	110
Zinc or Spelter	144	87	109	116	136
Other Metals	...	71	32	115	161
Brass	53	66	80	62	65
Quicksilver	58	28	24	23	26
Grand Total	5,982	10,158	12,037	12,906	14,921

Figures in second and third columns are from Rec. Geol. Sur. Ind., Vol. XXXII, p. 185, and Vol. XXXIX, p. 13, respectively; those in the last column are from Review of Trade of India for 1909-10; and Annual Statement of Sea-Borne Trade for 1912.

TABLE (C).

Value of Imports of Articles made from Minerals in Lakhs of Rs.

Articles.	1898-99.	1904-05.	1908-09.	1911-12.	1912-13.
Railway Materials	487.5	561.5	741.9	594.6	894.8
Machinery and Mill Work	313	437.2	661.6	477.2	585.7
Hardware and Cutlery	156.8	266.9	292.3	359.8	364.6
Glass and Glassware	67.6	114.2	116.9	154.5	175.3
Alizarin and Aniline Dyes	77.7(?)	92.8(?)	80.4	91.9	113.9
Paints and Colours	33.4	46.9	59.6	72.3	76.4
Earthenware and Porcelain	19.5	29.6	42.3	53.1	54.3
Total	1,155.5	1,549.1	1,995.2	1,752.9	2,265.0

Compiled from Statistics of British India for 1907-08, the Review of Trade of India for 1908-09; the Annual Statement of Sea-Borne Trade of India, 1912; the Review of Trade of India, 1912-13.

The large increase in the annual output as shown by the table (a) is noteworthy. Thus within the ten years from 1898 to 1908, the value of the annual output has expanded from 3.4 millions £ to 7.8 millions, that is, has more than doubled itself. At the same time, the import figures in the Tables (b) and (c) show that there is still large increase in the Indian demand for goods obtained from minerals. As a result of this demand, the progress in the output is insignificant when compared to the value of the annual imports. It is, therefore satisfactory to note the steady fall in the imports of coal, which is perhaps the most

important of the Indian minerals worked at the present day. On the other hand, all other Indian minerals are exported as such rather than used in the country. The output of the latter does not help the reduction of the imports of the allied products, nor does it confer upon the country as many advantages as might be expected.

DETRACTORY FEATURES OF THE INDIAN MINING INDUSTRY.

Besides this, there are several other detractory features of the expansion in the output of the minerals which diminish the value of the progress. "Firstly, practically the whole of the remarkable increase is due to the progress in developing six minerals, four of which,—coal, petroleum, gold and salt,—are consumed by what may be called the direct processes, and two of which—manganese ore and mica—are raised for simple export. Secondly, there has been, with a few exceptions, a continuance of the remarkable neglect of the metalliferous ores and minerals that are necessary for the more complicated chemical and metallurgical industries."*

DANGEROUS SIMPLICITY.

Another characteristic of the recent expansion is the dangerous state of simplicity—almost amounting to crudeness—of the Indian mining methods. "In every economic system, as in every department of nature, a simple system is generally in a condition of unstable equilibrium easily upset on the slightest change in the balance of forces. For instance, a rise in the unit price of manganese to a shilling yields profits to the Indian miner altogether out of proportion to the capital and the risk involved, while a fall to eight pence would practically wipe out the whole industry of manganese mining. Until metallurgical and chemical industries are developed in India, and as long as ores can be raised for export in the raw state, this dangerous state of uncertainty must exist making it practically impossible to develop any minerals so situated that they can

* *Quinquennial Review of Mineral Production of India during 1904-1908*, by Sir T. H. Holland and Dr. L. Ferrier Calcutta, 1910, p. 10.

be exploited only by systematic operations incurring a considerable capital outlay. So long, therefore, as these unsatisfactory features of the industry persist, most of the so-called ore-mining in India must be limited to the mere quarrying of the easily accessible and visible deposits of grades sufficiently high to pay for the heavy charges of transport to distant markets. Such an industry, like the vegetation of a desert, is either in a state of rank and luxuriant growth during a favourable season or is absolutely dead. The weak spot which is so conspicuous in Indian mining is similar in character to that of its agriculture, which depends still almost wholly on the monsoon, and the natural fertility of the soil—years of prosperity alternating with years of famine both being embarrassing, because the whole country is affected at the same time and in the same way.*

INCREASING IMPORTS.

A still worse feature of the "progress" is the fact that in spite of huge and expanding mineral production of India she has to import increasing amounts of the articles directly or indirectly obtained from minerals. Thus, India exports the raw produce, as in agriculture, only to receive back the manufactured products. She has thus to pay for double freights and to lose the profits of manufacture. India produced in 1912, minerals worth 9·8 million £, but she had to import in the same year 14·4 millions £ worth of minerals and products obtained directly from minerals, and also 15·5 millions sterling worth of products of a more finished nature obtained from minerals. Thus the Indian demand for articles ultimately manufactured from minerals is more than three times the Indian production of minerals which again are used for export rather than manufacture in the country.

COMPARATIVE STATISTICS.

Again, the magnitude of the progress is insignificant when compared to the mineral production of other countries. Thus, in 1907,

* Sir Thomas H. Holland in "Commerce" of February 28th, 1912.

the production of coal in India was valued at 2·6 millions sterling, and the total mineral production at 7·8 million £, while the value of coal production only in the United Kingdom, United States, and German Empire respectively amounted to 120·5, 126·2 and 77·5 million £ during the same year. The total mineral production of Germany in 1911 was estimated at £ 270 millions. In making this comparison it should be noted, however, that India is still in its infancy as an Industrial Country and if we take into consideration the age of the modern mining industries of India,—which can scarcely be said to be over 25 years—the Indian progress is not quite so bad as it may appear on a superficial comparison.

ONE-SIDED DEVELOPMENT.

Thus, it might be said of mineral production in India, in general, that though it has undergone a huge expansion during recent years, the progress is only one-sided, being unattended with the rise of the metallurgical and chemical industries; and that the minerals being generally exported in the raw condition, their production does not confer the maximum advantages on the people. Again, the majority of the mining concerns are under European management and so do not show any progress on the part of Indians. Moreover, the production and export of Indian minerals dwindle into insignificance when compared to the

Indian consumption of the articles manufactured from minerals.

ABSENCE OF SUBSIDIARY INDUSTRIES.

It might be explained that the low stage of the development of the Indian metallurgical industries is due to the absence of subsidiary industries, which are necessary for the utilisation of the bye-products. The sulphurous ores of copper and iron cannot be worked in India for some time to come on account of the limited and localised demand for the by-product, sulphuric acid, and of the enormous outlay required on the best machinery and expert advice.

Again, the free importation of these commodities manufactured on a very large scale in Europe and America, makes production on a small scale here a matter of great difficulty. However, it cannot be denied that in many cases, the use of costly machinery for boring, lifting and extracting (*e.g.*, in the gold mines of Mysore, and some of the coal mines in Bengal, and in the colossal factory of the Tata Iron and Steel Works), has marked an epoch in the history of Indian manufactures. A visit to any of these mines would show at once the contrast between the orthodox methods of manufacture prevalent in the rest of the country and these centres of the latest methods of Engineering and Chemistry, which may easily compare with the mining districts of the West.

Book of the Month.

INDIAN FINANCE AND CURRENCY.

REVIEW BY V. G. KALE, M.A., *Professor of Economics, Fergusson College, Poona.*

It is expected that the report of the Royal Commission on Indian Finance and Currency will be issued shortly, and if the expectations are fulfilled, the Commission will deserve to be congratulated upon the promptitude with which it would have finished its business. The general trend of the evidence recorded by it has already been made the basis of guess work in which certain publicists have indulged with regard to its probable recommendations. Though it is not very difficult to form some idea of the conclusions the Commission is likely to arrive at, we would rather wait for the publication of the report than indulge in prophecies however interesting that pastime may be. We

refer to the subject here because we wish to call attention to a very instructive book on the financial and currency system of India, written by a member of the Chamberlain Commission, Mr. J. M. Keynes. The volume we refer to ("Indian Currency and Finance," by John Maynard Keynes : Macmillan & Co.) was, of course, written before the Currency Commission was appointed and the author had not the advantage of the rich store of information which was placed before it and of the expert views propounded by the various witnesses. Mr. Keynes observes in the preface to his book that when all but the last of its chapters were already in type, he was offered a seat on the Royal Commission and that if the book had been less far advanced, he should have delayed publication until the Commission had reported and his opinions had been more fully formed by the discussions of the Commission and by the evidence placed before it. It is difficult to say how far Mr. Keynes will feel himself called upon to modify his opinions in the light of the evidence recorded by the Commission and his discussions with the other members of that body. The present book does give, at any rate, a very lucid account of the system of Indian currency and finance as it exists to-day, and it cannot but prove interesting to those who wish to get acquainted with that intricate subject.

In the first chapter, the author has given a brief account of the growth of the existing Indian system of currency and he seems to hold the opinion that the Government of India never deliberately adopted a currency system, having gradually drifted with the prevailing arrangements. That they never set forth their principles and policy plainly accounts partly, Mr. Keynes states, for the widespread misunderstanding that exists about the whole system though intrinsically it is quite sound. He refers to the hot controversies of the time, the exchange difficulties and the closing of the mints to silver, and maintains that in spite of the fact that the Indian currency requires an elaborate state management, it does not suffer from the several serious drawbacks and con-

sequences usually associated with a 'managed' system. The second chapter of the book is designed to show, in the words of Mr. Keynes, "(1) that the British system is peculiar and is not suited to other conditions; (2) that the conventional idea of 'sound' currency is chiefly derived from certain superficial aspects of the British system; (3) that a somewhat different type of system has been developed in most other countries; and (4) that in essentials the system which has been evolved in India conforms to this foreign type." In this chapter, the author gives a very clear idea—and does it in a very interesting manner—of the gold-exchange standard. First of all, he compares the development of the British currency system with the monetary systems of the continental nations and accounts for the important points of difference subsisting between them by referring to the fact that while England has been a wealthy and therefore a creditor country, the other nations are more or less debtors. Gold is economised in England by the extensive use of cheques and other media of exchange and raising the bank rate is enough to regulate the outflow of that metal. But this bank rate policy does not succeed elsewhere, because the other countries have less to lend and more to borrow. Apart from the bullion reserve and the bank rate, therefore, they have evolved various devices for protecting the local currencies, which have been mostly shaped upon the model of British gold mono-metalism under the impression that that system was the secret of the wonderful wealth and prosperity of England. At one end of the scale we have Great Britain and France—creditor nations in the short loan market and at the other end, the great trading nations of Asia, India, Japan, and the Dutch East Indies, an intermediate position being occupied by Germany, Russia and Austria-Hungary—rich and powerful but debtor nations. From these last to India is an easy step. Mr. Keynes warns us against the nonsense that is talked about a gold standard's properly carrying a gold currency with it, and observes that gold is an international, but not a local currency. Though India was not the

first country to lead the way to a gold-exchange standard, Holland and Austria-Hungary having preceded it, she was the first to adopt it in a complete form, and her lead was followed by other countries. Speaking as a theorist, Mr. Keynes believes that 'it contains one essential element—the use of a cheap local currency artificially maintained at par with the international currency or standard of value (whatever that may ultimately turn out to be) in the ideal currency of the future.'

Having thus lucidly explained the principle underlying a gold-exchange standard, Mr. Keynes proceeds to describe the paper currency system. He gives three salient characteristics distinguishing the Indian system from those of most note-issuing countries:—(1) the function of note issue is wholly dissociated in India from the function of banking; (2) as there is no central bank in this country, there is no Government Banker; and (3) the Indian currency is internally absolutely inelastic. Much of the difficulty and inconvenience caused by these circumstances, the author believes, can be removed by having a State Bank, associated in a greater or less degree with the Government. But as there is a considerable weight of opinion in favour of the view that the time for the establishment of a Central Indian Bank is not yet ripe, he suggests that, in the meantime, Government should be at liberty to lend out part of the reserve in India. He thus recognizes the lack of elasticity in the Indian currency against which there has been such a loud outcry recently, and proposes to impart to it the needed element of elasticity and to modify the present absolute dependence of India on London for an expansion of currency by empowering Government to lend out of the liquid portion of the Paper Currency Reserve.

With regard to the introduction of a gold currency in India, Mr. Keynes expresses the view that the system of active gold circulation and a preference for a tangible gold currency are no longer more than relics of a time when Governments were less trustworthy in these matters than they are now and when an imi-

tation of the British currency system was fashionable. On going through all the evidence that is available on the question of the use to which gold and sovereigns are put in India, he concludes that there is at the present moment in India an enormous demand for gold bullion, a very considerable demand for sovereigns for purposes of hoarding and a relatively smaller demand for them for purposes of currency. He then examines the various arguments put forth and the proposals made in connection with a gold currency for India and gives two counter-arguments, viz., that it is extravagant and wasteful to have gold coins as the actual media of circulation and secondly that it would diminish and not increase the stability of the currency system as a whole. He thinks it unlikely that at a time of crisis, the greater part of what has to be withdrawn from circulation would come from the gold portion of the circulation. Bankers and others would keep as much of their surplus currency as they possibly could in the form of gold, and it would be rupees (in great part) and not gold that would be paid into the Government Treasuries. He further states that the infusion of more gold into the circulation would necessarily weaken the existing reserves and would not correspondingly reduce the amount of such reserves which Government ought in prudence to keep.

Mr. Keynes is thus opposed to the establishment of a gold mint in India and the more extended circulation of sovereigns in the country. For ourselves we cannot see how the existing inelastic and managed currency system in India can be called satisfactory. Reading the fourth chapter of the author's book along with the Government of India's Despatch to the Secretary of State for India, dated May 16, 1912, and the third, fourth and fifth chapters of the Hon'ble Mr. Webb's 'Advance India!', one is led to the conclusion that the objections raised by Mr. Keynes are not very strong. He says that 'a gold standard is the rule now in all parts of the world; but a gold currency is the exception' and that an actual gold currency has nothing to do with a gold standard and is not an essential condition

of the latter. This view is held by certain economists but opposed to their opinion are the authoritative statements of men like Sir Robert Giffen, Lord Rothschild and Sir John Lubbock who have declared that "you cannot have a gold standard without a gold currency." Those who realize the consequences of the action of the Indian Government in issuing crores of token coins and putting them into circulation, i.e., the resultant high prices and the burden of taxation indirectly but none the less surely thrown upon the shoulders of the people of India, must feel that the present currency system must be materially modified." Mr. Keynes himself admits that if we take a longer view, the Indian demand is, at a time of plentiful gold supply like the present, a true friend to the city and an enemy of inflation. London financiers ought not, therefore, to apprehend any evil consequences from the absorption of large quantities of gold by India. If owing to the wider circulation of the yellow metal in this country joined to a diminished production of gold from the mines in the future, other gold using countries are hard put to it for an adequate supply of gold, why, the way will be paved for the adoption by the world of the ideal currency system, viz., bimetalism—a consummation devoutly to be wished. Let us make it clear that there is no question of forcing a gold currency down the throats of unwilling people in India. What we insist upon is that the present situation will not do, and our currency must be improved and be made more automatic.

One of the most illuminating chapters in the book under review is the one dealing with the mechanism of council bills and transfers. In describing that process he controverts the view of certain critics that 'the issue of rupees into circulation depends in some way upon the amount of council bills sold by the Government and can, therefore, be expanded or contracted by them at will, according to the policy of the moment.' He justifies the present system of selling council bills in London in excess of the usual requirements of the Secretary of State, whereas Mr. Webb, for instance, would have the sale strictly limited to the sum required to meet the Home charges except when more gold is wanted for the purchase of silver for coining rupees. With regard to the question of reserves and cash balances, Mr. Keynes anticipated the situation to which the recent banking crisis gave rise, viz., the stringency of the money market and the appeal made to Government to come to the rescue of banks by placing at their disposal

funds out of their cash balances. He shrewdly observes:—"The expectation that the Government will bring some of its gold to the rescue in extreme circumstances, has always been said to exert an enervating influence on the banks themselves in the matter of the precautions they take for times of crisis." This point was recently emphasised by Mr. D. E. Wacha who suggested that our merchants and financiers, instead of looking up to Government, should combine and start a large bank which might supply them with the needed monetary assistance in times of difficulty. The ultimate solution in the opinion of Mr. Keynes is the establishment of a Central Bank for India. His discussion of the controversial question of the holding of India's gold in London and the placing of it at the disposal of banks there will repay perusal. We cannot follow the author in his lucid account of Indian banking but would recommend it to the careful attention of every student of the question in India, especially at the present moment, when a large part of the country has just emerged out of a terrible crisis. We would particularly draw the reader's attention to his remarks upon Indian Joint Stock Banks and their banking methods. The seventh chapter of the book has therefore an interest of its own.

In conclusion, we may observe that it would hardly be adequate praise to say that Mr. Keynes has, in the volume under review, elucidated the intricate problems of Indian currency and finance in a way not attempted before. He does not merely give a superficial account of the existing system. He explains the fundamental principles underlying it while describing the complex mechanism and additional value is imported to his book by the array of facts and figures he gives to illustrate his remarks. While one may differ from Mr. Keynes with regard to certain of his views and while some may even characterize the book as an apologia, we freely and cordially welcome the production as one of the most luminous we have ever seen on the subjects he has handled. What we value more than anything else in the volume before us is the simple and unambiguous exposition of the financial and currency machinery as it exists in India to-day and the principles and motive force by which it is moved. His statements are clear and fair and students of Indian Economics ought to make it a point to peruse the volume carefully and give it an honourable place on their book-shelf.

The Agricultural World.

Salt Increases Fertility.

Sea-salt seems to play a rather important rôle in the development of plants, according to the *Chemical News*. Its fertilizing properties have been explained by the fact that chloride of sodium favors the solubilization of potassic feldspars. Carbonate of calcium and sulphate of ammonium do the same. They favour the dissolution in water of the feldspars, and of potassic salts, which constitute the mineral aliment of plants.

Artificial Manure for Coconut Trees.

The manure consists of—

Groundnut cake	...	2 lbs. per tree.
Fish guano	...	2 "
Bone-meal	...	2 "
Kainit	...	2 "
Pot. sulphate	...	$\frac{1}{2}$ "
Salt	...	1 "
Lime	...	$1\frac{1}{2}$ "

Total ... 11 lbs. per tree

The manure should be mixed with sufficient earth before its application so as to ensure its even distribution in the ground.

The above manure has been recommended by the Director of Agriculture, Travancore, where it is sold at the rate of about half-anna per pound.

Seed Depot.

We learn from the Report of the Benares Agricultural Station for the year ending June 1913, that a seed depot has been attached to the farm in which a collection of best seeds is stored to enable the cultivators to procure good seeds without any difficulty. All improved seeds produced on the farm are transferred every season to this seed depot for distribution among the groups of cultivators. Those who cannot pay cash can get the seed on sawai system.

Spacing Experiment in Paddy.

An important point in paddy cultivation is the distance apart at which transplant should be put down and the number of plants per hole. To test this, in the Hmawbi Agricultural Station, Burma, plants of *Ngasein* as even in size as possible were planted out in rows at 6 inches, 12 inches and 18 inches apart. In each case planting was done with 1, 2, 3 and 4 plants, giving altogether twelve different ways of planting. So far as the result of one year's experiment shows it appears that the yield falls off in all cases when the distance of 6 inches is exceeded. The highest yield was got planting at 6 inches apart and using three plants to the hole. "I am not satisfied, however," says the writer of the report, "with the result of the experiment and am inclined to think that the variety used and the fertility of the soil should determine the method of planting." Accordingly the experiment will be remodelled during the present year.

Science and Agriculture.

"Modern Science and Modern Agriculture" was the subject of a lecture delivered at a recent meeting of the Surveyors' Institution in London, by Professor Ainsworth Davis, Principal of the Royal Agricultural College, Cirencester. Professor Davis said that among the results of the scientific study of the soil was the discovery of the bacterial nature of the process of nitrification. On the other hand, denitrifying organisms were also discovered, and the problem was to destroy the latter without detriment to the former. More recently Dr. Russell and his colleagues at Rothamsted had found that partial sterilisation of the soil was followed, after a short interval, by a marked increase in fertility. The theory put forward was that the soil contained microscopic animals which preyed upon the nitrifying bacteria. These animal organisms were

destroyed by sterilisation, which at the same time was not sufficient to destroy the bacteria.

Trial of Interculture in Wheat Crop.

The results obtained by a trial of interculture in wheat crop, sown in ordinary way as well as very thick, in the Aligarh Agricultural Station and included in its report for the year ending 30th June 1913, are interesting from the point of view of dry farming.

Four plots were taken. Two plots were sown with Muzaffarnagar wheat in the ordinary way with the local drill in which case the distance between the rows is from 9 inches to a foot.

Two other plots were sown with wheat in furrows from four inches to six inches apart. For this purpose a small desi plough made for the purpose was used.

When the plants grew a little, one plot from each set was taken for interculture. After every three rows of wheat, two rows were pulled out to leave enough space for a small hand cultivator to work.

These spaces were hoed and weeded when necessary. The remaining plot in each set was cultivated in the ordinary way.

The outturns of grain per acre in maunds are given below :—

Method of Sowing.	Outturn per acre in Maunds.					
	Ordinary.			Interculture.		
	Mds.	sr.	ch.	Mds.	sr.	ch.
Sown in ordinary way...	22	30	13	25	9	0
Very thick sowing ...	22	39	5½	26	13	10

Tropical Agriculture.

The International Association for Tropical Agriculture (*Association Scientifique Internationale d' Agronomie Coloniale et Tropicale*) has decided to hold at the Imperial Institute in next June, an International Congress, in which all countries interested in tropical agriculture and forestry are invited to participate. Among the subjects which have been suggested for papers and discussion, and on which contribu-

tions are invited, are the following:—Technical education and research in tropical agriculture; labour organisation and supply in tropical countries; scientific problems of rubber production; methods of developing cotton cultivation in new countries; problems of fibre production; agricultural credit banks; agriculture in arid regions; problems in tropical hygiene and preventive medicine; problems relating to tropical agriculture and forestry; the cultivation and production of rubber, cotton and fibres, cereals and other foodstuffs, tobacco, tea, coconuts, other agricultural products and forest products; and plant diseases and pests affecting tropical agriculture.

Dry Farming.

The following is printed in the *Tropical Agriculturist* for the information of the members of the Ceylon Agricultural Society :—

1. Dry farming has been defined as the conservation of soil moisture during long periods of dry weather by means of tillage.

2. The object of the system is to bring about a certain mechanical condition in the soil which will favour the growth of crops in dry districts.

3. To begin with, the soil should be loosened to a considerable depth in order to catch rain water when it falls; so that instead of running away as it would on a compact surface soil, the water may sink in and be carried downwards and there stored for future use.

4. After this the upper 2 to 4 inches of soil should be frequently stirred to preserve it in a state of mulch, that is, in a loose condition, so that the moisture below may not rise to the surface and become evaporated, as it would if the soil become compact.

5. Thorough ploughing or forking up followed by the frequent use of the harrows will help to bring about this result.

6. Never allow the soil to become crusted, and the more serious the drought the more frequently should the surface layer of soil be loosened.

7. Do not permit the land to grow weeds since the presence of grass or weeds so far from protecting the soil aids in the dissipation

of moisture by transpiration through the leaves.

8. Sandy loams and clayey loams can be dry-farmed but not gravels, pure sand or impervious clays; level or gently sloping land is more suitable than steep hill-sides.

9. In regions where dry farming will be found most serviceable, conditions of soil and climate favourable to the process usually prevail.

10. As a rule the soil is light and there is a good depth of it; there is no impermeable substratum; and such humus as is present is richer in nitrogen than that in wet districts.

11. The bulk of the rainfall is precipitated within a short space of time.

12. It is therefore necessary to prepare the land by ploughing or forking to receive the water and store it, and afterwards, by frequent surface cultivation, prevent its dissipation.

13. To facilitate the use of implements regular planting should be done and in the case of annual crops the seed should be drilled or dibbled in rows as straight as possible to allow of tillage between the growing plants.

Some Foreign Farming Methods.

According to an article appearing in the *Technical World Magazine*, the United States is behind other nations in the utilization of farm products, in co-operative farming and, above all, in intensive farming. In spite of their great farms and wonderful machinery and, compared with the amount of capital at the disposal of European farmers, an endless supply of money, the Americans, it is said, waste, to put it at the lowest estimate, one-half their land.

The Danish farmer is perhaps the most progressive of all the farmers in Europe, for in Denmark there is the finest co-operative system in the world among the farmers, and as a result they get better prices on the whole than any other group of European tillers of the soil.

In America thousands and thousands of tons of hay are wasted simply because the great stacks are heaped up and merely raked down on the outside. This allows the rain to soak

in deeply, while the base of the stack, resting upon the bare soil, absorbs sufficient moisture to mould and ruin at least two feet of the hay from the ground up. But in Germany and other European countries, the stacks are raised from the ground on a platform to prevent the formation of mould. The hay stacks of England resemble great barns in size and shape, for the workmen climb upon them and thatch them just as carefully as they would thatch the roof of a farm-house. The result of this is that even the heaviest of their rains cannot soak in and spoil the hay.

Every European nation has its own special tricks in practicing thrift and conservation on the farm. In Switzerland one will never see a branch or a twig on the ground. Everything is gathered up and saved for firewood. In Holland, water divides the farm tracts instead of fences. While this is especially feasible in low-lying Holland, it is evident that dikes and ditches on any meadow land would save the labour and cost of fences, at the same time serving for purposes of irrigation.

In most European countries, common fertilizers are used, except in Italy, and yet there, in the territory north of Naples, is the richest soil in Europe. On one Italian farm the same plot of ground has been cultivated two thousand years, growing three crops a year, and yet no fertilizers have ever been used there. It was here in this famous region that farmers were found growing fruit trees and grapes and either wheat, or vegetables on the same plot of ground at the same time.

In the matter of fertilizer also, European farmers are able to get three times more value out of it than does the wasteful farmer of the United States. The former build brick pavements, water-tight and hollowed out, and on these they pile the manure. By means of pumps the liquids are extracted from the manure to be poured over the top of it, and extracted again and again, until every ounce of it is thoroughly decomposed. When this compost is placed on the soil there is no burning of the ground and no delay in rotting.

The common practice in America is to let

the manure accumulate in the barn yard all winter, and then, if it is to be used at all, it is shovelled on to the fields in a crude state. The liquids, percolating into the ground, often pollute the farm wells.

Non-Available Water in the Soil.

The following article is a summary appended to *Research Bulletin* No. 3 of the University of Nebraska. It deals with the results of experiments conducted with the object of determining the relation of the final water content of the soil to the hygroscopic coefficient, and to determine to what extent the moisture is removed from the different portions of the sub-soil not penetrated by plant roots:—

In the portions of a semi-arid sub-soil where roots are well developed, the final content of free water is independent of the distance from the surface, except where the stored water is much in excess of the amount required for the complete maturity of the plant.

When the portion of the sub-soil, in immediate contact with the roots, contains only a comparatively small amount of free water, crop plants may die quickly if conditions are such as to cause an unusually rapid transpiration. An abundance of free water in deeper portions of the sub-soil, into which but few roots have been developed, may not avail to carry the plant over such a critical period.

The economy in the use of a certain amount of free water stored in the sub-soil may be much affected by its distribution. A high content confined to the portion of the soil near the surface may induce a rapid growth of the plants and an economical use of the water in so far as the production of foliage alone is concerned, but the resulting large transpiring surface may cause the death of the plants before they reach maturity. The same amount of free water distributed through a greater depth may induce a slower growth, allow a longer lease of life, and so permit of the production of seed, while if the same amount be distributed through a still greater depth the content of free water may every-

where be too low to permit of the development of roots, thus rendering the free water non-available.

The loss of water from the sub-soil of dry lands under crop seems to take place almost entirely through transpiration. In the absence of plants the loss from the sub-soil is small. The stored moisture of the different depths of sub-soil in the field becomes available to the plants by the roots being developed into these depths, but little moisture being elevated to the roots by capillarity. However, in the case of sub-soils saturated in cylinders or pots and comparable to such field sub-soil as are only a few feet above the water-table, the content of free water is so high that large amounts of moisture may be elevated to the roots by capillarity. The amount of water retained by a soil saturated in pots or cylinders is far in excess of the amount retained by a similar soil saturated in a field where the water-table is at a considerable depth below the surface, as in ordinary dry-land soils.

In the case of ordinary dry-land soils, the water-table being at a considerable depth below the surface, the *maximum* amount of soil water available to plants, for growth and for the maintenance of life, is *approximately* equal to the *free-water*—the difference between the total water and the hygroscopic coefficient—in these portions of the soil and the sub soil occupied by the roots. For some plants the available water appears to be somewhat greater and for others somewhat less than the free water.

To Test Grain with a Saw.

The reason why some varieties of grain resist the attacks of insects and plant-diseases much better than others has been discovered by Dr. F. Stranak, of the Bohemian Technical High School in Prague, whose experiments go to show that it is the harder grains which are thus immune, and that this hardness is dependent on the structure of the cells that go to make up the grain-substance. Dr. Stranak even determines the degree of resistance of a given specimen of grain by testing its hardness with an instrument that he has devised for the

purpose, consisting essentially of a tiny saw which attacks the grain like the jaws of an insect. The harder the skin of the grain or its stalk, the greater the resistance to the cutting action, and since the saw is mounted on one arm of a sensitive balance it is possible to measure the exact degree of resistance by means of suitable weights. Here is a description of the machine, taken from *Prometheus*.

"The apparatus consists of a saw fastened to the curved arm of a balance, together with a small car which holds the grain in position beneath the saw. The contact of the saw and the plant is produced by a weight on the under arm of the balance. The car moves beneath the saw on a track whose degree of inclination balances the weight of the scale-pan, and the weights used are small shot.

"Stranak employed the finest English saw, only one-tenth of a millimeter in width. As soon as the weight of the shot placed in the scale-pan was sufficient to overcome the resistance of the plant skin, the car was drawn up the inclined plane past the edge of the saw, which thus cut the surface just as the jaws of an insect would do. The weight required to produce this cutting action was hence a precise measure of the degree of hardness of the tested plant."

According to Stranak's experiments noticed in the *Literary Digest*, the machine affords a thoroughly reliable means of determining the exact degree of hardness of different varieties of any grain, and this hardness directly corresponds to the closeness and toughness of fibre or cell structure, to which is due the greater or less resistance of the plant to attack. This resistance is operative not only against insect injuries, but against plant diseases. The simplicity and inexpensiveness of the apparatus are further points in its favor and its general introduction in agricultural experiment-stations will undoubtedly be productive of valuable results.

Fat Content of Cow's Milk.

Among the components of milk, fat is the most valuable, both when milk is sold as such and when it is used for butter or cheese-

making, thus the economic importance of producing cheaply a milk rich in fat will be perceived at once.

The chief of the Animal Husbandry Section of the Central Agricultural Experiment Station of Sweden, discusses the circumstances which exert an influence on the fat content of the milk, and gives a resume of what has been ascertained up to the present. These are incorporated in the *Monthly Bulletin of Agricultural Intelligence and Plant Diseases* for October.

It has been proved that certain kinds of food, such as palm and coprah cakes and the leaves of beets, have a tendency to increase the fat content of the milk produced, whilst others, such as poppy and German sesame cakes and inferior rice flour, act in the opposite way. Nevertheless it is not by feeding that sure progress is to be expected, but by selection in breeding with this object in view.

Calculating the average fat content of the milk of all the descendants of a bull, the writer has determined the fat content that this bull represents and which he can transmit as inheritance. He calls it "genotype fat content percentage" of the bull.

The writer summarizes as follows the results of his investigations on the influence that the choice of the bulls has on the fat content of the milk:—

1. It is possible to increase the percentage of fat content of the milk of a herd, with economic advantage, by a judicious selection of the breeding animals.

2. By dividing a herd into families of descendants of the sires and of the dams, the influence of each animal on the development of the qualities of the herd may be better demonstrated.

3. The influence of the males is demonstrated by the average production of all their female descendants, or still better by a comparison of the average production of their daughters with that of the dams of these daughters when they were of the same age.

4. The influence of the bulls on the percentage of fat content of the milk of their female

descendants depends upon the qualities of the females of the preceding generations.

5. The influence of the cows appears in the fact that a bull possessing a certain genotype percentage of fat cannot increase the percentage of fat in the milk except in the daughters of cows inferior to him in the percentage of fat content, whilst, the daughters of the same bull out of cows yielding richer milk will have a percentage of fat inferior to that of their dams.

6. The males and the females transmit to their descendants the percentage of fat which they themselves have inherited from their ancestors, the male and the female having, as it appears, an equal influence on condition that they represent the same constancy of results in this respect. But owing to its larger number of descendants, the male has a greater influence on the development of the herd.

7. Nevertheless, as is usually the case in questions of heredity of quantitative characters, variations are frequent, so that some particular animals may have an average fat content percentage very different from that of the sire or the dam; but the average percentage of all the descendants is in general very near to the average genotype percentage of fat of the sire and of the average fat content of the dam's milk.

8. For the improvement of animals, as well as for that of plants, it must be sought to unite the qualities having the greatest practical value; every effort towards the attainment of such a high yield of milk as would be injurious to the health of the animals must be carefully avoided, as well as record figures in the butter fat content. But everywhere where milk is paid according to its quality, the object in view should be to combine the efforts in these two directions in order to attain a high production of butter fat.

9. The principal means of increasing the fat content of the milk is a scrupulous selection of the breeding animals, especially of the bulls, judging the genotype percentage of butter fat according to:—(a) the average percentage of the milk of their dams; grandams and sisters;

(b) the influence of their sires and grand sires on their daughters; and, when the bulls are sufficiently old, (c) their own influence on the average percentage of butter fat in the milk of their female descendants.

Cotton Outlook.

In the paper which he read before the Board of Agriculture at Coimbatore Mr. Arno Schmidt, Secretary of the International Federation of Master Cotton Spinners and Manufacturers' Association, said that the cotton industry of the world had been suffering from a scarcity of the supply of raw materials, that the scarcity had frequently been pronounced, that mills in all countries had been obliged to stop working for certain periods and at the present time a reduction of working hours of Cotton Mills in several continental countries had been commenced and Lancashire would discuss the advisability of running short time during the month. The primary cause for the reduced output was the fear that the world's supply of cotton would not be sufficient to last out the season, owing to the deficiency in that year's American crop. That opinion was held by his Committee and he might say by every expert who had studied the question. India alone was the country that could come to the immediate rescue of cotton industry in that perilous position. He said for various reasons the development of the industry in Africa had been slow and the hope entertained that the continent would come to the rescue had not been yet realised, but he thought the work done there would be of benefit to the industry in say, 20 or 25 years. Regarding the output of cotton in the United States he was of opinion that the limit of the crop had been reached. Other suppliers of cotton which were some of the Republics of South America were short of agriculturally trained people and of the means of transport. They were therefore bound to fall back upon India which possessed such an excellent net work of Railways and had a hard working population more than 90 per cent. of whom being born-agriculturists and cotton had been the important crop in India since time immemorial. The speaker then dwelt on the increasing

consumption of cotton goods and the enormous and ever increasing demand for raw materials. These assured the Indian cultivator that for many years to come he would get remunerative price for his cotton crop. He said that they must conclude that there was no fear that the present high level of cotton prices would make way for a lower one for a long time to come. The Indian Government were, therefore, justified in fostering the growing of cotton wherever it could be produced. In almost all the cotton growing provinces of India, cotton was already the most remunerative crop above all others and he was inclined to think that it could be made the best paying crop in all provinces with the help of an increased staff of agricultural experts. The department of agriculture had already done some very good work. Any one who had travelled through the country, and observed the work of that handful of agricultural experts employed by the department of Agriculture must be astounded at the work accomplished. He knew a good many of them and he had been able to follow their results from almost year to year. Those men are the finest productive investment which the Government of India possessed and they were more valuable even than the irrigation canals of the Punjab. They had to a large extent been responsible for the increased cotton crop which would mean additional income to India in the present year, of £16,000,000. The speaker further gave examples of remunerative investment which the Government had made, such as the newly introduced cotton in the United Provinces, Cambodia cotton in Madras, and the Zemindari yields in the Punjab and Sindh; spinners of the world were recognising these services and at every deputation to the Secretary of State, they had strongly urged to increase their number, but he was afraid that the Government of India did not fully realise their values. The insignificant sum which the Government of India spent on this department was £215,667 for 1911-12 and he was told that a large percentage of that sum was spent on the teaching staff of the Agricultural Colleges, which was hardly of immediate profit to the land. The

land revenue of India during 1911-12 was £10,000,327 and yet, only one per cent. was spent for the improvement of the condition of agriculture. An increase in the yield of land meant an increase in revenues and that seemed to be frequently left out of consideration. The speaker then compared the figures of other agricultural countries and said that cotton spinners held the opinion that the Government of India were not spending one-tenth part on the Department of Agriculture of what they ought to do. He calculated the other day the area under the supervision of one agricultural expert and found that the Department of Agriculture expected him to look after an area larger than the whole of agricultural Egypt. Whenever his Committee petitioned to the Secretary of State for additional men, they were told that posts in the Department of Agriculture were earmarked for Indians and that Europeans were too expensive to be employed largely. But the facts were that sufficient Indians could not be found, qualified for the posts of agricultural experts. It was plain that Indians in necessary numbers could not be obtained at present and any further hesitation in the employment of, say, 10 additional agricultural experts meant withholding the produce of the soil for which not only the cotton industry but also other industries were clamouring. Regarding agricultural education, Mr. Schmidt thought that the vernacular schools at Mirpur Khas and Lyallpur seemed to fulfil the wants for the education of the cultivators perfectly well. He mentioned a few points of advantage which he had met with in Egypt and Sudan. He suggested that Government farms should be classified into research farms, demonstration farms and seed farms. Research farms should be merely devoted to various kinds grown to different distance in planting, different applications of manure and no attempt at profit should be made. The demonstration farm should, in the first instance, show how much money it had made each year in the way which an ordinary cultivator was able to adopt. Mr. Schmidt, then, referred to ginning factories and said that with a few exceptions the ginning factories of India were badly managed

and that they were to a very great extent responsible for the degeneration of Indian cotton. It seemed hopeless to obtain real progress in the improvement of staple and yield, unless some reforms were introduced in the ginning factories. It was a difficult question, but what was possible in Anglo-Egyptian Sudan should not be impossible in India. By issuing special licenses to ginning factories taking the whole business of cotton ginning, a licensed one, a great improvement would be effected. Mr. Schmidt made a very strong appeal for legislation regarding damping. The latter did the greatest injury to the spinner and that feeling regarding it had been great and urged for legislation which would be able to bring the offenders to book. In concluding his very interesting paper, Mr. Schmidt offered some valuable suggestions and said that he was pleased to see from the reports of the Co-operative Credit Societies that they were extending and that Agricultural Associations were making good progress. Regarding the suggestion that the right way to grow cotton might be taught to soldiers, he said that Agricultural instruction was given in some of the continental armies. Ordinary village schools could also help. In Egypt all school children had to learn by heart an address delivered by Lord Kitchener on the best way to grow cotton and how to fight cotton insect pests. It is entitled "Reconnaissance before the battle."

Red Rot of Sugarcane.

An instructive account of the most serious disease to which sugarcane in India is subject, known as "red rot," caused by the fungus *colletotrichum fulcatum* Went, is given in the *Memoirs of the Department of Agriculture in India* (Vol. VI, No. 5). In India it is in many places the greatest obstacle to successful cane cultivation. In Madras, Bombay and Bengal the area under thick cane has in certain places periodically shrunk as a result of an accumulation of red rot in the crop. Indeed, red rot has often been the limiting factor to the successful cultivation of heavy yielding canes.

The first requirement to combat the ravages

of the disease is to start with a healthy stock. In those districts, such as the Godaveri Delta and some parts of Bombay Presidency, where the local canes have become widely infected, new healthy seed must be brought in from outside. The very successful history of the Samalkota Sugar Station in the Godaveri Delta, shows what excellent results may be obtained by this measure under efficient supervision.

There is good evidence to show how dangerous it is to grow a variety from stock known to have been seriously infected, even though the crop may do well for the first few years. Large estates or groups of estates should be self-contained in the matter of seed supply and should possess a nursery or testing garden for the trial of new varieties under the best conditions. For the ordinary native cultivation, Government Farms should be utilized for the same purpose. In this way a supply of healthy seed can be assured and new varieties can be introduced into cultivation as required.

Systematic and thorough selection of the sets used for planting must then be done each year or the new varieties will not maintain their freedom from disease for long. The object of the selection is to prevent an accumulation of red rot to such an extent as materially to reduce profits and render it difficult to obtain a sufficient supply of sound seed for the coming season. Of lesser importance, but still worth doing in most cases, is the regular removal of all withering clumps during the growing and ripening season. Such clumps, if left, dry up and produce spores, sometimes in considerable quantity. Infection of even perfectly sound cane through the aerial root eyes and through injured buds has been shown to occur. There is, also, the danger of infection through the soil, especially in irrigated cane, by means of the shed spores.

Judging from Godaveri experience it is important to give cane a long rotation. The fungus appears to die out rapidly in moist soil, but cultures exposed to the air and kept moderately dry retain their vitality for at least five months.

The Co-operative World.

Co-operation in Bengal.

The report dealing with the working of Co-operative Societies in the Presidency of Bengal during the year ending the 30th June, 1913, indicates steady progress. The number of societies rose during the year from 939 to 1,121, or by 19 per cent., and the number of members from 40,636 to 57,027, or by 40 per cent., while the working capital excluding the value of grain, rose from Rs. 26,02,709 to Rs. 46,09,559, or by 77 per cent.

Cattle Insurance Societies in Burma.

We read in the Administration Report of Burma for the year 1912-13 that, in that Province, Co-operative Cattle Insurance Societies increased from 23 to 57 within the short space of two and a half months. It was thought desirable to make arrangements for re-insurance, especially as there was every indication that the number of cattle insurance societies would continue to increase largely. Pending the establishment therefore, of a Central Re-insurance Society, no new societies were registered after September. Proposals for the establishment of a central society are being examined. Under the present bye-laws the premium is Rs. 3-2 per cent. *per annum*. Deaths from rinderpest are excluded. Fifty-seven societies have Rs. 3,300 in hand. Rs. 141 were paid in indemnities on nine deaths. Working expenses amounted to Rs. 34. Two thousand and ninety-nine head of cattle were insured at the end of the year, the full value of which was Rs. 76,396. The possibility of the inclusion in the insurance of death from rinderpest is being considered.

It may be pointed out here that the whole of India does not possess even one Cattle Insurance Society!

Co-operation in Coorg.

At the first Coorg District Co-operative Conference, the Hon'ble the Chief Commissioner of Coorg reviewed the work of the past year and offered a few interesting remarks.

When the Co-operative Societies were started in 1905, there were only six societies in the district, consisting of 507 members, with a working capital of Rs. 9,400. Last year, there were 28 societies and 2,310 members with a working capital of Rs. 91,500, including a reserve fund of Rs. 15,050 and Rs. 37,800, in paid-up shares. The latter amount represents the actual savings of the members of these societies. The old societies were in a position to pay dividends amounting to Rs. 3,071, at 10 to 21 per cent. per share.

Co-operative Conferences in India.

No fact has been more significant in recent times than the phenomenal success that has attended the co-operative movement in India. The close of the last year as well as the beginning of the new year witnessed a series of co-operative conferences in the various Provinces, and Native States; namely, Madras, Bengal, Behar and Orissa, Central Provinces, the United Provinces, Baroda, as well as various minor District conferences. Important questions connected with rural credit, its organization and mobilization by spreading a net work of co-operative societies in the villages, co-operative education and propaganda and other vital problems connected with co-operative work, were discussed in the important vernaculars of the country. The movement has been, from the beginning, guided by Government organization; and the various conferences held so far have derived a deal of advice and help from the Departmental Heads and Official Registrars of Co-operative Societies. It is enough to mention to indicate the amount of attention that the Government bestow upon the movement, that the Governor of Bengal presided over the first day's sittings of the Conference held in that Presidency, the respective Lieutenant-Governors over those of the United Provinces, and Behar and Orissa. We are compelled by exigencies of space to restrict ourselves to a rapid survey

of the important matters discussed at only a few of the Conferences.

Audit of Co-operative Societies.

The first Co-operative Conference of Behar and Orissa was held at Bankipore the other day. His Honour the Lieutenant-Governor opened the meeting in which he referred to the progress of co-operation in Behar, and wished the conference every success.

AUDIT AND INSPECTION.

Mr. Collins, then, introduced the subject of audit. The value of audit had to be considered first and secondly the means or agency by which it should be carried out. First, he asked the conference to affirm the resolution of the first Congress of the Imperial Federation held at Strasburg in 1908, which was to the effect that audit is indispensable, not only for the internal growth of individual societies, but also for the development and progress of rural co-operation. Secondly, he asked the conference to express their belief that the agency, whatever agency they might apply in future, for audit, should be independent of the central banks or unions to which the societies were affiliated. His reason for holding this view was that the central banks invested their money in the affiliated societies; so it was very desirable that the affiliated societies should be audited by an agency independent of the central banks.

Babu N. R. Bahadoory observed that the annual audit should be made by an agency independent of the central banks and unions, and that some of the directors of the central banks and unions should be appointed auditors to audit the central banks accounts once a month and that the inspector—manager should audit the accounts of the rural societies every month.

Babu Asutosh Mukerjee remarked that the audit might be conducted by an independent agency, but the central banks should have a hand in the inspection of accounts.

Some members suggested that there should be audit twice a year.

Rai Hari Har Parsad Sing Bahadur thought that there ought to be more frequent auditing of the central banks.

Mr. Jamini Mohan Mitra, Co-operative Societies, Bengal, observed that under the law the central banks auditor must be approved by the Registrar, which was a sufficient condition for the success of the movement. He instanced the case of the joint stock banks and said that he saw no objection to auditing by bank auditors.

The Conference then affirmed the following principles:—

- (1) That audit is essential.
- (2) That it should not prove of a less standard than the present audit.
- (3) That it should be independent of inspection or audit by the central banks which would be supplementary.
- (4) That though an audit twice a year would be a counsel of perfection, still at present a yearly independent audit is as much as can be insisted on.

Mr. Collins in introducing the subject of inspection next said that unless the persons, whose duty it was to inspect and supervise societies, were persons of education and could thoroughly grasp the principles of co-operation and the possibilities of the movement, they would not be able to achieve those ends as well as they should. Therefore it was that he asked the conference to resolve that as soon as the central societies and unions could afford to do so, they should appoint gentlemen of good education as supervisors and managers. It might be said that if they retained the services of such gentlemen the directors and honorary workers would cease to take any interest in the societies. There was, he said, that fear, but he felt that these societies began to multiply in course of time to such an extent that they would form part of the life of the people, so that every body would take interest in them.

After some discussion the Conference passed the following resolution:—That as soon as central banks can afford to do so, they should retain the service of gentlemen of good education on adequate salaries as paid officials of the bank."

Co-operative Housekeeping.

More efficiency with less of effort can be

injected into almost every department of human activity, if only man would work with his fellow-men. That is the economy and ideal of the co-operative principle.

The more advanced and extended application of the principle, we find in the West. The ordinary man of any occupation has his leisure moments, but his wife is not so fortunate. Labour-saving schemes and appliances are generally outside her life, and the drudgery of her daily routine as housekeeper, wife, and mother leaves her little time for relaxation or mental development.

Ebenezer Howard has devised a scheme of co-operative housekeeping for these people, in the columns of *Reynold's Newspaper*.

Broadly, it is as follows:—If a plot of, say, four acres were set aside at Letchworth, (a working-class people's place in England) two rows of semi-detached cottages could be built, one preferably at the south-east part of it, and the other along the north-western side of it. This would give the greatest amount of light throughout the day. In front and at one side of each cottage could be laid a flower garden, and behind them all allotments could be run for growing vegetables.

In the centre of the plot, midway between the two lots of houses, could be fixed a large kitchen, a laundry, a creche, and a workshop for the weaving of cloth and the making of garments or any article of utility required, in the homes of any of the cottagers—or, for that matter, outside the homes.

Supposing, for the sake of argument, that there are forty-eight cottages on the plot, and each woman has hitherto occupied two or three hours in preparing dinner. In the kitchen, where the best labour-saving appliances would be installed, some eight, twelve, or sixteen of them could do all that work quite easily in two or three hours. And if a permanent head of the kitchen were appointed, food could be purchased at wholesale prices, and fresh vegetables would always be available from the allotments. The saving in cost of food, gas, and firing would be enormous.

The meals, when prepared, could be served up quickly, and the women could take them to their own homes, if they did not care for a common kitchen. Tea might also be prepared in the same way; and though the same might not be said of breakfast, hot water could easily be obtained from it.

THE COST.

Now the women who were not required in the kitchen could devote an equivalent length of time elsewhere. Some could look after the children in the creche and on the playground surrounding it; others could go to the laundry, where labour-saving machines would make the work a pleasure; and others would find their way to the workshop to undertake dress-making, crocheting, or repairing of clothes for all concerned. A few looms for the manufacture of cloth might be fixed in the workshop.

Cottages built under this system need not cost more than £200 each; and the whole scheme, could be financed for about £15,000.

The Bengal Co-operative Conference.

Speaking at the opening of the Sixth Provincial Conference of the Co-operative Societies of Bengal, His Excellency the Governor said:—

It gives me great pleasure to welcome you here again and thus show you that I take a keen personal interest in the Co-operative movement. I have watched the progress of your work since you conferred here last year. I am a great believer in conferences—specially in conferences between officials and non-officials. Here you have practically a little parliament of representatives of all those most interested in the movement, each keen to tell his own experience and still keener to hear of the experiences of others. Your deliberations last year led to the adoption of a wise policy as a result and to much real progress being made.

POLICY OF CONSOLIDATION.

I have watched your work with great interest. I need not go into details. You know the figures better than I do but I am impressed with the wisdom of the policy of consolidation. It is far better to perfect the work in the old

areas before you open out new ones. Yet I see that in spite of the efforts "to put on the brake," (as Mr. Mitra describes it in his report), the number of societies has increased by 20 per cent. and I notice that the membership has increased at double this rate and the capital of the societies has increased at four times this rate. This must mean that the old societies have been strengthened and that they are better able to finance their members in all their needs. Another fact which impressed me, when reading the report, is that there are practically no bad debts in the business of the societies. Out of a total of 121 lakhs outstanding in loans only Rs. 25,000 or two per cent. is over due and only a very small portion of this sum causes any anxiety. I quite see that the time has come to consider the formation of a central financial agency for the whole province. When the papers came before me, however, I was of opinion that such a step must not be taken without full deliberation. The societies deal almost entirely with agriculturists; thus, there is little elasticity in your finance. All your clients require money at the same time and there is one period in the year when the demand for loans is slack. I am told that to some extent that period coincides with the period in industrial centres when the demand for money is the greatest. What you want is an agency to bring together the financing of agriculture and the financing of commerce and industry. I agree with you in thinking that this agency should be built up upon a co-operative basis, but at the same time you must have the bankers and business-men of this city to support the scheme. It was for this reason that I advocated the drafting of a complete memorandum on the subject so that we might arouse the interest of those men whose help we so much need and get them to realise what an important step this is and how much the banking of Calcutta may in the future be affected. I believe that a bridge between the financing of agriculture and the financing of commerce and industries would be greatly to the benefit of the country at large. The public in Europe have long-realised the

possibilities of co-operation and the public in India are now fast realising that co-operation is no mere game. The results in India are now as important as the results in Europe and the public are beginning to see that at last after many years the true cure of agricultural indebtedness has been found. I have spoken with many Indians who have pictured to me the poverty of the masses and have told me of the millions who cannot obtain more than one meal a day and I have heard from them too of the millions who are on the verge of poverty to whom any rise in prices consequent on a failure of crops means actual want, for they have no capital to withstand it. Such an economic state cannot be cured by the executive action of a Government. It can only be cured by a great economic revolution and here I believe in co-operation we have the beginnings of that revolution.

BEGINNING OF A NEW ERA.

We have the beginnings of a great movement which will not only bring wealth to the individual but will teach him thrift with all its economic and moral advantages; and will teach him more. It will teach him to work gratuitously for the good of his fellow-men realising that his salvation is bound up in the salvation of those around him. I believe that the young men of Bengal are ripe for such work. I know how they worked in the great floods in the Burdwan Division and how some of them are still working in the flooded areas of Midnapore. I then learnt what they were prepared to sacrifice for the good of others. In co-operation the young men have an almost unlimited field for such social service and I appeal to them to make the most of it. It is not perhaps heroic work, but it is the quiet work of the multitude of men which brings about a great economic revolution. The General may lead the army, but without soldiers in the ranks he can do nothing. Raiffeisen led the way in Europe, but he himself would have been the first to admit that it was the great army of silent workers who carried out the economic revolution in the German Empire.

Government Servants' Co-operative Societies in Madras.

We have only one such society; and that, in Madras. The Registrar says that "it is doing excellent work, and that there is room for other societies of the same kind, particularly at the head-quarters of districts." So it will be interesting to learn of its work from a paper on the subject contributed to the Second Madras Provincial Co-operative Conference, by Mr. S. Krishnama Chari, B.A., its secretary.

The Government of Madras who have evinced their sympathy for the agricultural population by establishing a number of co-operative societies in different parts of the Presidency, were approached to relax the rule that prohibited their servants drawing salaries of Rs. 35 and upwards from becoming members, or participating in the management of co-operative societies. The application was strongly supported by high Government officers and approved by the Registrar of Co-operative Societies, and on the 7th September 1912, the first Government Servants' Society was registered under the Act. The Hon'ble Mr. R. C. C. Carr, I.C.S., Member of the Board of Revenue, is the President of the Society and M.R.Ry. J. Ramayya Pantulu Garu, B.A., B.L., is the Vice-President.

The value of a share is Rs. 5, and is payable in five annual instalments of one rupee each. Savings of even half a rupee per mensem are accepted for periods of 24 or 45 months according to the convenience of the depositor and are allowed simple interest at 6 per cent. per annum, or thereabouts. Deposits of Rs. 5 or any multiple thereof are taken at 6 per cent. per annum. Loans are granted to members at an interest of a pie and a half per rupee per mensem mostly on the suretyship system and are recovered in a number of easy monthly instalments varying generally from 12 to 16. An abatement of interest is allowed on every rupee repaid by the borrower towards principal.

Mr. Krishnama Chari says that a Government Servants' Society will be a real boon, in the mufassal, and the sooner such institutions are started, the better.

The success of a Government Servants

Society depends upon two main factors (a) discrimination and care in the grant of loans and (b) punctuality in the repayment of loans. The managing committee have to be particularly careful that no loan is granted without a detailed and thorough investigation of the character, antecedents and solvency of the borrower and his sureties. Character is the key-note of the institution and forms the principal asset of Government servants. The managing body should therefore make it a point not to admit as members persons of doubtful veracity or who are known to be indifferent or bad in their private dealings.

It is essential for the successful working of an institution of this kind that either the head of the office or the head ministerial officer of the office from which members are admitted should himself become a member and take a real interest in the affairs of the society and collect on the "pay day" all sums due to the society from the employees in his office. The society should look up to him and to one or two others in the same office, preferably one in the middle ranks and another in the lower ranks, for advice in the matter of the grant of loans. In short, each office should have a sub-committee of its own and the principal member of the sub-committee should in turn be a member of the directorate of the society.

One great difficulty to be overcome is the lack of time. Very few Government servants can command any leisure and no single individual can be expected to run a society for any length of time. Changes in the personnel of the principal office-bearers are absolutely necessary in their own interests as well as in the interests of the society. Elections should therefore be resorted to every year, if not once in six months.

Some Features of Co-operation in the U.P.

At the second day's proceedings of the U.P. Co-operative Conference, the Registrar made some remarks on certain features of the movement in the United Provinces.

He indicated briefly the way in which the present working of the movement has impressed an observer coming to it from the

outside. In the first place, he detected a tendency to forget that the individual society is the end for which all the co-operative machinery exists and that in its welfare lies their whole and only justification. The central bank, the district bank and the department must ultimately be judged by the quality of the village society and by nothing else. It is natural that every man should be primarily absorbed by the work that lies to his hand and that the directors and manager of the district bank should think first of the solvency and prosperity of their bank and tend to regard the villages and the subordinate central banks as its feeders and not as those whom it is their business to feed. I have said that the tendency is natural and human. There is no country in which the movement has not been in danger from it. All the same the danger requires constant emphasis. If the effective village society is the object to which all the other ends must be subordinated it follows that the utmost care and attention should be devoted to the original organisation of these societies. The Registrar said that he found, occasionally, indications that organisation had not been much more than the selection of a *sarpanch* and the gathering together of some dozen men who wanted money badly and who were ready to accept unlimited liability with a somewhat hazy conception of its meaning. Such a society results in a caucus consisting often of the *sarpanch* and secretary; there is no co-operative feeling nor inquiry into the need of members for loans or their destination. The panchayat has little more than a paper existence and the recorded proceedings represent no actual meeting of the panchayat at all. He urged, then, upon the district banks the necessity of thoroughness in the organisation of the panchayat in the first instance and its constant education, and of continual enquiry to ascertain that the *panches* other than the *sarpanches* take their proper part in the business of the society and know exactly the position and character of every member. To this end directors should devote more attention than is sometime done to see that their staff is in touch with the village societies, and, if necessary, should strain every nerve to maintain

a staff of sufficient strength to enable them to keep in such touch. There is a tendency of the supervising staff to gravitate towards the office of the district or central bank which it requires unremitting attention to counteract. Resolution is also required to resist the temptation to multiply societies in localities where supervision is not available or in order to feed a new central bank which public-spirited gentlemen wish to call into premature existence.

The same tendency exhibits itself in the relations of district banks and central banks subordinate to them. It is inevitable that something approaching jealousy on the part of the district bank should attend the springing up of central banks within their territory. Such jealousy is, of course, short-sighted for the services of the central bank as an intermediary between the district bank and the remote village are equally valuable to both and enable the district bank to undertake business it could not otherwise safely touch. It is all important however that the district bank should keep itself acquainted with the working of the central banks subordinate to it. More especially where the central banks are little more than financing agencies and the duty of supervision is the district bank's. The district bank has to finance its central banks and it is bound to satisfy itself that in so doing its money is safe. But it should not cease to finance the central bank without the full justification of local knowledge. The essence of a cash credit, the Registrar pointed out, is that only surplus money should be recredited, and there is no point in sending money into the district bank to withdraw it immediately. The system adopted elsewhere in the provinces—of a much more limited cash credit combined with loans repayable in fixed instalments—is preferable at the outset as enabling the district banks to keep their fingers on the pulse of the central banks. The point is the necessity of district banks working in touch with their central banks. In cases like that alluded to, it could not be difficult for the Registrar to arrange for the financing of these central banks from outside sources, but to do so would be to undermine the position of the

district bank and deprive it of the profits it should receive to cover the cost of supervision. Such difficulties may, however, have their compensation in driving the central banks to secure local deposits.

The Registrar then pointed out that there was the danger of starving the village society by the narrowness of the margin of profit left to it. The margin is usually that between 12 per cent. and 15 per cent. *i.e.*, 3 per cent, but from this are deducted charges for the secretary fund and sometimes for pass books and forms which often reduce the margin to 1 per cent. It is desirable to consider whether this margin should not be increased. From the point of view of the village co-operator, it is far more important and stimulating that his little society should be rapidly building up resources than that the district or central bank should be flourishing like a bay-tree. Where financing institutions are making substantial profits, it is time that this question should be faced. To summarise all these points—it is in the highest degree important that large banks should never forget that the criterion of their success lies, not in fat dividends, not in imposing premises or overflowing reserve coffers, but in the quality of co-operation in the villages they serve. It is by this they will be judged by those who understand co-operation and by posterity; if the village societies are flourishing, all these other things will automatically be added unto them.

The Problem of Marketing.

Improvement in agriculture is directly affected by the facilities that may exist for the distribution of the produce of land. The one motive for all agricultural improvement is to find a ready market for its results. Where means of communication and transport do not exist, one may be sure of seeing agriculture being carried on in a haphazard fashion without any manifest enthusiasm on the part of the tiller of the soil. The small land-owner has no ambition beyond raising crops just enough to maintain himself and his family and never dreams of marketing his produce for public consumption. It is here as observed by the

Wednesday Review, that the co-operative movement must come to his aid.

Mr. E. J. Cheney, Assistant Secretary to the Board of Agriculture in England, speaking at the recent Congress of the International Co-operative Alliance at Glasgow, laid stress upon the importance of the marketing problem in relation to agriculture. He pointed out that as the most profitable crops were also, as a rule, the most perishable ones, it was useless to produce them unless a ready market was available. This the small farmer cannot do all by himself but if he has a co-operative society to depend upon, which will help him in finding a market for his produce, he will have the necessary enthusiasm to raise the most profitable crops and thus aid in the agricultural improvement of the country as a whole.

Mr. Cheney explained why the more modern and profitable methods of cropping were not adopted in England, except in some districts, was because of the difficulty experienced in finding a satisfactory market for agricultural produce. There were two methods according to him by which this could be effected:—(1) the sale of the produce of agricultural, productive and sale societies to distributive societies in the same district, and the direct supply of goods to agricultural societies by the same distributive societies and (2) the sale of the produce of agricultural, productive and sale societies to distributive societies, in other districts of the same country through the agency of distributive co-operative wholesale societies or central co-operative sale societies and the supply of goods to the agricultural societies by the wholesale societies with which they maintain commercial relations. Mr. Cheney said that the pressing problem was how best to show small land owners the way to obtain a maximum return from the land and an ideal system would be for the large industrial society of a district to inform the small holders of that district of the particular produce for which they had a market, and not only they but also other industrial societies throughout the country,—and to undertake to purchase it at market price.

Agricultural Co-operation.

We read in one of the leaflets of the Board of Agriculture of the United Kingdom that "the application of the principle of co-operative purchase of farming requisites has made but slow progress in this country, and farmers generally have, in the past, been disposed to doubt the possibility of obtaining by combined effort any better prices than those which each individual could obtain for himself by bargaining directly with merchants and dealers."

Some reflections on the scope and limitations of the co-operative principle have been aroused by the above and find expression from a well informed writer in the *Agriculture and Horticulturist Review*.

It must not be thought, he says, that what has failed in the past, must, by law of nature, be doomed to failure in the future. The strength of the character of the co-operators, their determination against odds, have opened up a vista of success that economists have long looked for. But co-operation will only be favourably criticised by economists when the limits of its sphere of operation have been duly defined, and when the philanthropic element has given place to true business rules. To the small farmer who requires to buy manures, seeds, cake, and implements in small quantities, the benefits are obvious. By combination, small farmers can, between them, buy large quantities at cheaper rates and be assured of the genuineness of the goods they purchase, for the society can guard against adulteration or misdescription by analysis. The cost of this is small for large quantities, but the trouble and expense involved would tend to discourage the small buyer from protecting himself.

There are two branches of the farming in-

dustry—the productive and the distributive. It is probable that many farmers are not good salesmen. In this case it certainly would be beneficial for farmers to combine, for thereby they could secure the services of a qualified manager and staff to give their attention to the disposal of the produce sent in by members, as well as to the purchase of manures. The saving of trouble and expense in marketing his goods would enable him to devote the whole of his time to cultivation, while a society for purchase can also be a society for sale. On the other hand, the facilities given by auctioneers to farmers would tend to make a sale society superfluous for by putting their produce in the ring, prices tend to equality easily and quickly.

The difficulties in grading produce, due to the differences in quality and cultivation of land, expenses in production, quality of cattle, and success in harvesting, make it almost impossible for co-operation to be successful in the sales department.

Another weakness of co-operation in agriculture in England is the system of land tenure. Co-operators must be freeholders, not tenants, for accounts must be public property. Landlords can then see their profits and rents are liable to be increased. Again, co-operation needs few markets. England has numerous markets which make it possible for produce to exchange hands easily and quickly. Thus co-operative societies find their work in this direction done without their aid.

The Co-operative Movement in India.

The following table shows in abstract the number of Societies and members in British India, including the Native States of Mysore and Baroda :—

I.—Number of Societies.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.
Central	14	7	15	32	60	120	251
Non-Agricultural	89	149	227	321	415	495	691
Agricultural	740	1,201	1,766	3,145	4,957	7,562	11,382
Total	843	1,357	2,008	3,498	5,432	8,177	12,324
II—Number of Members.	90,841	149,160	184,889	230,693	314,101	403,318	5,73,536

The Industrial World.**The Human Factor in Industry.**

The human factor in industry is now engaging the attention of leading men of science, as formerly did material and processes of manufacture, writes the *Daily News and Leader*. What the intellectual investigator can do who is not concerned with profits (in the old sense) has just been illustrated by Sir William Crooks. He has been engaged for some time past in the preparation of eye-preserving glass for spectacles. The subject seems prosaic enough until one learns that Sir William was moved to do so because of the liability of glass workers to cataract, owing to the extreme heat rays to which they are exposed in their employment. The aged scientist busied himself in the preparation of an ideal glass which would screen heat rays and ultra violet rays, and be sufficiently free from colour to be capable of use as spectacles. To this end he fitted up glass works at his own house. The ideal glass, Sir William explained recently, was still to be discovered, but he had prepared glasses which cut off 90 per cent. of heat radiation, which were opaque to the invisible ultra violet rays, and were sufficiently free from colour. The next thing was to combine these three qualities in one glass.

The Waste of Bones.

There is probably no other civilised country in the world where there is such an economic waste of materials as in India, says the *Englishman*. This is, of course, due to ignorance primarily, and to the restrictions of caste in the second place. For centuries the bones of dead animals, for example, have been allowed to go to waste. In this case the people did not know the economic value of bones, either as a fertilizer of the soil, or their use in a hundred other ways in which bones are utilized in European countries in the manufacture of articles of domestic and other use. It must be admitted, however, that in

the neglect of this important waste product the natives of India are in very good company, for the British had done nothing for over 150 years that they have been in occupation of this country to set the people an example. It is only within the past twenty years or so, that Europeans in India began to realise the value of bones as a fertilizer of the soil, and then only because a large foreign demand had arisen for bones, and large quantities were being sent out of the country. One or two bone-mills were established for the preparation of bone meal. But even in this form the material is not being utilised in India, but is being exported to foreign countries, because the caste prejudices of the natives will not permit them to use bones. That is one reason, perhaps, why bones are not used in the manufacture of buttons, knife-handles, etc. Yet the high-caste Brahmin will readily use these articles when imported from abroad!

Preserving Eggs in Sterile Air.

In a paper submitted to the Third International Congress of Refrigeration held at Chicago a few weeks ago, M. F. Lescarde described a special system of preserving eggs in sterile air. The eggs are placed on end in horizontal fillers made of paste-board and wood. These fillers are put into tin cases which can be hermetically sealed, each case having a capacity of six fillers containing 160 eggs each. The covers of the filled cases are then soldered, and the cases are deposited in an autoclave (digester) which contains twelve cases of 960 eggs each. A vacuum is then made in the autoclave, and a duly proportioned mixture of two gases, carbon dioxide and nitrogen is injected. This process is very simple because carbon dioxide and nitrogen, in the form of compressed or liquefied gases are on the market now, so that the manipulation of a few cocks, and the reading of a gauge suffice to produce the proper mixture. The process in the autoclave having

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been completed, the cases are taken out, hermetically sealed, and stored in cold storage rooms, at a temperature varying between $+1^{\circ}$ and $+2^{\circ}$ Cent. In a commercial test in 1912, the cost of treatment and preservation including all depreciation, amounted to 15 fcs. per thousand. The average sale price of eggs per thousand delivered at the plant, was 135 fcs., thus leaving a net profit of 40 fcs. per thousand, which is considerably greater than the profits made on ordinary cold storage eggs.

Hardening Fats by Catalysis.

In many industries, such as the making of soap and stearin, and the manufacture of various edible fats, the firm hard fats are more prized than those which are soft, lardy, or oily. Hence a means of hardening the latter has long been sought, says the *Scientific American*.

After many failures, success has been recently achieved, so that it is possible to change the soft and liquid fats or oils into hard fats with a correspondingly high melting point.

In principle, this consists in the introduction of hydrogen into the fluid fatty acids contained in the soft fats and oils.

This depositing of hydrogen takes place, according to the *Technische Rundschau*, when the fats are warmed in the presence of the so-called *contact-bodies*. Nickel and palladium are especially valuable as such catalyzers, either in the pure pulverized state, or in the form of aqueous solution of various salts of these two metals.

The fat to be solidified is warmed with about one fifth per cent. of the metal powder or the solution, the temperature varying between 100 deg. Cent. and 300 deg. Cent. for different fats and different processes. Then hydrogen is led in at the highest temperature required, and when necessary, the reaction is hastened by increasing the pressure 2 to 3 atmospheres.

This process is long past the laboratory stage and has been applied in various industries on a large scale, and has been found economical as well as useful.

An advantageous feature is the destruction

both of coloring matters and of malodorous substances in the fats treated, so that a long series of previously inevitable purification processes is avoided.

Rough Tests for Lubricants.

The following directions for determining roughly the qualities of lubricating oils without the use of special testing apparatus are given by a contemporary. To determine the presence of solid impurities in the oil, kerosene is added to half a tumbler of oil until the whole becomes quite thin. The mixture is then passed through filter paper or ordinary white blotting paper, and after all the oil has passed through, the paper is washed with kerosene; the residue on the paper, if any, will show if the oil had any solid impurities. Impurities may also be roughly detected by smearing a piece of writing paper with oil, and holding it against the light; if the oil is free from solid impurities, the blot will be equally transparent throughout—otherwise the solid particles will show. The oil must not resinify. To test it in this respect, it should be poured into a shallow dish and left in a warm place for about a week. There must not be the slightest crust at the end of that time. To test for acids, copper oxide or copper ash is added to the oil in a glass vessel; acid-free oil retains its original colour, while if it contains acid it becomes greenish or bluish. Another test is to drop the oil on a sheet of copper or brass, and leave it there for a week; if the oil contains acids, there will be a green spot on the metal. Blue litmus paper dipped in acid free oil stays blue, but becomes red if the oil contains acid. A good oil must be greasy in order to have good lubricating qualities; to find which of several oils is best in this respect, a few drops of the different oils should be placed on a smooth, slightly inclined metal or glass sheet; the drop of the best oil will travel furthest in a given time.

Modern Shoe-Dressings.

In his paper read before the Society of Chemical Industry, and published in its *Journal*, Dr. J. T. Donald said:—The term

dressings includes all preparations used in cleaning or renovating boots and shoes where friction is not employed, whether the result be a gloss or not.

By far the most important and widely used dressing is "Ladies' dressing," so called because of its very general use on women's and children's foot wear of kid and goat leathers. This is essentially a colored solution of shellac, borax or an alkali being the solvent and nigrosin the coloring agent; a little glycerin is usually added to prevent cracking of the lac and to preserve the softness of the leather. When applied with a sponge, there is left on drying a thin coating of colored shellac having a soft and pleasing gloss.

When a solution of soap is added to "Ladies' dressing," the soap overcomes the gloss of the shellac and the preparation is now "Gun-metal dressing." This in the language of the trade "does not dry bright but gives to the article a dull gun-metal finish."

PATENT LEATHER DRESSING.

This is usually simply an oil such as olive or cotton-seed under some high-sounding name, or vaseline, or a white wax reduced to a soft paste by means of turpentine. The application of any of these with a soft cloth brightens the gloss of the leather but has no effect upon cracks in the enamel, which are so troublesome in this style of leather.

For these there is a special preparation of gun-cotton in solution in amyl acetate colored with a spirit-soluble black dye. On the evaporation of the solvent there is left an elastic pad of cotton filling the crack and adhering to the edges.

Nappy Dressing for Use on Ooze, Suede, Nappy and Castor Leathers.—This is wood alcohol having in solution a colour insoluble in water. The alcohol cleans the nap of the leather and on evaporation leaves a deposit of colouring matter which, being insoluble in water, does not markedly soil damp garments.

White leather, as in military belts, claims a dressing for itself. The pipe clay of our forefathers is still in use, sometimes alone and

sometimes in admixture with light magnesium carbonate. The mixture gives a lighter and more pleasing white than does the clay alone.

Another article is zinc oxide suspended in water containing a small percentage of an adhesive. This is applied by a sponge and in drying leaves a layer of the white pigment. By mixing with the white solids a small percentage of such substances as lampblack, umber, red and yellow ochre, we have preparations for canvas shoes of various colors.

Button-making.

A correspondent gives in the January number of the *Indian Textile Journal* a description of Shell-button-making as carried on in Japan. Speaking of a factory at Kobe, he says that the factory is a small one, comparatively speaking, employing less than fifty hands.

Heaps of *takase* shells come from the South Sea Islands and the Australian coast. Down the sides of a long shed stand rows of drilling machines, worked by a treadle. Each is fitted with a circular bit, the size of the button required, and has an independent up-and-down motion. The shells, which are conical, are held by the hand against a block of wood cut roughly to their shape, and, of course, adjustable under the bit. The workman turns a wheel above, which forces the bit downwards, cutting a neat disc out of the shell. It looks a very simple operation, but it employs a leg and two hands, and it is stated that it takes a man two years to acquire the knack thoroughly. Seven or eight discs are cut from the convolution of the shell, which is then thrown down, where women and boys squatting on the floor break off the drilled portion with hammers, exposing the next convolution. The cutter can work three times round a good shell.

The discs are now taken to a bench in which eight miniature lathes are fitted, each worked by a treadle. A wooden chuck receives the button-disc, the chuck being split, with a sliding collar to tighten it. The workman changes the discs. With chisels the rough sides of the discs and the inequalities are

rapidly planed off, a ridge, if needed, is developed, or a concavity or convexity created. The drilling machine is very simple. Like the rest of the machinery it works by a treadle, and the bits are long steel wires with sharpened ends. They are led through holes in a block of wood at the drilling end, but diverge at the driving end for convenience sake in fitting them to the simple device which gives them opposite motions. The button is pushed along a primitive sort of gauge to meet the points. Collective polishing in a tumbler and individual polishing on another lathe finishes the operation.

There is an entire lack of labour-saving arrangements in the packing processes,—with one notable exception. There was an imported machine consisting of two steel rollers, slanting downwards on the same plane but slightly diverging. Down these the buttons were allowed to slide, dropping through into separate boxes when they reached a space sufficiently wide. It is also mentioned that various other shells, all from tropical seas can be used in the business; horn, bone, wood, tortoise shell and stone. The industry is considered a suitable one for India, since labour is cheap here and sources of supply nearer than in Japan. The Government of India might, however, lend a helping hand, without resorting to protection. The Andaman Islands abound in shells, and the convicts there might be allowed an apprenticeship at the art of button-making. Convicts do not, as a rule, stick to their jail industries; but a few do, and those few might make it a commercial possibility to start button-making on the Japanese plan in India.

With button-making, as with match-making, the strength of the Japanese position lies in the use of cheap and simple appliances to get the same result as is attained by expensive and complicated machinery used in Europe. When it suits them, they import European machinery, but of the simplest patterns. The German shell button machines are very expensive affairs, and, while they pay for themselves where wages are high, they cannot

compete against a combination of manual dexterity and low wages.

The Mica Industry in India.

Mr. A. C. Dickson, Consulting Mining Engineer, writing to the *Mining World*, points out India's opportunity to manufacture mica ware in India. There are about 77 manufactories at present, on the Continent and in America, principally maintained at India's expense. Of the profits of manufacture he says:—

The average mica content of a ton of pegmatite, provided, that the work be carried out economically, that is, exploiting only mica-bearing shoots, is 200lbs. of rough mica. Only 20lbs. of this mica is at present dressed for shipment, while the balance 180lbs. is consigned to a dump, termed the "wasteheap," which is really the deserted gold mine. This 20lbs. of mica, when dressed, fetches on an average 6s. 8d. the lot, and is looked upon as the output of the ton of pegmatite and has to bear alone the total cost of extraction and dressing, etc. The balance waste (180lbs.) if powdered, in the absence of other dressing appliances, gives 1½ cwt. of mica powder, which can be sold for 18s., and the cost of making this powder, dependent on the quantity of adhering rock that has to be removed from it, is 3s. 4d. to 5s. 4d. From this it can be seen that two-thirds, in value of the output, is now thrown away. Only one-third is made to cover the entire charge of extracting, etc., of the whole. Still further economy can be effected by converting the above 180lbs. (waste) into mica washers. We can get from the 180lbs. of waste 100lbs. of mica measuring over ½ in. by ½ in. which can be built up to be a thickness of 1 m/m, so that by converting this into washers, it can be sold at present for 2s. 4d. per hundred—weight being charged for before punching. One hundred pieces of mica of the above dimensions, from which 12 m/m washers are made, sell for 2s. 4d., weigh ½ lb., so that 100 lbs. will sell for (roundly less, of course, realisation charges and labour, which are nominal) 466s., and still there will be a balance. The inside of the punched washers and the outsides as well, with the remaining

80 lbs. (waste), will give about 1 cwt. of mica powder valued at 12s. What do we learn from this? Miners at present, through ignorance, have done nothing to help themselves, and are throwing away 478s. or 634s., if mica-grease were made. From the above powder about 1½ cwt. of mica-grease could be manufactured. Mica-grease is selling for 112s. per cwt. and the miners are recovering only 6s. 8d. This is economy!

If mills were opened says Mr. Dickson, the return to Government on royalties alone would not be less than £7,000 annually, and the mill-owner, if he only manufactured for the different lessees, would net about £20,000 annually, the very least, so that it may even pay the Government to start a mill of its own. This would certainly have the effect of resuscitating many of the fast-failing concerns in the forest. It would also be a check on local dealers and be yet another way of bringing about what has so seriously been sought—putting a stop to the trade in pilfered mica.

The Dairy Industry.

The dairy industry of India and how the various scientific and commercial problems involved should be attacked were among the subjects discussed by the Board of Agriculture which met recently at Coimbatore. The sub-committee's report on the subject stated that the condition of the industry in India was admitted on all hands to be most unsatisfactory, although Indian conditions offered a field for the development of dairying second to none in the world. Dairy produce was one of the staple foods of the people and cattle in India were bred almost exclusively for milk and draught purposes. Again, dairying was a branch of agriculture which could be very successfully combined with cropping and was also specially suited to the development of the co-operative idea. The committee's recommendations were, amongst others, that legislative measures should be taken to protect honest traders and to encourage capitalists to invest money in the dairy industry; that sustained and systematic effort should be directed towards the improvement of the milk-producing qualities of dairy

cattle, both cows and buffaloes. In this connection, the committee suggested the starting of cattle-breeding farms at suitable centres to increase the milking capacity of dairy cattle. A dairy school should be opened in each province at some important dairy centre for the training of persons who proposed to engage in dairying. Efforts should be directed to educating the people on the practical side of cattle management. The question should be considered of establishing in the better cattle breeding districts milk record societies on the lines of the Danish (control) bodies, in order that the selection of bulls of known quality might be made with certainty and the uselessness of inferior cows brought home to the breeder.

The following suggestions among others were also made by the committee:—The dissemination of the most up-to-date and profitable methods of pasteurising and sterilising milk; of transporting and distributing milk in suitable vessels; of the manufacture, storage, packing and transport of the butter and cheese, and the utilisation of separated milk and other by-products; the education of public opinion in cities as to the importance of a clean milk supply by means of the Press, provision by Government of free information and assistance to any one willing to embark on dairy enterprise of any sort.

The committee further recommended the subsidising by the State of co-operative societies, public companies, or private individuals for the production or sale of milk, the manufacture and distribution of milk products and kindred objects. This might take the form of loans secured on the capital assets of the concerns and could form a fixed percentage of the capital of the business.

The committee also recommended that cheap rates for the carriage of dairy produce by passenger and mail trains should be granted. Indian railway rates for milk are at present 100 per cent. over the British charges for distances of over 50 miles. The committee also recommended that steps should be taken to carry on scientific investigation.

On the question of legislation there was a lively discussion; and finally the Board

resolved that it was necessary to recommend legislation.

Fish and Vegetable Oils.

Some interesting official correspondence between Sir Frederick Nicholson, K.C.I.E., Honorary Director of Fisheries, Madras, and the Secretary to the Government of Madras (Revenue Department) on the above subject has just been published. It appears from these papers that in June of last year Sir Frederick Nicholson approached the local Government with a proposal for the employment of an oil expert to investigate the defects in the present methods pursued by oil manufacturers in the Madras Presidency; to ascertain by experiment the direction in which improvement is possible, and to demonstrate approved new methods in small Government factories. Sir Frederick Nicholson considers that from the stand-point of the Fisheries Department, there is immediate scope for much useful work in the examination of vegetable oils and fish oil and tallow; but suggests that eventually the oil expert should be employed in a wider sphere in more general inquiries into the manufacture of oils and fats for commercial purposes. Sir Frederick Nicholson nominated for the post Mr. A. Kesava Menon, a young man who had received special training in foreign countries at Government expense. The Government of Madras approve generally of the proposals and have decided to appoint Mr. Kesava Menon at once to work at Calicut in the first place under the direction of Sir Frederick Nicholson on the problems connected with oils with which the Fishery Department is more immediately concerned. We give below extracts from the first letter of the Honorary Director of Fisheries, to indicate the nature of the work to be undertaken by the Oil Expert :—

CANNING.

For canning in oil I need refined oil, practically without specific flavour or odour. Owing to the excessive cost of olive oil, especially in India, and knowing that in the United States of America cotton-seed oil is mainly employed as also oil and groundnut oil in other countries

either alone or mixed with olive oil, I patriotically attempted to obtain cotton-seed oil and groundnut oil from Indian sources. Both oils were for my purposes, absolute failures, though I went to Cawnpore for the former and to Cuddalore for the latter; both colour and flavour were wrong, the specific flavour especially being so strong, that I cannot successfully use the oils even in the preliminary frying; it persists even through the heaviest spicing. But when in England last year, I obtained cotton seed oil from America, Hull, etc., which is perfectly suited to my work; bright, of good colour, and almost free from specific flavour, so that my canned fish in oil next season will have only the proper blended flavour of fish spice and oil, instead of the overpowering flavour of the coarse oil. Similarly I can get groundnut oil from Marseilles which will be equally suitable.

Now I know quite well the causes and remedies of the inferiority of these Indian oils, but I have neither the technical skill nor time nor plant to tackle the work of (a) designing and carrying out proper methods of decortication and expression, (b) subsequent refining methods, which, for edible oils, must avoid chemical ingredients.

PASTES.

One of my best successes is the manufacture of fish-paste; in these a large addition of fatty matter is needed which in Europe, etc., is butter, lard, and other animal fat. For Indian consumption animal fat can only be (a) butter, (b) mutton tallow, since beef fat would be abhorrent to Hindus and lard to Muhammadans. Now Indian butter is very dear and very bad, and not above suspicion of certain adulterants; the tallow is abominable. Hence I have to find either vegetable butters or refine the tallow till it becomes edible. I can get certain vegetable butters in England and Germany, but these are mostly, if not all, based on coconut oil, and though solid in England are perfectly fluid at Indian temperatures. Cotton seed stearine, however, is largely used in the United States of America and has a higher-melting point, probably 102° F., and I am try-

ing to get this; similarly, I can get "edible tallow" from Hull, etc., which is mutton fat nicely refined. Here again I know the process for obtaining cotton seed stearine and for refining tallow, but I have neither the technical skill nor the time, etc., to work out the problems practically.

FISH OIL.

This is the oil expressed from sardines in the new oil and Guano industry. It has at best, a fishy odour; at worst, a strong rank smell. I am able to produce two-thirds of this oil as a good yellow oil with mere fishy odour, and for this there is a much more highly priced demand than for the common oil; recent prices on samples were £21 and £14 per ton, respectively, stearine free. Now (a) if I could deodorize the better class of oil it would be far more valuable, and I could use it at once in sardine and other fish canning; supposing it to be worth £20 per ton and cost £5 or even £10 per ton for refining, I should have an eminently suitable canning oil on the spot at £25 to £30 per ton as against imported vegetable oils costing, on delivery, from £45 (cotton seed) to £110 (olive), per ton. Moreover (b) the common oil, when not burnt or scorched, is only common, i.e., dark in colour and strong in smell, by reason of removeable causes; if such oil is treated by an expert it can be brightened in colour and improved in odour and sold as high class oil. I have experimented already on these lines but, as stated, I have neither sufficient technical skill nor time nor plant to tackle such difficult matters and I have no chemical or physical laboratory for the purpose; (a) is notoriously difficult, (b) is not so.

There are other important matters connected with my fish oil such as its utilization for soap-making, and the best method of dealing with its large percentage for stearine (fish tallow), both of which would notably be within the scope of Kesava Menon's attainments.

It will be seen, then, that even from my small stand-point there is much work for an oil and soap expert. It will also be seen, however, that to deal with such problems as the

proper expression, and refinement of cotton-seed and groundnut oils, the refinement of mutton fat, the manufacture from cotton-seed of cotton-seed stearine (as vegetable butter) and the deodorization and decolorization of fish oils, both plant and laboratory on a somewhat extensive scale are needed. For unless cotton-seed and groundnut are properly treated in the first stages (*viz.*, those of decortication, etc.), they cannot, or can hardly, be properly refined afterwards for edible purposes; the colouring and flavouring principles largely reside in the husk and skin; if these are thoroughly removed and the oil expressed be cold, it will be first class; otherwise colour and flavour can—I believe—only be removed by methods which are apt to injure the oil and are inappropriate to edible oils. If I endeavour to deodorize fish oil, the only process which so far has given promise (*viz.*, by ozone) requires expensive plant; a mere laboratory plant to treat a few gallons a day costs over £100, and my minute personally-owned apparatus costs about £20.

It may be said that since I can get good oils and fats from Europe, etc., I need not concern myself with manufacture and refinement, etc. But it is obvious that immense economies will result from the successful treatment in India of these matters alone, apart from the advisability of developing our manufacturing industries and of being completely self-contained in these matters. I have mentioned above the immense price of olive and even of cotton-seed oil, and it is ridiculous and almost criminal that our groundnut, now being produced in such vast quantities, should go to Marseilles, when we, here in India, need the industry, the oil, and the cake; so also with cotton-seed.

Considering the technical success already of the sardine canning industry, and that on the west Coast about 200,000 tons of sardine are landed in a good year (not 100,000 as I used to think), the importance of cheap oil merely to this industry is apparent.

Now considering that my own sphere (fisheries) is but limited, though important, that the utilization in "Fisheries" of a special

oil-chemist would require large expenditure in plant and laboratory, that Kesava Menon is the only oil expert and practical soap-maker in the Presidency, and that we have much larger *Presidency* interests in oils and soaps, I regretfully—from my personal stand-point—suggest that Government should employ him in a wider sphere.

I do not agree with Mr. Kesava Menon's suggestion that he should have a sort of roving commission to ascertain the less known oleaginous seeds "to be met with in forest regions," study their local conditions of growth, and endeavour to persuade—forlorn hope—the various landowners, merchants, etc., "to raise capital and form companies to establish successful oil and soap industries in the Madras Presidency;" not even a Government appointment would coax men to spend money on unknown, invisible, and intangible directions.

I disagree with Mr. Kesava Menon also in his suggestion in paragraph 10, that "the factory for seed-crushing and soap-making should be done on a large modern scale." The industrial work entrusted to him will be mainly experimental, especially at first; experiments should always be conducted on the smallest possible scale, *provided* that the conditions are those of the industries under experiment. For instance, an oil factory can be established as a complete unit with the most modern equipment, *in all sizes* from a trifling to a large cost according to the unit selected, and each unit will be precisely similar, except in size, to the largest size, *e.g.*, provided with kettles, crushers, hydraulic presses, filters, etc., complete. Messrs. Rose, Downs and Thompson, for instance, will supply (I quote from memory) Colonial, Export, Premier, etc., types of these Anglo-American oil plants, each type being of several sizes, but each size absolutely complete, and similar to the largest sizes except

in capacity of outturn. So also in the matter of soap-making. Government is not a manufacturer; and its industrial demonstrations should be demonstrations only. Moreover, by establishing small but thoroughly up-to-date installations Government will provide *type examples* so that intending manufacturers can not only study the new industry in actual operation, but can simply order duplicates of the plant in any desired size.

My suggestion is that he should be appointed to take up certain great classes of oil seeds and oils and (a) study the hindrances to the manufacture of oil which at present lead to the export of the raw seeds (*e.g.*, ignorance, bad and primitive methods of manufacture, ignorance of markets, adverse tariffs, control of the local raw produce by exporters who have interests in foreign countries and with foreign manufacturers local adulterations, etc.), (b) ascertain the faults in local manufacture and subsequent treatment which result in inferior or debased products, (c) establish by laboratory experiment the remedies for such faults and the methods of producing articles superior *ab initio* or refined by subsequent processes, (d) demonstrate his improvements on plant to be provided, and (e) open, at Government expense, small works for the production of oil and the working up of oils, especially those of inferior grade, into soaps, and the manufacture of better substitutes. This is an extensive programme, but much of it is simple to an expert; (a) may be left out or committed to other persons for enquiry; (b) can readily be ascertained by examining a series of samples and thereafter visiting a few places of manufacture; (c) is probably known already to an expert in oil questions; but will doubtless require re-examination; (d) and (e) are practical matters, which are well known to Kesava Menon, at all events so far as the soap-making process is concerned.

The Commercial World.

Motor Cars and Cycles in India.

The following table shows the countries of origin of the imports of motor cars and motor cycles into British India during 1912-13:—

	No.	£
United Kingdom ...	2,336	451,964
Aden ...	2	202
Ceylon ...	31	3,024
Straits Settlement ...	8	1,650
Hong-kong... ..	1	46
Natal ...	1	80
East African Protectorate	1	40
Germany ...	44	11,773
Holland ...	1	573
Belgium ...	167	40,406
France ...	53	15,848
Italy ...	5	1,070
Austria-Hungary ...	11	1,219
Java ...	2	16
Egypt ...	1	80
United States of America	425	69,186
Total ...	3,089	597,177

Business Enterprise in India.

The business enterprise of India during the month of November 1913 may be seen from the following abstract of Companies registered in that month—

	Rs.
1 Banking Company . . .	50,000
1 Insurance Company . . .	50,000
2 Railways- . . .	68,00,000
2 Printers and Publishers . . .	7,90,000
9 Trading Companies (other than specified above) . . .	24,63,200
2 Mills and Presses . . .	3,50,000
2 Tea Companies . . .	4,00,000
2 Coal Companies . . .	2,00,000
21 Grand Total . . .	1,11,03,200

The Ground-nut Trade of Madras.

The Hon'ble Sir Francis Spring, K.C.I.E., Chairman, Madras Port Trust, has drawn up

a note, outlining a scheme for the provision of additional facilities for the steadily growing ground-nut export trade of the Madras Presidency. He writes that the Madras Port suffers from there being no great staple article of agricultural export for Southern India comparable with the jute of Calcutta or with the wheat of Karachi. He says that the export trade in ground-nuts shows signs of an upward tendency, with a probability of permanency, and, it is hoped, that they may become the staple export product of Madras in the near future.

The Four Ports of India.

Mr. G. C. Buchanan, C.I.E., Chairman of the Rangoon Port Commissioners, recently issued a memorandum containing an interesting review of the financial status and working of the ordinary four principal ports of the Indian Empire (Bombay, Calcutta, Karachi and Rangoon) during the past year. The memorandum shows that Bombay has in the last ten years increased in indebtedness by 658½ lakhs. Karachi has borrowed and expended 180 lakhs; Calcutta has borrowed 574 lakhs; and Rangoon, 263 lakhs. The proportion of establishment charges in Calcutta in proportion to revenue is greater even than at Rangoon (where wages are notoriously high) and a ship owner pays in dues and charges (exclusive of pilotage) over 8 annas per registered ton of shipping entering the port as against 3-26 annas at Bombay, 5-73 at Karachi and 3-49 annas at Rangoon, while the pilotage alone on the same basis costs 5-51 annas as against 1-03 annas at Bombay; 1-16 at Karachi; and 1-89 annas at Rangoon. The total tonnage of exports during the year amounted to 2,666,000 tons in Rangoon, thus exceeding Karachi, whose export was 2,183,000 tons.

Cold Storage Works for India.

There would seem, according to Mr. J. B. Sultor, A.M.I.C.E., Commercial Commission-

er for New South Wales in the East, to be scope for the early establishment of cold-storage works at Calcutta, Bombay, Madras and Rangoon. From the interviews that he had with the Port Trust and Municipal authorities of Calcutta and Bombay, he is convinced that no obstacle will be placed in the way. At Calcutta in particular, the question, he says, has been raised to open Municipal cold-storage works at the site of the local bazaar. With the view of indicating the extent of the meat and mutton consumption at Calcutta, Bombay and Madras, the following figures have been compiled :—

Live stock slaughtered at Bombay, Calcutta and Madras during the twelve months ended 31st December, 1912 :—

	Sheep and Goats.	Cattle.	Calves.	Pigs.
Bombay . . .	693,688	49,048	110	780
Calcutta . . .	76,167	46,671	10,914	Nil
Madras . . .	445,593	16,153	Nil	2,080
Total . . .	1,215,438	111,872	11,024	2,860

He says that the cold storage products can be sent also to the interior. In addition to 75,000 English troops, there is also a large number of Europeans. Local arrangements may be easily made with the various railway authorities for refrigerator cars for distribution in the interior. Mr. Sultor is also sure that if the cold-storage question be taken systematically in hand and established, the P. and O. and other steamers would readily provide the necessary cold-storage space.

Indian Cotton Seed.

Firms engaged as exporters or buyers of Indian cotton seed are often in some difficulty to conjecture, from the estimates of the Indian cotton crop, how much cotton seed will be available for shipment. It is generally accepted that the weight of cotton seed in India is to the weight of ginned cotton as estimated in the forecasts as 7 to 3; but the extent to which the cotton seed will become available for export depends not only on the prices offered in foreign markets but on the intensity of the internal demand for the cake as cattle food. When there

is a shortage of ordinary fodder in India more cotton seed is wanted to supplement them, and it does not necessarily follow that when there is a large cotton crop the shipments of cotton seed will be proportionately great. On the average of the last five years, it is found that India usually produces about 1,662,000 tons of seed and exports about 236,400 tons, or 14.2 per cent. of the production. The largest quantity exported from India in a single year was 299,000 tons in 1910-11. The outturn of cotton in 1910-11 was about 688,000 tons but the crop of 1909-10 also contributed to the exports of the later year and it amounted to some 842,500 tons. Reckoning seed to cotton as 7 to 3, the quantity of cotton seed produced was about 1,965,800 tons in 1909-10 and about 1,605,400 tons in 1910-11, the average being some 1,785,600 tons. The 299,000 tons shipped in 1910-11, therefore, represented about 16.7 per cent. of the average available supply.

India's Import Trade.

Mr. A. D. Denning, M.Sc. M.A., Ph.D., formerly Superintendent of Industries, Bengal, contributes to the January number of the *International Review of Commerce and Industry*, a summarised analysis of the recent trend of India's Import Trade. India's imports of merchandise bear to her exports very approximately the ratio of 2 to 3, and in the year 1912-13 the value of her imports reached a total of some £141.5 millions. This total is about 2½ times that of a quarter of a century ago, and shows an increase of 10.5 per cent. on the figures for 1911-12. "Articles wholly or mainly manufactured," contributes by far the largest proportion, namely, rather more than three-quarters of the total.

The recent changes in the percentage and sterling values of the imports from the principal countries trading with India are dealt with in the following table :—

	1911-12. per cent.	1912-13. per cent.	Differ- ence in £1,000's	Value in 1912-13 £1,000's
United Kingdom	62.4	63.0	+ 9,992	67,627
Germany	...	6.5	+ 900	6,869
Java	...	6.8	+ 65	6,379
United States	...	3.8	— 58	3,469

	1911-12. per cent.	1912-13. per cent.	Differ- ence in £1,000's	Value in 1912-13 £1,000's
Japan	...	2.5	+ 392	2,710
Austria-Hungary	1.9	2.2	+ 581	2,352
Mauritius	...	1.4	+ 882	2,159
Straits Settlement.	2.1	1.9	+ 72	2,057
Belgium	...	1.7	+ 485	2,027
China	...	1.8	+ 368	2,011
France	...	1.5	+ 26	1,453

After dealing with the principal items, namely, yarns, textile fabrics, metals, railway plant and stock, cutlery, hardware and instruments, Mr. Denning concludes his interesting and concise analysis of the more marked tendencies of India's import trade by giving figures contrasting the recent imports of private vehicles :—

	1907-8	1908-9	1909-10	1910-11	1911-12	1912-13
Carriages and Carts.	216	173	119	183	166	172
Cycles	...	148	158	174	183	221
Motor Cars and						
Motor Cycles	...	423	288	317	488	669

Inter alia these figures, comments Mr. Denning, may well serve to indicate the growing wealth of India's "middle classes," which in the near future will provide ample capital for their very legitimate but at present ill-directed and ill-informed ambitions towards industrial activity—the submerged touchstone of the *Swadeshi* agitation. In its best features, remarks Mr. Denning, this agitation is founded on India's growing consciousness that she is lamentably dependent on the more progressive nations of the world for her manufactures, largely because such few technological and commercial institutions as she possesses are the creations of well-meaning Government Officials outside the business world, and with but little knowledge of modern specialised education. India's technical education and native industrial organization are woefully inadequate for the country's needs.

Metric System of Weights and Measures.

It would appear from the following article published in the *Journal of the London Chamber of Commerce* that the metric system of weights and measures has a chance of being more or less

universalised. It may also be pointed out that that system has been suggested as being suitable for India to follow. As the question of the introduction of a uniform standard of weights and measures in India is referred to a committee specially appointed therefor, we reproduce *in extenso* the article noticed above :—

Opponents of the metric system of weights and measures have, in the past, argued that its adoption by the United Kingdom might be prejudicial to its trade with the East, through suspicion and distrust on the part of Oriental customers, and that, further, America might take advantage of this by continuing to use the yard and pound so popular in the East. Now, however, it is pointed out by the Decimal Association that so far from metric usage being a hindrance to British trade with the Far East, the time is approaching when it will be a necessity in its dealings with China, Japan and Siam, which countries have taken definite steps to establish that system. Already the Advisory Council of China has passed the first reading of a law to that effect, and there are now in Paris two Chinese gentlemen studying the subject at the International Bureau of Weights and Measures with a view to completing what is planned. Japan has for the present four legal systems of weights and measures—the metric, the shaku-kwan, the kujira-shaku and the British yard and pound. The Government has declared its preference for the metric system by making it obligatory for the service of the customs, excepting a few articles. It is taught in all the public schools, and is prescribed for the Army, for medicine and for electrical work. The carat for precious stones is now 200 milligrams. A specially heavy charge (more than threefold) is made for the verification of British weights and measures, and the public registers show a steady increase in metric usage. Siam has for some years employed the metric system with much success on its railways and public works, and last year joined the International Convention of the Metre, from which it has received the apparatus needed for a Central Bureau of Standards at Bangkok. It should interest India to know that the Sanskrit element

In the Siamese language has proved useful in connection with the names of the metric units. Siam proposes not to make metric reform compulsory at one and the same time in all parts of the kingdom, but to deal with each province separately at convenient times—a plan which might, perhaps, be usefully followed by Russia, China and India. Russia also, which is now one of the great powers of the Far East, has adopted the metric system for several purposes, and has announced to the Decimal Association, by a recent letter from the Ministry of Commerce and Industry, that the metric system is favored, but has to await the necessary arrangement of control and inspection throughout the Empire with its 165 millions of people. This conversion of Russia is notable as completing the solidarity of all Continental Europe in metric reform, and as being likely to hasten the action of China, her eastern neighbour. In conclusion, it must not be forgotten that all South and Central America are either metric or tending to be so. The Australasian Dominions of Great Britain have urgently pressed the question on her notice, and last, but not least, important of all as a source of external influence, are the United States of America, which have gone far in preparing for reform and may be expected to act with vigour when the time comes.

Waste in Distribution.

There can be no doubt that waste in distribution for agricultural products is far greater than for manufactured goods. Just as a difference exists in this way, so it occurs among estate products themselves. As is pointed out by Mr. C. R. Van Hise, President of the University of Wisconsin in the *Modern Sugar Planter* for September, this waste occurs principally amongst perishable produce, like fruit and vegetables. It is interesting to observe that the nature of such produce and the fluctuations in acreage year by year cause a large variation of prices. This fluctuation is one of the factors which tends to make the retail cost of perishable goods very high.

When wholesale prices go up, retail prices are promptly advanced. When wholesale prices

fall, by informal understanding, the retail prices are frequently held at the old rates. This, of course, causes a wide margin between the price the grower receives and that which the consumer pays.

With very perishable goods there are hundreds of instances in thickly populated areas that might be cited to show the waste that accompanies a glut on the market. Thus Mr. Hise says:—"At various times there comes into the markets of the Northern States a larger supply of melons and peaches than can be disposed of at the current prices.

"The retailers take advantage of the situation to purchase at a lower price from the commission merchants; but not infrequently they find it more profitable to them, to maintain existing retail selling prices with smaller sales, than to lower the price sufficiently to dispose of the additional material. Under such circumstances, car-loads, and even ship-loads, of fruit or melons may rot, when the people—and especially the people in less favourable financial conditions—would have been glad to have the products, thus destroyed, if they could have been obtained at a low price."

Building up Sales.

In the January issue of the *Wealth of India*, page 38, we published an article on the "Art of selling," in its general aspect. Mr. W. Chinneck who is the writer of that article in the *Organiser*, has contributed to the same journal another brilliant essay upon the same theme. As remarked in the previous article, every speciality must be considered on its own merits and the selling scheme provided after taking into consideration all the circumstances.

BRANDED GOODS.

These have to be sold through retailers. It is important to remember, says Mr. Chinneck, that it is comparatively useless to spend a great deal of money advertising branded goods until you have made more or less adequate arrangements with the retailers to supply the demand. At the same time, until a demand is created, a large proportion of retailers will not stock

RETAILER'S WASTED EFFORTS.

The retailer loses a great deal of money through advertising unsuitable goods. What the man first has to take into consideration is the policy of his house. That must determine his campaign. He knows the class of public from whom his customers are drawn, he knows the service he is proposing to offer them, and he should try to invest the whole of his selling campaign and, in fact, all his actions with the individuality of his house.

WHAT TO SELL.

Take one article or more in each department, or create an article in each department, which will sell more readily than any other article, and build up your sales on that. This brings customers to the department or shop, and you will find the general trade increase not only for the article you advertise but for all the other articles. By this means you can make advertising pay.

CREATE YOUR OWN BRANDS.

Create a special brand of your own. Go to the manufacturers, select the product, have it stamped with your name and make an arrangement with them whereby you get low prices by taking a considerable quantity. The point is to select an article that pays for selling, and to advertise that, thereby building up a business or a department. Get the customers in by offering the goods they are most likely to want.

USEFUL EXAMPLES.

In an outfitter's trade the articles which a man most frequently wants to buy are shirts and collars. Advertise those two articles. In boots, select two or three styles and go strong on them. In a linen department, take towels and sheets and blankets, around which to build your business.

Thus concentrate your selling scheme in one speciality and build the reputation of the house on that. Do not waste money by selecting the things that are difficult to sell, but devote yourself to selling the things that people want; when they require the exceptional things they will still come to you.

The Illustration in Advertising.

Mr. Robert Strong writes in the *Printer's Ink*.—The primary function of the picture in advertising is to arrest attention. It is the "human interest" which attracts the attention to the comparatively unattractive typography.

But some of us have limited the use of the picture to that one thing. This is quite obvious from the many pictorial illustrations one comes across which are entirely irrelevant to the "copy."

Now, if we decide to illustrate our advertisements it costs no more to get a picture which is pertinent to the copy than it does to use a picture the only merit of which is that it appeals to us by its art or its humour.

And this brings me to the point I wish to make, which is—Let-the-picture-tell-the-story.

There is a sound logical reason for this. Unfortunately for the advertiser, the general public has not yet acquired the habit of reading advertisements so extensively as it might. Therefore it is advisable to create an impression in the reader's mind in the event of our failing to get him to read the advertisement. And a picture which "tells the story" accomplishes this.

By all means let us endeavour to get the reader to study the advertisement (every word of it) if we can, and stimulate him to action, but, failing that, we should strive to do the next best thing, and that is, vividly impress the goods and their utility on his mind. This can be done by a picture.

If an analysis were practicable, I think we should find that far more goods are sold as a result of a series of impressions than in direct response to some particular advertisement.

The picture is remembered long after we have forgotten the description of it. The picture is "alive"—the descriptive matter is relatively "dead."

Indian Linseed.

In view of the importance of linseed among the export articles from India, traders in this valuable seed will doubtless welcome all hints as to the conditions and prospects of the several buying markets. The effect of the entrance of

Canada into competition as a large shipper of linseed has been keenly felt by other producers, and the following extract from a recent report of the Canadian Trade Commissioner will be read with interest:—"It should be pointed out that Hamburg is easily the first port in the whole of Europe for transactions in linseed, and Canadian shippers would find it much to their advantage to cultivate the Hamburg market in addition to the English, and perhaps in preference to other Continental ports, for the following reasons:—The oil-crushing mills in and around Hamburg are the largest in Europe, and they work up an incredible amount of oil-bearing seeds of all kinds. The financial standing of the big Hamburg merchants handling linseed is first class, while the standing of the oil-crushing firms is absolutely beyond question. In selling linseed to Hamburg the shipments are taken off the market by the crushing firms, and disappear as a market factor, altogether unlike linseed sold in a speculative market such as Antwerp, where it becomes largely a gambling counter, creating fictitious values and unsettling business. Where Antwerp buys ten thousand quarters for the rise, Hamburg buys ten thousand tons for consumption. The latter procedure is obviously the better both in the interests of the market and of the merchant, for the Hamburg merchant runs only one instead of two risks—the risk in regard to the man who sells to him. He is sure of his buyer."

Metal Fakes.

There are, of course, in the scrap metal trade, as in every other trade, a number of unscrupulous men, and it behoves the honest ones to be continually on their guard against being taken in. The following, according to *The Brass World*, are some of the methods employed to deceive the unwary buyer:—

SENDING YELLOW BRASS CHIPS.

A dodge that seems to be frequently worked consists in mixing a certain amount (as much as the chips will stand) with yellow sand. In this way the scrap metal man obtains brass prices for sand.

As sand, if mixed with the chips direct, would be noticeable, the following method is

carried out to overcome it:—Scrap bronze powder is easily obtained in the scrap metal market, and is the sweepings, etc., produced in the manufacture of bronze powder. It is very fine and slightly greasy. It readily adheres to anything, except wet material. The sand is dried and then mixed with a small quantity of the bronze powder. This coats them over. The bronze powder is practically the same color as the brass. In reality it is made from yellow brass, and is not bronze at all, although so called, it is also cheaper than the brass chips.

The sand, when covered with the bronze powder, is mixed with the chips and is then entirely concealed. The usual amount of sand to mix with the chips is about 10 per cent. and when added to them it is very difficult to see it. Those who purchase the chips, therefore, obtain the sand at the price of the chips. To look at a pile of chips of this kind, one would say that they were of good quality.

The method of ascertaining this deception is to take some of the chips and examine them. As yellow brass chips are usually fine, the sand is not readily seen, although the particles may be detected if they are spread out on a paper. The usual method, however, and one that is absolutely certain, is to take a small quantity of the chips, soak out the oil and grease in benzine or gasoline so that acid will act upon them, and then dissolve (in a porcelain dish) in dilute nitric acid. One part of the strong acid and one part of water are used. The chips will dissolve and leave the sand.

MIXING RED GRINDINGS WITH COMPOSITION CHIPS.

Composition chips command a comparatively high price as compared with red grindings. The latter, of course, result from the grinding of composition castings on an emery wheel, and contain a considerable amount of emery and moulding sand from the foundry.

If composition chips and red grindings are mixed in the ordinary manner, the two will separate when shipped on account of the difference in size. In order to prevent this, some American dealers of the lower class have been

known to coat the chips over with molasses and then mix them with the grindings. In this manner the two will adhere and will not separate in shipping.

In using the molasses in this manner it is possible to mix from 5 to 10 per cent. (or even more) of red grindings with the chips without being conspicuous, and unless the purchaser is forewarned he will not usually detect it. As there is a considerable difference in value between the chips and the red grindings, this is a deception to be guarded against.

SPURIOUS CASTINGS.

Buyers are usually willing to believe the best of castings. In the case of composition castings they assume that if the metal was once cast, is red, and has been in use, it must be good. Hence they do not hesitate to purchase any form of composition casting.

Unscrupulous people have taken advantage of this fact to carry out a very careful deception.

Washings, railroad chips mixed with babbitt metal, or other form of scrap, that is, of such a character that a brass founder would never think of using it for making castings, are melted and cast into various common shapes found in the trade. As it would hardly pay to make valves or other complicated castings (although there are instances in which it might be done), simple castings only are made. One of the favourite shapes is large rings of the shape of a bearing. When cast, these are broken up and then are ready for sale.

The buyer, having such broken castings offered to him, at once believes that they were originally in use, wore out, and were discarded. He files them, and they show red metal. Consequently he believes that the castings are of good metal. The more ingenuity has been displayed in making the castings in forms that will serve to indicate that good metal had been used in them, the more the buyer will be deceived. The discovery of this method of making "scrap composition castings" leads one to believe that "all is not gold that glitters."

PICKLING WASHINGS.

The term "washings" is used to designate

the metal left in washing out the coal and slag from brass foundry ashes. Washings of this kind, when they come from brass foundries making red metal castings alone (such as, for example, steam metal valves), are always a desirable material, and can be used in the making of composition castings.

As such washings have usually been sold by the appearance, it is customary to wash them quite clean, and then, if they are entirely uniform in color and red, they command a good price. If, however, they are mixed with yellow brass washings, even in a small amount, the yellow color is so conspicuous that the whole material cannot be sold for red washings, but comes under the head of "mixed washings," and the price which they will bring is much lower.

In order to change the color of these metal washings before they are mixed with the red ones, they are sometimes "pickled." By doing this the surface of the yellow metal is changed to red. The method followed is simply to pickle the yellow washings in weak sulphuric acid (oil of vitriol). About nine parts of water and one part of sulphuric acid are used. The washings are immersed in it until the zinc in the brass is dissolved out, leaving the copper on the surface. This, of course, takes place only superficially, but still it is sufficient to color the washings. The pickling operation may take several hours if the pickle is cold, but if hot it acts very rapidly and the red color is obtained in a few minutes. The washings are then rinsed in water, and they will have a red color.

The yellow brass washings thus colored red on the surface are mixed with the red washings so that the whole lot has a uniform red color. The practice is, legitimate in one way, but is dangerous in another. Yellow washings are now rarely good on account of the extensive use of aluminium in making yellow brass castings. Aluminium is never used in the red metals. By thus mixing the yellow washings with the red, aluminium may be introduced. Were it not for the aluminium the red washings might melt to a red ingot, even though containing a small amount of yellow metal, but the presence of aluminium ruins the whole lot for any purpose that can be found for red brass except the cheapest class of railroad work, and even in this it cannot always be used.

Openings for Business.

[For particulars, address the Director-General of Commercial Intelligence, New Imperial Secretariat, I, Council Street, Calcutta, mentioning the *Wealth of India*. Firms that may like to follow up any enquiry should give proper references and restrict themselves to those enquiries only which they are fully and seriously qualified to handle.]

SHEEP SKINS.

A firm in Osaka, Japan, is desirous of communicating with shippers of sheep skins. (C 220.)

MATS, GUNNY, AND COTTON CLOTHS.

A Melbourne firm is desirous of representing in Australia manufacturers of mats and matting, gunny and cotton cloths suitable for the manufacture of bags. (C 222.)

CATTLE FOOD.

A firm in Bombay is desirous of appointing agents in the principal towns in India for the sale of patent cattle food. (C 223.)

RAMIE FIBRE.

A Manchester firm is desirous of communicating with sellers of ramie fibre and is prepared to offer £12 to £14 per ton delivered in England. (C 224.)

STEAM ENGINES AND BOILERS.

A firm of manufacturers in Ohio, U.S.A., is desirous of appointing agents for the sale of steam engines and boilers from 3 to 60 H.P. (C 234.)

COTTON PIECE GOODS.

A firm of manufacturers in New York, U.S.A., is desirous of appointing agents for the sale of voiles, crepes, imitation linens, cheap brocade effects, serges, sateens and twills for lining purposes. (C 235.)

HEATING, COOKING AND IRONING APPLIANCES.

A firm of manufacturers in California, U.S.A., is desirous of communicating with importers of household electrical heating, cooking and ironing appliances. (C 236.)

CAMERAS.

A firm of manufacturers in Chicago, U.S.A., is desirous of appointing agents for the sale of minute photograph cameras and accessories. (C 237.)

GUNNIES AND RICE.

A merchant in Durban is desirous of representing, in Natal, Calcutta exporters of gunnies and rice. (C 238.)

HORNS AND HORN TIPS.

A Calcutta firm is desirous of communicating with sellers of deer horns and buffalo horn tips. (C 239.)

SENNA LEAVES.

A London firm is desirous of communicating with exporters of Tinnevely senna leaves. (C 240.)

BONE MEAL.

A firm in Osaka, Japan, is desirous of communicating with Calcutta shippers of bone meal. (C 242.)

OILSEED CAKES.

A firm in Genova, Italy, is desirous of communicating with shippers of oilseed cakes (groundnut, gingelly, linseed, etc.) for feeding purposes. (C 244.)

WOOL GREASE.

A Liverpool firm is desirous of communicating with buyers of wool grease which is used in the jute industry. (C 246.)

ELECTRIC AUTOMOBILES.

An American firm that makes electric automobiles desires to appoint agents in principal centres. (C 248.)

MOTOR CARS AND MOTOR LORRIES.

A firm in Wisconsin, U.S.A., is desirous of appointing an agent for the sale of four and six cylinder cars and motor lorries of three-fourths and one ton capacity. (C 249.)

BOAT MOTORS.

A firm of manufacturers in Chicago, U.S.A., is desirous of appointing agents in Bombay and Calcutta for the sale of boat motors ranging from 6 to 75 H.P. in 2, 3, 4 and 6 cylinders, suitable for pleasure, work and racing boats. These motors run on kerosine. (C 250.)

WOOD-WORKING MACHINES.

A firm of manufacturers in Ohio, U. S. A., is desirous of appointing agents for the sale of wood-working machines specially adapted for carpenters, blacksmiths, wheelwrights and contractors. (C 251.)

The Economic World.

Economics and Human Nature.

A very interesting lecture was delivered on the above subject by Sir Theodore Morison at the Calcutta University Institute Hall recently. There was a very large untitled field for original research, said the speaker, which he commended to the youth of India generally. He commended this field, not only because of its intrinsic importance, but because it was bound to prove of great interest to them. The speaker after referring to the subject of historical research referred to some others which are equally important:—Folk-lore, Economics, and Sociology. Speaking of Economics, he referred to the now exploded belief that it is a universal science like Physics and Chemistry. There were certain zones of civilisation, said the speaker, which had special kinds of Economics appropriate to them, and the conclusions come to in one zone would not necessarily hold true in another. Therefore Indian students cannot do better than study the Economics of their country in their own way, just as students in Germany and the United States study theirs. A distinctively Indian school of Economics is one of the things most needed in India.

Indian Economic History.

Mr. S. Ranganath contributes apparently the first of a series of articles on Indian Economic History to the January number of the *Hindustan Review*. The writer attributes the poverty of India to two causes, namely, the economic drain and the system of land-revenue administration which is rarely conducive to saving. In the writer's words, the Ryotwari system had for its chief feature the direct relations between the state and the cultivator. No intermediary was tolerated under it. It was thus opposed to the Zamindari system. But the evil did not stop here. It carried its hatred to intermediaries so far that it did not allow even the old village communities to exist.

Besides the untold injuries inflicted by this destruction of the old village communities and the forced disappearance of a stratum of Indian society in Zamindars, Polygars and others, the Ryotwari system, wherever it spread, and it spread far and wide, brought in its train short leases of 20 and 30 years and all their attendant expenses, injustice and dislocation of agricultural industry. It was in these ways that Indian agriculture was grievously injured.

Growing Indian Population.

Mr. Gait in his final review, just published, of the recent Indian census, shows that making allowance for certain special factors, the real increase in the population during the last thirty-nine years is estimated at about 50 millions or 19 per cent. This, he points out, is less than half the increase which has taken place during the same period amongst the Teutonic nations of Europe, but it considerably exceeds that of the Latin nations. The birth-rate in India is far higher than in any European country, but the increase of the population is checked by the heavy mortality, especially amongst infants. If the population were to continue to grow at the same rate as that recorded since 1872, it would double itself in about a century and a half. There are, however, great variations, both local and periodic in the rate of growth and no prophecy can be safely indulged in as to the length of time within which the population may be doubled. Under modern progressive conditions of government, the probability is that the rate of growth of the population will tend to increase. It is fact like this that illustrate the importance of making "two blades of grass grow where one grew before", and of developing the wealth-giving industries for which are available such a wealth of raw materials in India.

Can Prices be Checked.

In the course of an editorial note, the *Review*

of *Reviews* remarks that in England and Wales, since 1905 the purchasing power of a sovereign has been reduced by 2s. 3d., or 11·3 per cent. Applied to the working-class families of the country as a whole, it suggests an increase in the cost of living by £117,000,000 per year; and as the statistics show that the increase in wages does not amount to more than 30 millions, there is a balance of some 87 millions against the working class. It is unfortunately inevitable that the least organised section of the community are bound, in the nature of things, to suffer. The efforts of the trade unionist are discounted by the undisciplined hordes of unskilled labour, and rendered null and void by that great section—the lower middle class, at present too superior to learn the needful lesson of co-operation.

The journal further adds that prices cannot be regulated by Government, but the conditions ruling prices are entirely subject to the legitimate operations of Government.

The stimulation of agriculture and other neglected industries will work wonders. With improved transit facilities England's dependence on foreign food imports will disappear, with a consequent lowering of prices. The possibility of Great Britain becoming self-supporting, so far as food is concerned, must be preached in season and out of season. "To screech about the rise in values is worse than lunacy while we continue to neglect the essentials of good house-keeping."

The Study of Political Economy.

Mr. J. H. Chinmulgund, M.A., L.L.B., contributes an article to the January number of the *Fergusson College Magazine* on the importance of the study of Political Economy. The writer says that to us, Indians, its study is a prime necessity. India is just now passing through a very momentous and critical period in the course of her national evolution. The connection of India with Great Britain has brought India into relationship with all the great states of Europe and America.

Amongst the many and varied problems which we have to tackle, economic problems occupy a very important place. The oft recurring

famines, the enormous rise in the price of food-stuffs, the ever-increasing growth of population and the consequent problem of their employment, the existence of a huge class of idlers who subsist on indiscriminate charity, the abject poverty and appalling indebtedness of our cultivating classes, the establishment and spread of co-operative credit societies, the now much debated question of currency, the incidence of Taxation, &c., are some of the problems for the proper appreciation and solution of which a thorough grasp of the principles of Political Economy is absolutely essential.

A knowledge of Political Economy is also highly useful for an intelligent appreciation of the course of events now taking place in the different parts of the world.

Village Reform in Southern India.

In an article written on the above subject to the February number of the *Modern Review*, Sir C. Sankaran Nair notes a few economic factors that have made their impress on our rural society. There is a distinct tendency now, says the writer, among our rural population to migrate to the towns. The junior members of Hindu families receive their education in English schools in towns, education of a character which is not fitted for agricultural pursuits or village life. After his business career, a man of this class settles down in the towns. He does not follow the profession of agriculture but takes up a business which keeps him away from his village.

The labouring population is also moving in the same direction in search of work. The Zemindars and other wealthy men also prefer to exhaust their pecuniary resources in the towns.

To any one acquainted with the needs of a village, many affairs and problems will at once occur in which co-operation among the villagers is likely to be of great benefit, and the writer refers to a few of them.

We want co-operative stores in villages to bring articles direct from the producer to the villager, without the intervention of middlemen. More important than this is co-operation for sale, to obtain information about the various

markets, to secure facilities for conveyance, and also for storage both in the village itself and elsewhere.

They may purchase the standing crop at a reasonable valuation to divide the sale-proceeds among the members, the owner himself being possibly one of them. Such a society may standardize the grains for sale. Samples of the produce may be sent out for inspection. The best methods of agriculture, the suitability of the soil for any particular crops, will then be freely discussed. Amongst them there will be a considerable healthy rivalry as to who shall produce the best kind of grain, and as it is the society that sells, they will enforce a certain standard of excellence.

The writer says that co-operation for irrigation is equally important, similarly he refers to co-operative processes for the solution of other problems as well, like sanitation, the relief of the poor and the sick, the administration of village forest reserves, &c. For real progress, co-operation among the villagers themselves is necessary. The village community alone could adequately deal with problems of the nature indicated above, though for some time the guidance of officials might be necessary. Several Indian Statesmen in this Presidency have nursed and fostered the growth of the co-operative spirit. Its educative effects have been remarkable.

Income in Terms of Goods.

We have been so used to estimate income in terms of money, that we have half forgotten its value in commodities. This would really depend on the quantity produced in a country and its distribution among the people.

Mr. L. G. Chiozza Money gives in a recent issue of the *Daily News and Leader*, some interesting facts about the United Kingdom. The average income of the people of the United Kingdom, who at this time number about 45,600,000 is, according to him, about £49 a year. And if the population is carved up into nine million families of five persons per family, the average family income is seen to be about £230 a year.

This, Mr. Chiozza Money says, is, in spite of modern science and progress, but a small fund on consumable wealth. Five persons with £230 a year between them can at best live a straitened life. Further, a greater part of the people of the United Kingdom have less than this average sum.

Moreover, the whole of the National Dividend is not available in any year for purposes of current consumption in personal expenditure. Out of a year's income, the material framework of a nation has to be repaired and renewed, and that alone calls at, say, 7½ per cent. for upwards of £150,000,000. Again, part of the aggregate has to be devoted to the accumulation of new capital stock, and if no more than £200,000,000—a very inadequate sum—is invested, we see, says the writer, that between renewals and repairs of existing capital and the accumulation of fresh capital, some £350,000,000 a year is required. Thus out of the average family income of £230, nearly £40 has to be subtracted on capital account, leaving, say, £190 per annum per family for current present expenditure.

National and local expenditure raised by rates and taxes is not deemed fit to be deducted as good value is given in return in the shape of wise Government.

Now, what is the material income of the United Kingdom, expressed in the factory price, what is its income in goods as distinguished from services and apart from the ultimate cost of production?

Mr. Chiozza Money's answer to this question is that income in goods is ridiculously small—in relation to modern power of production. "That is the chief lesson which is to be learned from the Census of Production Report." In "The Great State" published in 1912, I estimated the British net gain in material wealth in 1907 as £1,040,000,000. This has since been independently confirmed by the Board of Trade's General Summary of the Census of Production according to which the figure is about £11,00,000,000. In 1913 the figure may be about £1,200,000,000, or about £27 per head of the population or £135 per family. This £135,

of course, is subject to deduction on account of capital savings and renewals, and it is probable, therefore, that counted in goods at factory prices, the average income of material wealth is no more than about £100 a year.

The inadequacy of production is thus revealed. And the writer urges more production and an equitable distribution of the same.

Usury in India.

To combat usury in India, the *Advocate of India* urges the Government to step in and help the needy borrowers in some such way as the French Republic does with her State institution. The journal gives the following description of the French System:—

THE FRENCH SYSTEM.

In Paris there are no private pawn-brokers. A central corporation, with many branches, both in Paris and the Provinces, has a State monopoly of lending money on movable property. The officers are appointed by Government, and the civil service system prevails in clerical appointments. The profits go to public charities. The immense capital needed is borrowed at a low rate of interest, and loaned out at a higher rate of interest to those who have the means of pawning.

THE OFFICIAL PAWN-BROKERS.

There is one great central office, with a branch in every district. There is a waiting-hall, in which people congregate. A wicket opens and an official calls out. The first person steps up and delivers the article and receives a round brass ticket in its place. "Suite," and the next article is taken in. A man at the side calls out the number and the person holding the brass check, goes forward. "Ten Francs." "Accepted." Then the appraisers who sit behind to value the article confirm their verdict. You take the offered loan or you get your article back. The bonded appraisers are supposed to value for silverware or jewellery in gold or silver four-fifths of the weight value, for all other articles two-thirds of their value at an auction sale. At a desk in the large hall two clerks sit, making out the tickets. In some cases if the amount is over ten francs, the

pledger is required to give evidence of his identity. For a foreigner a passport is sufficient. The French workman hands in his "papiers," etc. On small loans up to five francs if they are redeemed within three months, no interest or storage or, in fact, any charge is made. To those small borrowers who may be taken to be persons in temporary distress, no charge is made.

THE PAWN TICKET.

On the reverse of the ticket the conditions are laid down. So that there shall be no mistake, in the case of an illiterate person, if he desires it, they are read out:—

The length of the engagement is for one year.

The administration takes 3 per cent. a year for interest, and 3 per cent. a year for expenses, handling, and instance.

The periods counted are the usual pay system of once a fortnight.

All interest is counted by fortnights.

Upon loans for larger amounts, a fixed tariff of one per cent. extra is charged.

If an article is not redeemed within the year, the interest can be paid and the article renewed during the thirteenth month for another year. But the pledger who finds he can neither redeem the article nor pay up the interest can ask that his article should be sold, and any surplus handed over to him, after deducting the amount due. If the article is sold in consequence of the interest not having been paid, the surplus is kept for three years, after which it is handed over to a charity.

Such in very brief, is a sketch of this great Government pawn-broking establishment, which has been in vogue for generations, and which has worked most successfully.

The journal appeals to the Government to do some such thing to the poorer classes in India who exist perennially under a load of debt to the *Marwari*.

Bad Roads and Cost of Living.

More than a score of reasons have been given by political economists as to why the cost of living is so high. Bad roads are now added

to the list, for bad roads, says Mr. William N. Taft in the *Technical World Magazine*, keep up the rise in living expenses. It is stated that in the conveyance of goods in the United States, under present conditions, by horse or motor vehicle, and in improper road administration, nearly three hundred million dollars are wasted annually. "Is it any wonder," asks Mr. Taft, "that the prices of cotton and wheat remain at a high level instead of falling proportionately to the increase in production?"

Besides, other economic effects of having good or bad roads, are mentioned by Mr. Taft, with reference to America, but which will equally apply to other countries as well, *mutatis mutandis*. The principles underlying the economic service of roads may be briefly stated as follows:—

(1) Bad roads impose a tremendous tax upon farmers who have often to take the product from the fields to the railway station or a market some miles away; not to mention the tax upon the ultimate consumer.

The old idea of the toll roads—that only the people who use a road ought to be made to pay for its improvement and maintenance—is now recognized to be erroneous, since everyone in the country would share in the benefits accruing from the increased commerce and decreased expenses following the general and adequate improvement of the roads throughout the country.

(2) Every improvement in the roads makes unproductive land productive, and enables the farmer to exercise a wider discretion in determining the value of his crops. The prosperity of the individual farmer becomes far greater, the traffic of the railroads increases, the consumer receives better supplies at lower prices.

(3) Unimproved roads are an operating cause of the exodus from rural districts, bad roads form a menace to health and hinder the educational development of a nation.

(4) In addition to increasing the cost of living as it concerns the individual, bad roads intimately affect the nation's standard of life and its future among the nations of the world. It is not alone the past and the present which should

be considered in computing the toll exacted by the bad roads, the future should also come in for consideration.

(5) Experience has shown that when roads are improved, many beneficial reactions on country life appear. Speed of travel benefits first of all the country physician and the business man; the number of days the road is comfortable for all uses is increased; the ability quickly to market perishable light farm products is a stimulus to production and results in decreased cost; while heavy crops, can be hauled with profit where bad roads formerly prohibited their production at all. With more uniform marketing, violent fluctuations in prices, cart shortage, and money stringency would all be diminished. The influence of road conditions likewise upon rural mail and parcel post delivery is also important.

Realizing then the immense saving possible through the improvement of roads, the cut in the cost of living which would grow out of the decreased time between producer and consumer must be immediately apparent.

Syndicalism in Germany and France.

General Smuts speaking in Cape Town, on the deportation of the ten syndicalist South African labour leaders, declared that society had not yet perfected the machinery for dealing with the syndicalist who was a worse enemy than a man with a rifle. The Dutch man is not a remote kinsman of the German and it is a matter for wonder how the echo of this speech will be received in Germany where at the present time, the German syndical movement, regarded in its entirety, is the strongest in the world. According to M. Paul Louis, writing in the *La Revue* (Paris), "It recently outstripped British Trade unionism; and it leaves far behind the American federation of labour. It unites more than 3,000,000 men and women, or three times as many working men as are organized in France, the home of syndicalism. In every country, however, the growth of syndicalism is dependent upon, or subordinated to, the expansion of manufactures. Here M. Paul Louis compares the respective intensity of the movements in Germany and France.

Syndicalism spreads less quickly in the smaller industrial countries than in those of large industrial operations. It experiences special difficulties in populations which are riveted to the soil and which do not engage in manufacturing. Syndicalism was born almost spontaneously of the concentration of capital and of men. For this reason it became acclimated in England under the form of the old Trade-unionism before it was implanted on the Continent. It is on this account, also, that it spreads with less celerity in France, where concentration is less marked, and where 40 per cent. and more of the total population have not left the rural *milieu*. It is for this reason that it was late in penetrating Germany, where the extractive industries—chemistry, metallurgy, textiles, etc.—are not of ancient creation, and that it has there recently acquired so surprising an expansion. The depopulation of the rural districts and the great increase of the manufacturing centres have contributed to this increase with a disconcerting promptness.

There are in Germany 3,061,000 Syndicalists, and these are divided into five groups:—(1) The free syndicates, (2) the little group of localists, (3) the Hirsch-Dunker associations, (4) the Christian or mixed syndicates, and (5) the independents.

THE GROWTH OF SYNDICALISM IN FRANCE.

The free syndicates date from the period 1866-1869, contemporary with the diffusion of the International in Europe, and when the two primitive currents of German Socialism, Lassallism and Marxism, came into turbulent contact. M. Louis gives the following details concerning these syndicates:—

The free syndicates recognize the struggle of the classes, but remain neutral in the domains of politics and religion, evolving in the same sense as Social-Democracy. They numbered nearly 2,400,000 in 1911. Feminine manual labour is as important in Germany as in France and England. Indeed, one may say it is more considerable in Germany than elsewhere, owing to the metallurgical industry. At first women hesitated to join the syndicates, but there are

now at least 200,000 of them in the free syndicates.

These federations are impregnated with the doctrines of Social-Democracy, which characterize the best of German Syndicalism, and which play beyond the Rhine the decisive vote. The other groups, directed in fact against them, neither hinder their propaganda nor paralyze their economic action.

M. Louis notes some marked differences between German and French Syndicalism. He says:—

The *Verbande* by their very nature represent the very best conception of German Syndicalism. Differing from that which prevails in France and which expresses itself clearly in the confederation of labour, this conception tends to repudiate federalism for centralism. In France the federation is superposed upon the syndical sections to render certain services; but these sections keep the major portion of their resources, and they maintain a distinct autonomy. In Germany, the syndical section exists merely as "the kernel of recruitment and an organ of perception." The receipts go to a central chest. A local section seldom proclaims a strike without having first consulted the central authority. Discipline is strict and regulated by statutes. Fragmentary and dispersed efforts are carefully excluded. Each *Verbande* has its mechanism, which functions methodically.

The German Syndicate temperament differs from that of the French.

The Farmer's Income in the United States.

Many factors enter into the income of a farmer, ordinarily different from those outside the farming occupation. The method adopted in estimating the farmer's income in the United States, by W. J. Spillman of the United States Department of Agriculture, is ingenious. We give below the working in its entirety:—

There are two items of income about which no information is available, *viz.*, the value of the milk and cream consumed on the farm, and what the farmer earns for work outside his farm; and one item of expenditure which cannot be determined, *viz.*, the amount paid for live stock. The data presented below should

be interpreted in the light of these omissions.

The average area of the American farm in 1910 was 138.1 acres, 75.2 acres of which are classed as improved land and 49.77 acres as devoted to crops. The total average investment per farm is \$6,443.67, the amount in farm buildings being \$994.33 and that in implements and machinery \$198.88.

All the data for the receipts were obtained from census returns. The farm is also credited with the total value of all the crops produced except that part fed to live stock, which is obtained by deducting the value of forage sold from the total value of the forage crops. The farm is thus credited with the butter, cheese, eggs, poultry, honey, meat, fruits, vegetables, bread, etc., consumed on the farm where it is produced, and the value thus consumed on the farm is included in the farm income.

Any revenue from outside sources should be added to the net income.

The expenses for labour, fertilisers and fodder are obtained from the census returns also. The cost of maintenance of farm buildings is placed at 5 per cent. of their value, and that of implements and machinery (including repairs) at 20 per cent. of their cash value, both figures being based on extensive investigations by the office of Farm Management, and agreeing with the estimates in Warren's book on "Farm Management." Taxes are assumed to be 0.6 per cent. as an average for the whole country.

The remaining items of expense in the conduct of a farm are collectively calculated as 15 per cent. of other expenditure, which is the average obtained from a number of farm management surveys conducted by the Office of Farm Management. The total farm expenses, omitting the item of live stock purchased, amount to \$340.15.

The farm income is obtained by deducting the total expenses from the total receipts, and amounts to \$640.40. Assuming 5 per cent. as the rate of interest to which the farm investment (of \$6,443.67) is entitled, the farm income is then distributed between interest and

labour income as follows:—Interest on investment, \$322.18; labour income \$318.22.

The average farm mortgage based on the number of all farms, is \$1,715, which at 6 per cent. per annum amounts to \$102.90. Deducting this amount from the farm income of \$640.40, we get \$537.50 (to which must be added the value of milk and cream consumed on the farm and any outside income) as the sum to be used in the purchase of live stock, in living expenses, and in savings.

As the majority of farmers are capitalists, the interest on capital constitutes part of the income and the labour income is undoubtedly smaller than it would be if the farmer did not also have the interest on his capital. Thus, in the better agricultural sections, the labour income of tenants is considerably higher than that of farmers who work their own farms, though the latter may have larger total incomes than the tenants. In fact a large number of American farmers live on the interest of their investment and do not receive anything for their own wages. But this is not possible on the small farm, where the interest is too small to admit a high standard of living, and the farmer must have some labour income in addition.

An Enclosure Policy for India.

New economic forces, such as the rising cost of living, the increase in the number of the world's markets, are coming to exert their influence on India, as they have in other countries, compelling the cultivator to watch the cost of his production and to make the best use of his land, his labour, and his capital. Parts of India are now advancing towards the stage of what is known as market production; cultivators are no longer guided solely by the needs of their households, but have to pay attention more and more to the demands of other communities, and to the prices which those communities will pay.

In fact, this gradual commercialisation of agriculture is certain eventually to produce a change in the arrangement of land entirely different from what obtains at present.

Compact holdings come with the era of market production, and are not ordinarily found

in the stage known as 'Subsistence-agriculture,' where cultivators produce little beyond what is needed for their consumption. This aspect of rural economy is now vanishing in India and a recent issue of the *Pioneer* enters upon some speculations of how its substitute of enclosure would affect Indian conditions. The journal enters briefly into a historical discussion, as the subject with the many transformations that it would bring in its train, is best explained with reference to its history and contemporary happenings.

Broadly speaking, it may be premised, the centre of the problem is the agricultural labourer. He is so much talked of to-day in England that it is well we turn our attention a little to what is done for him there. As things stand in England to-day, he has not the means of living a reasonable life, and he has little prospect of improving his position. The best men therefore leave the country, and the rural population that remains is adequate neither in numbers nor in quality for the needs of the centre of the Empire. This, according to the journal, was not true under the former system, and it adds that this emigration is the result of the process of enclosure.

The disappearance of small holdings was not intended by the advocates of enclosure, but it resulted all the same. In many cases a holding which could support a family with the aid of the common rights attached to it proved insufficient when those rights were terminated and the compensation-money had been spent; in many others the costs involved in the proceedings, together with the expense of fencing and road-making, were far beyond the cultivator's means, and the small holding was merged in an adjoining farm; in others, again, the small man was unable to adapt himself to the changed conditions of agriculture that followed the process of enclosure. So the small holdings for the most part disappeared, and when they were gone, no prospect was left for the labourer; the ladder by which he could rise to the position of a farmer hung beyond his reach when the lowest rungs had been cut

ff. And while his prospects were thus ruined, his immediate situation was changed for the worse. As a matter of practice, the cottager or labourer had usually enjoyed the benefits of the common land, though these might be reserved in law for the cultivator. If he could get a cow, the commons supplied the grazing; and if a cow were beyond his means, he could usually manage to keep a pig or some poultry or a few of the geese that yielded such an important income in the days before steel pens were invented. He could often get fuel too for the labour of collecting it and the commons furnished the materials for various crafts that have now disappeared. Once the village was enclosed, these sources of income dried up, and the labourer became dependent solely on the wages he could earn. Everything he needed had now to be paid for; there was little scope for saving money, and there was no object in making the attempt. With such prospects as these, it is not a matter for surprise that the best of the labourers, with the best of the small holders, left the country for the towns or for the colonies that were even then crying for men; for the residue the tavern offered enjoyment in the present, and the parish stood behind to provide for the future. Such serious controversy as exists to-day turns on the means that should be adopted to restore the labourer to the position which he occupied under the earlier regime; and so we find that methods of increasing his remuneration, of providing common grazing, or of restoring the ladder of advancement by the creation of small holdings are prominent in the programmes of reform in the production of which parties are now so eagerly competing.

This, then, is the subject of the English land reform so prolific of controversy and in some quarters even of bitter invective.

This story contains a lesson and a warning that India would do well to heed. In the journal's opinion, an enclosure policy is wanted for India, but it must be a policy founded on laborious investigation of all the conditions of the problem.

The Financial World.

World-wide Distribution of Investments.

In the January number of the *Financial Review of Reviews*, Mr. J. Gardner, M.A., in the course of an article on "the Investment Aspect of Financial Stringency," explains the advantages of following a system of world-wide distribution of investments.

The fundamental idea of this system is that, to ensure its safety, capital must be evenly distributed among a number of sound securities, each representing a different part of the world. By the application of this plan, an investor secures the maximum of immunity from any rise or fall in values of the securities located in any one geographical area; his position, in fact, is similar to that of the itinerant showman who "makes on the swings what he loses on the roundabouts." In order to attain this desirable end, the prudent showman takes care not to invest in inferior tackle, lest his overloaded swings collapse and involve him in a ruin even more complete than that presented by the deserted roundabouts. On the other hand, he must not spend too much on gold paint and similar decorations, otherwise his profits would not be commensurate with his outlay, and when he desired to sell, he would only be able to do so at a loss. Similarly, an investor must not content himself with buying one British Stock, one Colonial, one European, and so on, but he must see that he obtains the cheapest and most reliable stocks, in other words, he should take up stocks which are adequately safe and return a reasonable rate of interest, avoiding on the one hand speculative counters and, on the other, "gilt-edged" securities.

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Other countries in		
Europe ...	2,584,900	3,615,000
British India ...	11,054,100	12,115,162
British and Dutch		
East Indies ...	4,726,500	4,925,000
Japan ...	6,896,900	7,165,000
China, etc. ...	3,769,600	3,750,000
South America ...	10,421,800	12,425,000
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TOTAL...	459,377,300	474,333,268

The Proposed Banking Legislation.

The following are excerpts from the Abstract of Proceedings of the Bengal Chamber of Commerce regarding the proposed Banking Legislation:—

The Committee have expressed their agreement with the proposal that all institutions calling themselves "banks" should be required to be registered under the Indian Companies Act, VII of 1913. But, agreeing with the Bombay and the Upper India Chambers, they have recommended that persons and firms calling themselves "bankers" should not be required

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so to register. They have also urged that "banks" should not be allowed to register as private companies under the Companies Act. As regards the restrictions to be imposed on banks the Committee agree with the Government that a minimum amount of subscribed capital ought to be fixed by law. No company should, they think, be permitted to begin the business of banking unless its subscribed capital amounts to Rs. 10 lakhs, and its paid-up capital to Rs. 5 lakhs. It is also their opinion that no bank should be allowed to begin business until a sum of Rs. 5 lakhs of paid-up capital is in hand. Further, they agree that there should be a restriction on the full allocation of profits to dividends, pending the building up of an adequate reserve. They have, however, expressed no definite opinion as to the rate to which the dividend should be limited, or as to what would be an adequate reserve. These points they propose to consider when the Bill is before them. The Committee also support a suggestion, which has been made by the Bombay Chamber, that the Registrar of Joint Stock Companies should be empowered to refuse a certificate to a company whose articles of association show that it intends to engage in business such as ordinary trading in addition to the business of a banker. They have also made the following suggestions:—(a) That the use of the term "working capital" should be prohibited; (b) That no sum should be included in the assets of a bank on account of "goodwill"; (c) That no bank should be permitted to advance money on its own shares; and (d) That promoters of banking companies should be required to exercise discrimination as to the names of the banks that they seek to establish. As regards the important question of audit, the Committee have made no definite proposals at present. They prefer to have the Bill before them when discussing this question.

The Gold Problem.

The recent speech made in London by Sir Edward Holden, Chairman of the London City and Midland Bank, is important as coming from an eminent banker and containing three important pronouncements on (1) the Gold

Reserve; (2) the Gold Standard Reserve; and (3) the proposed State Bank for India.

THE GOLD STANDARD RESERVE.

Sir Edward Holden remarked that if the balance of trade turns against India, the Government of India must sell sterling bills against the Gold Standard Reserve in London. If the greater portion of that Reserve is held in securities, these must be realised or borrowed upon. Consequently if the Indian demand for sterling bills synchronised with a crisis in London, the resources of London would be required to support India just when they were needed for the home market. They would be unequal to this double demand. Sir Edward observed that a careful study of the evidence before the Indian Finance and Currency Commission clearly showed that a larger portion of the reserve must be held in gold, and he hoped that it would be recommended; in that case Bills drawn against gold could be paid in gold and the market would be benefited by the gold thus released. If this reform is the only result of the Currency Commission its labours will not have been in vain.

STATE BANK.

Then, referring to the question of the State Bank, Sir Edward Holden observed that it might be that the Royal Commission on Indian Finance and Currency will not come to any decisive conclusion with regard to the establishment of a Central Bank. The prejudices against it at present are very great, yet in the interests of India it is bound to come.

"The recent failures of the native banks are giving an impetus to the movement:—the resources of the three Presidency Banks only amount to an aggregate of 35 millions, while the accommodation they are capable of giving to the internal trade of India with a population of 315 millions is only about 17½ millions. The population of Holland is six millions, yet the Netherlands Bank provides accommodation to an extent of sixteen millions sterling. France, with forty million people, has a State Bank which provides accommodation to the extent of a hundred millions."

He hoped that before long all parties would

recognise that for the benefit of India the establishment of a great Central Bank could not longer be delayed.

GOLD RESERVE.

A third suggestion that Sir Edward Holden made was to the effect that if the joint stock banks in England held at least 6 per cent. of their liabilities in gold, it would increase confidence and greatly assist in preventing any crisis. The *Times of India* observes that there is a sardonic humour in the manner in which this suggestion has been met by the City Editor of the *London Times*. The *Times* writer maintains that the actual stock of gold in the United Kingdom is at least as large as that in Germany, because in addition to the forty millions in the Bank of England, there is as much again in the other banks and in circulation. Our Bombay contemporary neatly exposes the futility of this argument. It says, the inference underlying this statement is of course that the gold in circulation would be available in an emergency. But the case of those who object to a gold circulation for India is that gold in circulation is of little use in an emergency; therefore we must buy huge quantities of appreciated silver from America in order to swell the enormous volume of our token currency. But when it is a question of compelling the English joint stock banks to keep a fair holding of gold, then the gold in circulation in England is trotted out to emphasise the magnitude of the gold reserves. Yet is there not, in addition, this fundamental difference between the metallic circulation of England and of India? Gold in circulation in England is what Lord Goschen called "waistcoat pocket" gold—that is to say the gold required for everyday requirements. No one keeps more gold about him than he wants for his current needs, the whole of his balance being at the bank. Consequently in any crisis there would be the same use for gold in circulation as there is in ordinary circumstances. But a very large portion of the metallic circulation of India is what is commonly called hoards, but which we think is more correctly termed unbanked capital. Consequently it must come out in time of pressure. It would be interesting to see how the banker whose

views are reflected by the *Times* reconciles these differences.

British Capital and Indian Credit.

In reviewing the capital transactions for the past year from the valuable table supplied by the *Economist*, the *Times of India* notes some interesting results. The British Capital applications for the year amounted to £196 millions.

It is particularly interesting to study the destination of the British capital issued, because of its relation to the capital demands of India. Of the total of £196 millions, the United Kingdom took only £36 millions. The British Possessions absorbed £76 millions. Canada, as usual, was the largest borrower with £44 millions, Australasia received £18 millions, and South Africa £6 millions. India and Ceylon return the paltry total of £3¼ millions. Foreign countries took more than the British Possessions. The United States, for instance, borrowed £18 millions, Brazil £15 millions, the Argentine £11 millions, and Mexico £10 millions, whilst Russia obtained £9 millions and China £6 millions. The outstanding feature in this return is the insignificant place taken by India. The Indian borrowings, both in this country and in London, have been, observes the Bombay Journal, kept down because very large sums have been taken from revenue for capital requirements. It emphatically says that if there is any country which ought to finance its public works from capital, and to devote any surplus revenues there may be to ameliorative agencies, it is India.

It has been said that the credit of India is not strong enough to finance her capital requirements from borrowed money, and that therefore the surplus revenues must be drawn upon for the purpose. It is easy, remarks our contemporary, for those who have not to raise the money to be critical, but that is a position which it is difficult to accept. There is a very strong body of financial opinion in India which holds the belief that the Indian market, even for three and a half per cent. paper, has not been fully exploited. That is, without taking account of subsidiary securities, and the ease with which the Port Trusts have financed programmes ag-

gregating over sixteen hundred lakhs during the past decade, is an instructive indication of the potentialities of the indigenous market. A good deal has been heard of the decline of Indian credit in London, but this idea finds no support in the evidence before the Currency Commission. Mr. Gladstone elucidated the facts from some of the witnesses, and the most important of all was Mr. Alfred Clayton Cole, the ex-Governor of the Bank of England. He said that Indian credit had not declined relatively to that of other borrowers, if the quotations for her loans are compared with other trustee investments which have no fixed date of redemption. But apart from this authoritative expression, the mere figures given in the statistical tables of the export of British capital speak for themselves. The amount which India requires to borrow in London for her capital requirements is relatively small. The whole of this is immediately used for reproductive works. It may be broadly said that the loans are represented by shipments of British manufactured goods—rails and locomotives and stores. All these conditions make India a very strong borrower—indeed if her credit were properly developed, she ought to be the strongest borrower in London. It is an untenable proposition that a country so situate cannot borrow as much on reasonable terms as for instance Mexico, or the Argentine or Brazil. It is possible that she may have to pay a little more for her money than she has been doing; but that, she can well afford to do in view of the return that is immediately secured. If the organisation of Indian credit is seriously approached, both in India and in London, and the treasury system is reformed so that huge sums are not annually withdrawn from the money market during the busiest season of the year, then it is impossible to doubt that the annual borrowings can be made on a scale sufficient to finance the reproductive works without looking to revenue. According to the *Times of India*, there are plenty of useful purposes to which surpluses can be applied, without utilising them for the avoidance of reproductive debt.

The Scramble for Capital.

We should think that fashions change more often in the financial world than in the sartorial. Lord Milner in a recent address delivered to the students of the Birmingham and Midland Institute, suggested an inquiry into the "Scramble for capital" which is observable in every community which is economically progressive—a scramble which has, as its outward and visible sign, a rise in the average rate of interest. This investment rate is higher or lower according to the stage of economic development or the security of peace that a country has reached. But, broadly speaking, the tendency of the rate of interest to rise or fall made itself felt in every class of security and all over the world.

Lord Milner argued that capital all round was being obliged to content itself with a lower rate of remuneration. This fact dictated the policy behind the Goschens, *i.e.*, the $2\frac{1}{2}$ per cent. Consolidated Stock redeemable after 1923; for naturally Lord Goschen thought that the State should also benefit, along with other borrowers, from that universal change.

The miscalculation of this scheme was soon apparent. When the great fall in Consols began, it was the fashion at first to attribute it to temporary causes. Lord Milner thought that the great fall in the price of Consols was due, in some measure, to influences specially affecting stocks and British Government stocks generally. But they were not the only or principal causes of the fall. A similar fate had overtaken the stocks of almost every Government which had been in the enjoyment of first-rate credit. The fact simply was, said Lord Milner, that capital was no longer prepared to serve on the terms which it was willing to accept when those securities were created.

This strike of capital for higher wages is explained by Lord Milner as due to the following circumstances:—

- (1) The squeeze for capital in young countries like Canada, Germany;
- (2) The free movement of capital from one country to another causing a heightened de-

mand in any part of the world making itself felt, more or less, in every other part.

Analysing the cause, Lord Milner explained that it was not the total wealth of the world, or even its total capital, which affected the situation. It was only the fresh capital coming forward which could be of any use in assisting the expansion of old or the inception of new enterprises. It was the amount of this fresh capital, its abundance or scarcity, relatively to the demand for it which dominated the situation.

There was indeed an enormous and increasing production of wealth. But the corresponding multiplication of human desires, luxury and extravagance drew off this surplus wealth. Was it surprising, then, asked Lord Milner, that there should not be enough to go round, or that in their struggle, not to be left out in the cold, the various applicants should send up the price of that for which they were all competing?

Summing up, Lord Milner gave it as his opinion that it would be a long while before one could again see anything like a "glut of capital." The heightened demand for capital inevitably involves a heightened demand for labour also.

Lord Milner's opinions upon the modern "scramble for capital" and its effects in diminishing the popularity of British gilt-edged securities have been widely commented upon.

Some comments in the *Daily Telegraph* on Lord Milner's speech seem to us worthy of repetition. Our contemporary declares that there are "one or two important gaps in Lord Milner's theory," which it describes as "one-sided, in so far as it attributes the scarcity of capital and the rise in its market value entirely to new demands for it." Another and perhaps more potent cause acting concurrently, the *Telegraph* finds in "what may be termed, for lack of a better name, the 'scrapping' of capital. This is due, we are told, to 'the enormous depreciations that result from changes in financial sentiment. Every new fashion necessarily causes a certain amount of dislocation among existing investments, and that again involves scrapping of capital. The Stock Exchange, at the present

time, is encumbered with derelicts—the wrecks of ten-year-old booms. In each of them a large amount of capital has been scrapped, and this is a factor in the existing stringency which Lord Milner has overlooked."

Indian Banks.

The *Economist* writes thus of Indian Banks in its Banking number :—

The business of banking in India, especially as concerns the financing of foreign trade, is mainly carried on by banks with offices in London, the most important being the Chartered Bank of India, Australia, and China, which had 35 branches in 1913, and the National Bank of India, Limited, with 26. These two banks between them hold 46 out of the total 62 millions which represent the assets of Indian banks of this class. The rate of growth of Indian bank figures from year to year was slow until 1909, but has gained impetus during the last five years.

These banks, with the exception of the Indian Specie Bank, whose head office is in Bombay, are centralised in London, and mainly occupied with foreign trade; the home trader generally looks to his native bank for assistance. Banking in India on the English system is still in its infancy. At the present time there are but 35 registered Indian native banks of any size and importance. Of these only 10 were in existence 12 years ago. In 1913 the total paid-up capital and reserves of these banks amounted to approximately 11,50,00,000 rupees; their working capital 85,00,00,000 rupees. Of this total the three Presidency Banks of Bengal, Bombay, and Madras take more than half—they absorb more of the banking business of the country than all the other native banks together. These three banks are in a quasi-official position to some extent analogous to that of the Bank of England. They hold a certain amount of Government deposits free of interest, they act as Government bankers, and manage the Government debt; they issue weekly accounts and publish an official rate of discount, without, however, attempting to control the Indian money market. On the other hand, they are forbidden to raise money in London or to deal

in foreign exchange—a provision which doubtless was responsible for their safe continuance during the long periods in which Indian exchange dealing was an exceedingly speculative business.

The other Indian joint-stock banks which are not concerned with foreign exchange have in the last two decades come to play an increasingly important part in the Indian financial system, but the most rapid development has occurred since 1904, when the Bank of Burma was established. Accounts in detail would be impossible to obtain, but the following figures from the Indian official statistics show the trend of affairs. The table distinguishes the accounts of the Presidency banks, the deposits capital and cash reserve of purely Indian banks, and, finally, that part of the business of the great exchange banks which is done in India. The latter information is not obtainable from the individual reports, for these institutions do not show where the various parts of their business are transacted, but they give private information on the point to the Government of India. The statistics are not available since 1910, but the tendency of the last two years has certainly been in the same direction as that shown by these figures:—

PRESIDENCY BANKS

	Capital.	Public Deposits.	Private Deposits.	Cash.
	£	£	£	£
1890 ...	2,984,000	2,395,000	9,842,000	8,645,000
1895 ...	3,267,000	2,218,000	8,747,000	5,131,000
1900 ...	3,731,000	1,870,000	8,588,000	3,363,000
1905 ...	4,156,000	2,078,000	14,812,000	5,487,000
1910 ...	4,607,000	2,824,000	21,563,000	7,567,000

EXCHANGE BANKS.

	Deposits in India.	Cash Balances in India
	£	£
1890 ...	5,000,000	2,300,000
1895 ...	6,900,000	1,800,000
1900 ...	7,000,000	1,600,000
1905 ...	11,400,000	2,500,000
1910 ...	16,200,000	2,900,000

INDIAN JOINT STOCK BANKS (with Capital and Reserve exceeding 5 Lakhs of Rupees).

	No.	Capital and Reserve.	Deposits.	Cash Balances.
		£	£	£
1890 ...	5	340,000	1,810,000	370,000
1895 ...	9	630,000	3,780,000	640,000
1900 ...	9	850,000	5,380,000	790,000
1905 ...	9	1,080,000	7,990,000	1,160,000
1910 ...	16	2,510,000	17,110,000	1,870,000

A certain amount of reserve is unavoidably duplicated in this table, for the banks count as reserve the balances they hold at the Presidency banks. The figures perhaps exaggerate the weakness of the Indian position of the exchange banks, for in most cases they could rapidly strengthen their Indian position by buying Council bills in London and drawing on the Government reserves in India. In times of general difficulty, however, they are not in a position to contribute much to the general financial stability of India.

Most of the native banks are small concerns. The People's Bank, whose recent failure attracted attention to the position of the native Indian banks, had assets amounting in 1912 to 1,57,34,165 rupees and liabilities 1,41,50,045 rupees only.

The Unity of Finance.

Mr. J. C. Smith has a short article on the above subject in a recent issue of the *African Times and Orient Review*. The close business relations now existing between the great commercial nations of the West and the East, in these days of easy and rapid international communication, have unified all the nations of the earth, on the financial side of trade and industry, by means of the general acceptance of the legal enactments of these great nations which have established gold as the one and only international unlimited legal tender money material.

These enactments, which began in the United Kingdom, in 1816, were continued by the other progressive nations of the West and the East after 1870-71, until, for all practical business purposes, they have established gold as the only ultimate legal basis of the world's existing credit system.

"The world no longer consists of a number of separate national financial units which can each pursue a separate path in trade" or policy. These matters as they affect Japan, India and China, act and react, "for weal or woe, upon Europe and America, and *vice versa*; and as the years pass by, this tendency must become more defined," and more clearly and distinctly manifest even to the man in the street.

This world-wide financial unity should find outward and visible expression within each empire or nation, in the uniform weight and fineness of the gold coins used for internal wholesale and external business purposes, of the silver and bronze coins used for internal retail business purposes; and between the several empires and nations, this unity should manifest itself as the constant and enduring parity of exchange of the several imperial and national gold, silver and bronze coins, as the sign and symbol of the equivalence of the metallic contents of the coins of the several empires and nations of the West and the East—as this unity is now made manifest in the nations forming the Latin Monetary Union.

Within and throughout the whole length and breadth of the British Empire, sterling money—gold, silver and bronze coins—should be the one and only unlimited and limited legal tender money.

The cumulative influences proceeding from the coinage expression of the monetary and financial unity of the United Kingdom together with all the British dominions and territories beyond the seas would operate for the strengthening of the economic basis and the monetary ties of imperialism.

Every one of the diverse kinds of special coins now issued by any of the constituent members of the British Empire should be withdrawn from circulation and demonetised (sterling money being promptly and freely issued in exchange therefor) as insidious and invidious elements of economic disintegration, reacting adversely upon the influences which engender the economic and political integration of the developing United Empire.

By these means the several nations of the West and the East would absorb and retain the supplies of silver and bronze coins needed for internal retail business purposes, leaving the world's supply of gold and gold coins available for internal wholesale and external business purposes within and between the several empires and nations.

Gold is the money of the bankers and the ultimate legal basis of the world's credit system.

Silver and bronze are the money of the people and the actual media of exchange for ultimate consumption purposes.

Public Utilities in Germany.

The slow-footed, if scarcely moving, public enterprise in India might possibly benefit if attention were directed to studying the system whereby private concerns and public bodies in continental countries co-operate in the discharge of public services. The *Morning Post* of November 4th summarises a very interesting report on the matter by Sir Francis Oppenheimer, the British Commercial Attaché at Berlin. According to this authority, "the works for the supply of electricity, like those for gas and tramways, were in Germany at first purely private ventures. Then followed a period of reaction in favour of municipal trading. At present, however, the tendency is all in favour of a combined system, under which the works are managed by a private company, in the working of which the interest of the community as such is safeguarded by a participation in the capital and in the management of the company. This combined system has found favour with the municipalities and the companies alike. The municipalities admit that a purely public enterprise has been found too thoroughly tied to move as rapidly as modern circumstances of trade and industry may require; that the best managers cannot be secured among municipal officials with only municipal pay; that the town councils as controlling bodies, show a lack of technical understanding; and that the expected profits have failed because the rate of charges had to be lowered in deference to the demands of the people's representatives, or because wages

had to be unduly increased. The profits under public management were further curtailed by unavoidable concessions to the public of unprofitable lines, low tariffs, a certain luxury in the rolling-stock, etc." These are, indeed, the usual drawbacks of municipalising such concerns; and the opposition raised against complete municipalisation on this score certainly finds justification in the light of general experience.

ADVANTAGES OF CO-OPERATION.

It has been found that the above-mentioned and other disadvantages have been for the most part eliminated by the co-operative method described. The chief inducement for private concerns to work electrical enterprises together with a municipality as a partner is declared to be "the greater facility then afforded of financing enterprises of the necessary modern dimensions. Municipal credit, which is cheaper than private, can help them, for example, in a variety of ways. Again, it is notorious that many advantages, especially from official quarters, can be more easily obtained if the works are mixed rather than private, not only from the municipal authorities themselves, but also from the district or provincial authorities, e.g., in connection with the use of roads, thoroughfares, etc."

A SPECIFIC INSTANCE.

Sir Francis Oppenheimer's report points out that mixed private and public interest in a concern can under German law be effected in a variety of ways, among them being the lease of a municipal concern for working by a private company; co-operative societies, share companies, and partnerships with a limited liability. "The most important of all the electrical power enterprises owned partly by private and partly by public bodies," it is stated, "is the Rhenish Westphalian Electricity works in Essen, which owns several tramway-systems and provides electrical

current and gas for nearly that whole area of Rhenish Prussia which embraces the Government district of Dusseldorf. Out of a share capital of 38,000,000 marks in 1912, public bodies held 12,949,000, or about 30 per cent. The municipality of Essen held 4,725,000 marks and two other municipalities, eleven rural districts, and two communities were also shareholders. The municipalities and rural districts each had a representative on the supervising board, public bodies having 14 out of a total membership of 24. The total share and debenture capital is to be increased to over 100,000,000 marks (about £5,000,000), apart from long loans which have been granted for the creation of power stations."

In a country, like India, where capital is too shy to come out without either the direct guarantee of Government or the confidence of a public body like the Local Boards and municipalities supervised by the Government the obvious advantages of a combination of private enterprise with public concerns, like the bodies above mentioned, should not be left unexplored.

Bank Failures.

The following is the list of banks registered under the Indian Companies Act which suspended payment recently:—

No.	Name of Bank.
1.	People's Bank of India, Lahore.
2.	Amritsar Bank, Lahore.
3.	Hindustan Bank, Multan.
4.	Doaba Bank, Amritsar.
5.	Lahore Bank, Lahore.
6.	Indian Exchange Bank, Simla.
7.	Industrial Bank, Ludhiana.
8.	Bank of Peshawar.
9.	Kathiawar and Ahmedabad Banking Corporation.
10.	Credit Bank of India.
11.	Bombay Banking Company.
12.	Indian Specie Bank.

The Educational World.

A School for Village Artisans.

We are glad to read that the Central Provinces Government has opened, in Nagpur, a school under the control of the Director of Agriculture for the benefit of the cultivators who at present have no one in their villages capable of repairing and adjusting farm implements and machines of modern pattern.

This school which has now been in existence for some time is already proving popular with the "Malguzar" class, remarks the *Jayagi Pratap*. In an age when farm labour is becoming more scarce and costly, landowners and cultivators have in some parts come to realize the importance of the use of labour-saving implements, and it is a happy sign of the times to find the landowning class now waking up to its interests. The school undertakes to train a carpenter or blacksmith boy thoroughly for the requirements of village agricultural work. The next session will commence on the 1st July. There are three things which determine the eligibility of a boy for admission:—(1) he must be the son of a village artisan; (2) he must have passed the fourth standard vernacular; (3) his age must not be more than 15 years.

Agricultural Education.

At the annual meeting of the Teachers' Guild at the University of London Buildings, in connection with the Conference of Educational Associations, a discussion on Rural Education took place.

Mr. A. D. Hall read a paper on "The Organisation of Agricultural Education in England and Wales." He traced the record of the attempts which had been made to deal systematically with agricultural education, beginning with the Royal Agricultural College at Cirencester, and said that to the agricultural colleges must be attributed the change which had come over the attitude both of farmers and of the public at large towards the knowledge

and investigation in connection with the land. The advent of supplies of money from the Development Fund had enabled the Board of Education to exercise a general co-ordinating power and to lay the foundation of a scheme to provide for all the needs of the rural community. Time and the co-operation of the local authorities, and, above all, a desire for education on the part of the people themselves, were necessary to make that scheme a real factor in the national prosperity. The most notable deficiency in rural education was the gap existing between the primary school and the farm institute, a discontinuity which cut off the young countryman from all contact with learning. The rural continuation school must be made a reality, and some contact must be kept with the growing boy between the ages of fourteen and eighteen.

Commercial Education for Indian Youths.

Mr. Suchet Singh contributes to the January number of the *Hindustan Review*, an article on the above subject. He says that this age of modern and complicated commercialism calls for men who have been trained scientifically and can perform their various duties efficiently.

To-day the great merchants, manufacturers and bankers have realized the advantages of commercial education and have extended their assistance extensively for the furtherance of this particular object. This spirit has been manifested by the different commercial associations of Bombay, in establishing a department of commerce in connection with the Bombay University. In the West, this subject is one of the compulsory requirements in the high schools and colleges and great attention has been paid to it. Here one example is cited about the progress and importance of these commercial schools. The School of Commerce, Accounts and Finance in connection with the New York University was established in the early part of 1900 with sixty students and to-day the number

of students has gone up to two thousand and sixty. This school to-day has the largest number of students in the world.

Indeed, there is a special need for education, and for ideals, in commerce and trade because it is the foundation of civilized society. The writer remarks that most of our young men who are studying in different institutions to-day in India, have confined themselves mostly to the so-called "learned professions," (Law, Medicine, etc.,) and they have failed to see the fundamental advantages of other professions, which are equally important in manual labor, in business, in trade and in commerce.

Then he shows how important is commercial education to a nation, as commerce and the extension of trade are now the all-potent factors in determining the policies of nations.

Banking Education.

The profession of a banker, said Sir Edward, Holden in a speech delivered in London, is one of the most important of all professions; and it is also one of the most interesting. "I venture to say that if the young banker at the age of nineteen, commenced to read and study all the treatises written on banking subjects, he might continue to do so during the whole of his life and yet find when he arrived at the retiring age, there would still be much of the subjects which he had not covered. To become a thoroughly equipped banker, it is necessary to be acquainted with all the important banking systems of the world and with the connecting links between the finance of this and other countries. If he aimed at this he would find it necessary to become engaged in a study of the currency or the circulating medium of practically every country, he would find it necessary to study the movements of the imports and exports of all countries and he would require to study the question of the production and distribution of gold throughout the world. In fact no limit can be set to the study of finance and banking. He will find the words 'credit,' 'loan' and 'reserves' running through the whole of his studies."

Self-Supporting Education.

Captain J. W. Petavel, the co-adjutor of our

illustrious countryman Dr. Rabindranath Tagore, has an interesting disquisition in the columns of the *Commonweal*, on the sociological value of Educational Colonies Associations in the promulgation of which in India both of them are equally interested.

When the school years are to be followed by a period of educative employment, it would be possible to give a good manual training in the elementary schools; for lessons could be continued if necessary in evening classes during the "educational colony" period.

The "educational colonies" would produce things mainly for their own use; but in every country there is some work which the youths could do for the public, if it were necessary to make the educational system pay for itself entirely.

To explain "self-supporting education" in another way:—the children should have a good schooling, and those who have left school, the community generally, should pay for it. Modern industrial methods have rendered it possible for the boys to pay as soon as they leave school by giving their labour for a time in "educational colonies." Receiving their remuneration in kind, they would be better off than they could be by going in for any other employment. The only sort of sacrifice, therefore, they would make would be that of taking their remuneration in produce instead of "having the money to handle." Evidently, however, this discipline during adolescence would be the best possible thing for them. *The system would be made educationally good by being made economical.*

Then, Captain Petavel speaks of the effect of educational colonies on the solution of social questions. He remarks, in conclusion, that the management of this industrial republic would call for the display of civic virtues; but those who had once tasted freedom and well-being, and who knew what they had to do to continue to enjoy them, could be counted upon to display the necessary qualities.

Co-operation in Elementary Schools.

In the course of his concluding speech, the Hon'ble Mr. P. S. Sivaswamy Aiyar, C.S.I.,

who presided over the Second Madras Provincial Co-operative Conference said that, in the field of co-operation, foremost among the directions in which work was to be done, was the work of education and propagandism. As regards the work of education, the Conference passed a resolution that Co-operation should be a subject of instruction in Elementary Schools, commending the resolution to the attention of the Director of Public Instruction. While agreeing with the Conference as to the importance of education, one might, perhaps, without any want of deference to their views, doubt whether Elementary Schools were the best and most suitable places for inculcating the principles of co-operation. The President said that he had been putting the question to himself whether it was possible to impress upon the pupils of elementary schools the ideas of limited liability and unlimited liability and all the various basic principles of co-operation. He readily conceded that co-operation should form a subject of instruction at some stage or other of the school course, but they must consider the demands made upon the pupils of elementary schools and their capacity and age. They had a demand from the Agricultural Department, and he believed also from the Agricultural Conference, that agriculture must be one of the subjects taught in elementary schools. As a member in charge of sanitation, he should very much like that sanitation should be a subject taught in elementary schools. Almost every department would like that its special hobby should receive the special attention of pupils. While he was more confident about sanitation, he doubted whether pupils in elementary schools would be capable of receiving instruction in the principles of co-operation. It was possible that it might be a suitable subject of instruction in the higher stages of school course. In Germany, he believed, there was a university for teaching co-operation. Another expedient suggested itself to him, and he put it before them for what it was worth, and that was that before the Director of Public Instruction was called upon to introduce co-operation as a subject of study in Elementary Schools, it

might be better if managers of private schools might introduce the subject in such classes as they might think sufficiently advanced to benefit by the course of instruction in co-operation. They were told that a text book had been prepared and that co-operation was being taught in Mysore elementary schools. Possibly, sufficient time had not elapsed to enable them to judge of the measure of success which attended that experiment. If schools under private management tried the experiment and succeeded, that success might strengthen their hands in approaching the Director to introduce it as a compulsory subject of instruction in all elementary schools.

Industrial Education in Madras.

The following extract from the report of the Superintendent of Industrial Education, Madras, for 1912-13, will be read with interest in connection with an article on "Hand Tools," which was published in the December number of the *Wealth of India*, page 863:—

Regarding the Mysore Tannery at Bangalore, we read that Mr. Guthrie introduced a considerable number of improvements into the methods of manufacture followed at Bangalore, more particularly with regard to the proper use of modern tools and appliances. The Indian village tanner as a rule uses only one or at most two tools for all the different processes in his trade and consequently wastes a great amount of time, to say nothing of the inferiority of the work done. Even in the more up-to-date factories in India much can be done in the way of making the labour more efficient by the use of modern tools for certain processes. The greatest improvements in the leather trade that have been done in Europe and America during the last few years have been in the processes of finishing leather, and very much can be done in India in teaching how to give a finer appearance to the finished material. One of the greatest difficulties met with in Bangalore and elsewhere in India, is to keep the grain of chrome tanned hides tight, and during his stay in Bangalore, Mr. Guthrie did much work on this subject with fairly satisfactory results. At least one class of leather, the dressing of

which was taught to the staff and workmen at Bangalore, is now a regular line and is commanding a ready market. Fresh outlets for certain classes of hides that did not admit of working up in the ordinary manner were considered and in some cases discovered, and it is just possible that an export trade may be established that will prove to be a paying outlet for the excess of certain classes of leather for which the demand is not great in India. The Indian workman, in many cases, is not aware of the existence of cheap, up-to-date and handy tools; much less to handle them.

Evening Continuation Classes.

We are told that the results accruing from evening continuation classes are in reality poor. It is not surprising, seeing that the students that attend such classes come brain-fagged after the day's work. In most cases their minds are unreceptive. Further, the classes are far from homogeneous, discipline is hard to maintain and, in the majority of cases, it is said, the evening classes aim too high.

The remedy to make the continuation schools more successful is suggested by the *Journal of Education* on the following lines:—

(1) There should be no break between the elementary schools and the secondary schools. The object of the continuation schools should be to prevent the educational waste in those plastic years after a boy or girl leaves school and is turned into the workshop or on to the streets with little or no supervision, to conserve the educational results of school-life and to develop it wherever possible, to guide the youths and girls over those critical years of early "freedom" by some form of compulsion, exercised either at home by the parents or at the factory by the employers.

Then about the types and aims of evening classes. There should be commercial and technical classes for those who were considered fit to profit by them. The great need is for classes that are not educational in the narrow sense, but educational in the widest possible sense. Evening classes ought not to aim at converting a skilled artisan into a clerk, or, for that matter, into a more skilled workman. The

average youth from the workshop has had quite enough of his trade and ought to be taken out of its atmosphere. Vocational evening classes are in the majority of cases worse than useless.

After his day's work is done, the youth would gain refreshment both for his body and his mind by the recreative study of subjects that would broaden his views of life and widen his outlook. Continuation classes should perform the function that out-door games and country walks do. All too long have such things as physical exercise and recreative pursuits been lost sight of. Along with this the student might be instructed sympathetically in the wonders of his own country's history and the formation of the constitution. The glories of his literature could be brought to his notice and some idea given of the duties of citizenship. Most evening classes, then, ought to partake of the nature of a club where manual and physical training is given, and where the members' minds are refreshed in the ways mentioned above. It is becoming more and more evident that continuation classes can do little or nothing—in the majority of cases—in the field of education as narrowly understood, but they can be made useful instruments on the side of civilization.

Commercial Education.

The necessity that exists in India for a sound commercial education has been painfully emphasised by the recent financial crisis in Bombay, Karachi and the Punjab. A good many of the banking failures may be directly attributed to want of commercial enlightenment in bank-managers, auditors, directors and credulous and ill-informed shareholders. Taking Prof. S. R. Davar's plea for commercial education recently published, as its theme, the *Commerce* reviews the situation and the lessons taught by these failures.

The old prejudices against a commercial training are vanishing in the West as well as in the East.

The spell of the learned professions and military commissions which were once considered to be the only correct outlets for the activity of the educated sons of gentlemen is broken by

the advent of the multi-millionaire merchant, prince and banker, who have taken, by force as it were, their stand in all the social circles which were once closed to them. In India, the same transition is apparent, though very slow, and all we want is to make it march much faster than it seems inclined to do.

The bias in young men in England against learning commercial subjects at school was combated by sheer competition from the continent. Now, however, pitted against fast advancing rivals, English business men have established systematic training in all subjects connected with commerce.

Some fifteen years ago the London Chamber of Commerce took the lead by appointing a special committee to formulate a scheme of education best suited to the rising generation of business men. The scheme thus recommended is the one under which the examinations in the various subjects of commerce are held yearly all over the world by the London Chamber. This scheme of examinations has succeeded so well that as per their latest communication the London Chamber has now made these examinations half-yearly.

Besides this scheme of holding examinations for a general test of commercial education, other schemes for specialised branches of this education, such as position of public accountants, the position of a secretary of a joint stock company, bank management, actuarial work in a life insurance company, etc., were also formulated. The Universities of Birmingham, Manchester and Leeds have also started Faculties of Commerce, and the Bombay University has also taken this matter up.

It has been the general complaint that Indian youths educated in Universities for Arts Degrees do not take to business very kindly.

The fault lies not with the young men, but the result is quite natural, because their liberal education develops their faculties in quite a different direction and a leaning to the literary line is the consequence. If, on the other hand, young men were to be left in business colleges soon after their first general education test—say, the matriculation or school final—where

education in commerce would cultivate a taste for the subject of their study, the result would be quite different. It is, therefore, urged that the Indian parent who wishes his son to take to business should see that the boy is specially educated for business, and specially a merchant father who wishes his son to follow his line cannot do better than give his son a sound commercial education, for, not only would the young man readily take to commerce but would be of great assistance in improving and expanding his father's business.

Technical Education in the U.P.

The scheme elaborated by Sir John Hewett's Industrial Conference in 1907 has been to a very great extent thrown into the melting pot as a result of the Atkinson-Dawson report; and the upshot is that, in the words of a Resolution which has just been issued at Naini Tal, "it has now become essential to make a conspectus of the whole position and to collate the results of the work hitherto carried out with a view to framing a properly concerted policy for future advance." The Resolution goes in some detail into the failures of the past, and outlines the proposals of the Government for the future and from the earnestness with which Sir James Meston invokes the co-operation of all concerned in the industrial future of the province as an essential condition of a "stable and well co-ordinated scheme," it would appear that the co-operation has not hitherto been all that might have been expected. This impression is confirmed when we read of the textile class established at Roorkee, that it is equipped with a weaving and spinning installation and possesses a competent instructor, but that "hitherto there have been no students." A department of technology was set up at Roorkee with a view to "attract students related to capitalists and manufacturers who, in the natural course of events, would become managers of the business side of mills, factories, and engineering firms, so that, after obtaining the necessary practical experience, they might be fitted to manage the technical side too." It is regrettable that this plan also "has completely failed. The relations of capitalists have not been found eager to devote themselves

to practical work, and the only aspirants have been a few youths who have no particular connection with any existing industries.' In regard to the industrial schools, it is stated that "there is no general desire in Cawnpore that the Government should attempt to train artizans for its mills," and even the much advertised technological institute at that centre, with its special chemical equipment, threatens to be a white elephant. One of the subjects which it was to make especially its own, that of sugar, has now been handed over to the Agricultural Department. With regard to leather it is announced that no investigation is desired by the firms who control this particular industry in the province and already employ their own chemists." It is not surprising that in the face of these discouragements the Government should hesitate to proceed with the scheme for establishing a technological institute in Cawnpore, or to "think of spending a single rupee in bricks and mortar" until it has obtained from the commercial community of the Province "a definite expression of opinion regarding the particular branches of industry in which Cawnpore is to specialise." Sir James Meston's main proposals for the future include a representative Board of Industries to co-ordinate the work of the technical institution and to keep the Government in touch with industries and technical education; and a bifurcated technological institute to be established at Roorkee and Cawnpore, the former confining itself mainly to engineering and the latter to chemical research, with textiles included later on if it be so desired. It is also suggested that the Cawnpore Institute should deal with such subjects as dyeing and bleaching of textile goods, tanning, paper-making, oil seeds expression, and other cognate lines of enquiry. The mechanical apprentices class is to be moved from Roorkee and absorbed in the mechanics class at Lucknow, and finally industrial schools are to be continued and extended under the appellation of technical schools. These and other propositions are, however, tentative in their character, and the Lieutenant-Governor expresses the hope that they "may be so carefully scrutinised by all

competent to judge in such matters that it may be possible for the Local Government to make further advances in the full confidence that all aspects of the case have been thoroughly considered."—*The Indian Agriculturist*.

Agricultural Education in India.

The proceedings of the Board of Agriculture which held its last annual sittings in Coimbatore recently, summarised the work hitherto done by the Government to spread agricultural education in India and the line of work to be adopted in the future. Important resolutions were discussed and passed.

Mr. MacKenna said that the course originally prescribed in the standard curriculum for Provincial Agricultural Colleges as laid down by the Board of Agriculture and amended in 1908, are, in most cases, not suited to the class of students that the colleges are intended for. In Bombay, while the percentage of passes in the examinations is high, the question of the utility of and the demand for a course is obscured by its being made the road to a degree. College graduates on the subordinate staff have with very few exceptions continued to show no power to develop an original line. In Madras there is noted in graduates a lack of intelligent inquisitiveness and power of independent thought. Similarly in the Punjab, there is too much cram and too little power of practical application. The principal objection to the syllabus, in the opinion of many, is that it consists of a number of independent courses, each complete in itself and all compressed into an allotted time, without any reference to the capacity of students in general, or, of Indians in particular, or, to the limits to which any of the subjects can be pursued with advantage in a general education or by the practical agriculturist. Here we are at once confronted by the very small proportion of literacy amongst the cultivating classes of India. It would be interesting to know for all provinces up to what ages and to what extent children attend school. The figures for Madras are probably typical of the conditions in many other provinces. In Madras of 500,000 children who enter the infant class only about half pursue their educational career

further. It may be hoped that sooner or later the spread of education may improve the situation but at present it seems clear that the only way to get at this great uneducated mass is by demonstration of things in their own fields. It is pleasing to find that in certain provinces there is a growing demand on the part of large cultivators or landholders for agricultural education of some kind.

Then, Mr. MacKenna explained why the Agricultural College at Coimbatore and those in other Provinces had failed to attract the right persons. He said that the attempts made have been to build from the top rather than from the bottom. It has been assumed that research was sufficiently developed to provide material for teaching and that the general education of the provinces was such as to permit of the assimilation of such training, conditions which exist in few, if any, of the provinces. In some, the standard of English education is higher than in others. In some, agricultural research has been going on for many years, in others it has just begun. In future, uniformity will not be insisted on, but it will be open to all the provinces to reconstruct their educational policy on lines which they consider most suitable to attract the right class of pupil. If in the earlier stages the provinces are not hampered by having to work up to what, in the conditions of education and local research, might be regarded as a practically unattainable ideal but are permitted to adapt these courses to local conditions, then he saw no reason why from this well-laid foundation they should not later get the superstructure more satisfactory than they had in the past.

THE COMMITTEE'S REPORT.

The report of the Committee on education was based on the views of Deputy Directors of Agriculture who at a number of meetings considered the points referred to them, regarding the education of cultivators. The Deputy Directors were of opinion that the present education of cultivators seemed to the majority of them to be defective, in that their power of observation and reasoning faculties were not sufficiently developed and the cultivators were,

therefore, unable fully to appreciate the Department's propaganda, except in cases in which demonstration in their own village fields was possible. The Deputy Directors' Committee was also of opinion that elementary education should be of a general nature, and was not within the purview of the Agricultural Department but that the Board should express the willingness of the Agricultural Department to confer with the Education Department and to discuss the question of adaptation of education to rural conditions.

After an informing discussion, the following Resolutions were passed:—

(1) "That the Board desire to express their approval for the proposed two years' course at Coimbatore and suggested as suitable for consideration of other presidencies."

(2) "That the general educational standard embodied in the Matriculation or University Entrance Examination does not provide a sufficient basis to enable the student possessing these to take full advantage of the higher instruction imparted in the existing Agricultural Colleges in India and the Board recommend that general higher education than the Matriculation is necessary in all students admitted to such a course."

(3) "That the Board consider the question of sympathetic co-operation between the Educational and Agricultural Departments in adapting to rural needs to be one of great importance. In consequence, they desire to endorse the recommendation of the Deputy Directors' Subcommittee as to willingness of the Agricultural Departments to confer with Educational Departments, to discuss the important questions and to endorse the principles enumerated in the report of the Committee of the Board of 1910."

Another Resolution which was of considerable interest was to the effect that the Board should recommend for consideration of the Local Governments the importance of schools on the models of Vernacular Agricultural Schools in Bombay.

A Muscular Theory of Education.

To-day educational ideas are much in the

crucible and any one may stalk forth his theory without the apprehension of being dubbed a faddist or a visionary. That there is something fundamentally wrong in the present methods of bringing up children is now a settled conviction among thinking people. Perhaps that is due to the fact that life is now a very different thing from what it was fifty or a hundred years ago. Instead of walking we ride in automobiles; instead of cultivating our own food, we have it left at our doors in packages or cans; instead of weaving and making our clothes we buy them.

The Yankee is an expert thinker in this line and like many other modern improvements, his Interlaken School is a protest against accepted ideas in American, or for the matter of that, any system of education.

According to a recent issue of the *Scientific American*, the fundamental idea of the system is that the human mind progresses most satisfactorily along with muscular and hand training. It is said that it was not until man began to use his forward members for other purposes than locomotion that he really began to progress intellectually. As long as the infant has to lie prone, its mental progress is extremely limited; as soon as it begins to creep and walk, its intellectual life begins to flourish.

We gain practically all our knowledge by the use of our hands and the rest of our muscular system as infants. There is not a single one of us who would have any first-hand knowledge of iron or any other metal unless we were able to take it into our hands. Our eyes tell us that it is gray in color, that it is crystalline, that its surface is smooth. All these things, however, might be equally true of painted wood. It is only when we take the metal in our hands, attempt to bend and to break it, that we really understand its nature. Not only do our muscles enlighten us as to physical facts; they interpret the deepest emotions of the soul. Pleasure, pain, agony, remorse—all these feelings find their appropriate spokesmen in facial expression.

It is a fact of the greatest significance for educators that the function of speech is localized

to the third frontal left lobe of the brain, in close proximity to the motive center that regulates the right hand. Left handed persons have the center of speech in the right lobe. In other words, the faculty of speech is closely related to the faculty that controls the hand. Both are developed in the same parts of the brain. Teach a left-handed child to use its right hand and a bad case of stammering sometimes results. The two highest attributes of man—speech and the hand—seem to be really a part of one and the same intellectual faculty. Any attempt to educate a child without completely training the hand is fundamentally wrong.

Clearly, what we really need is, according to this theory of mental culture, something like the hand training that Interlaken scholars get upon their farm—not the smattering of manual training such as most educational systems have introduced in recent years. Unless the modern educational system, finds some adequate substitute for muscular training, its graduates will be only half men or half women. Not only is the body stunted, but the mind—for the mind itself really grows and develops as a result of muscular and especially of manual training.

It is to supply this need that the new schools have been established in Europe. In the founding of the Interlaken School the basis for an extension of this system to the United States was laid.

In the creation of the Interlaken School, it is claimed that the boys have lived over the experiences of the early American pioneers. It is also at once said that the school's primary purpose is not to make farmers or carpenters or orchardists, but to make men. Its theory in giving the boys this manual labor is the fundamental idea elaborated at the beginning of this article, that the human mind progresses most satisfactorily along with muscular and hand training. The product at which the school ultimately aims, therefore, is the sympathetic, understanding, resourceful, clean living, clean thinking, American gentleman.

Departmental Notes.

INSURANCE.

Theory of Life Insurance.

According to Mr. W. F. Dix, a mutual life insurance company is a company of people banded together to minimize the financial loss suffered by the family of each member on the occasion of his death. By it, the family of each member in the company is provided with a sum of money bearing a scientific relation to the yearly sum the member has paid. Theoretically, the sum of the amounts paid by the company to all the families at the deaths of the several members exactly equals the amount they have been annually paying in small sums, less, of course, the amount necessary to conduct the affairs of the company, and plus the amount which the common fund has earned in compound interest. A life insurance company does not know which individuals out of every one thousand policyholders at the same age insuring at the same time, will die this year, next year, and so on, but it knows that out of that one thousand so many will die this year, so many will die next year, so many the year following, and so on, and mortality statistics in this country are now based on so much experience that they have become an exact science. Thus, the individual knows that, as soon as he deposits his first premium, the wealth and the strength of the many are back of him individually."

Necessity of the Insurance Agent.

Possibly, in the distant future, when we are all automatically insured at birth by a beneficent Government which pays our premiums and takes them out and something over, later on in taxation, the life agent's occupation will have gone, says the *Montreal Chronicle*:—"But that is not a prospect that need worry unduly the present generation of agents. Meantime, a universal usage in the sale of commodities is a sufficient reason why for the life agent's existence. The fact that the few insurance organizations which have done without salesmen have made but little headway, is practical evidence of the necessity for the insurance agent."

ECONOMIC PRODUCTS.

Tomato Seed Oil.

Tomato seeds, once a waste product of the canneries of Italy, are now made to produce an oil, the rapid-drying quality of which is said to be excellent. The oil is used in the making of varnishes. Italy has many large tomato canneries, and in that country it is customary to remove the seeds carefully before canning the fruit.

Cow and Calf Hair.

The Canadian Trade Commissioner in Leeds recently stated that a considerable trade is done in his district in cow and calf hair, which is used among other purposes for the manufacture of horse rugs, cheap carpets and mats. In regard to the shipments of hair, it may be stated that one thing which commends it strongly to the spinners is its freedom from impurities, and on this account it should be well washed and dried before being baled. For export to that market, the hair should be press-packed and put up in bales weighing from 224 pounds upwards.

Paper Umbrellas.

The vegetable oil used in making paper umbrellas in Japan is pressed out of the seeds of the rubber plant. This oil, we understand, is made in the various islands famous for oil and seeds from these plants. Sandy ground is favoured for the cultivation of the plant and the oil is extracted from the seeds by presses. The yield of seeds is estimated at twenty bushels per acre. The annual production throughout Japan amounts to 350,000 bushels, from which over a gallon of oil per bushel is extracted. The oil before it is used is boiled and then cooled until it can be applied by hand to umbrellas with a piece of cloth or waste. No machinery or tools are used in applying the oil. When the oiling is completed the umbrellas are exposed in the sun for about five hours. This oil is also used in making the Japanese lanterns, artificial leather, printing ink, lacquer, varnishes, oil paper, and paints.

MACHINERY AND APPLIANCES.

Labour-Saving Machinery.

It is said that, in order to encourage the use of machinery and labour-saving appliances on estates in the Tropics, Gold Medals will be offered at the Cotton, Fibre and Rubber Exhibition, to be held in London in June, 1914, for the best samples of (1) copra, (2) cocoanut fibre, (3) Sisal fibre, (4) Ceara rubber, and (5) Robusta coffee, provided that such produce has been mechanically prepared, and not merely sun-dried or cleaned by hand.

Fruit Grader that does not Bruise.

A grader has been perfected abroad which largely overcomes one of the greatest objections to the use of fruit graders, that of bruising the fruit. This machine differs from other types of grader in having sizing rollers which lift the fruit and keep it free, and a belt that keeps the fruit turning so that it will drop through the proper section into the basket. The grading is even and rapidly done, more than a hundred bushels of peaches, for instance, having been graded in one hour. A machine which will grade the delicate peach should grade any fruit well.

Husking Rice.

The most popular method used by the Burmese for husking rice is by the "chike-set," or revolving mill, which is worked by hand. This mill is made of woven bamboo. The lower half is stationary, with a cone-shaped head of hard wood and bamboo extending within the upper half, which revolves around this cone when pushed backwards and forwards by means of the handle. Hard bamboo twigs, extending crosswise in the upper portion, husk the rice against the cone. Between the two sections is a small opening, through which the rice falls into a plate or basket. The other method is by a wooden mortar, the pestle consisting of a block of wood at the end of a heavy bar working on a lever, which is raised and lowered by the weight of the operator's body as he steps on and off the further end of the bar. These machines are manufactured in the neighbourhood of Rangoon.

SCIENCE AND INVENTION.

A New Vegetable Ivory.

According to a consular report, a new vegetable ivory is made from the albumen of the fruit of a certain small palm, of the genus *Hyphæne*, growing in the forests of the French Sudan. The product is said to resemble strongly that of the ordinary ivory-nut (*Phytelphas macrocarpa*) of South America. The nut of the doom-plum (*Hyphæne thebaica*) has long been used for making rosaries and small ornaments.

Making a Tire Puncture-Proof.

A patent has been issued to Thomas S. Causey and William Dugan, both Americans, for a composition of matter consisting of dextrin, ground asbestos, magnesia, glycerin, wood alcohol and water for preventing leaks in pneumatic tires. A surplus of the composition will tend to maintain a position adjacent the ground during the rotation of the wheel and as soon as the puncture occurs, the air in attempting to escape forces the material into the puncture, blocking the escape of the air.

A New Synthetic Tannin.

What has led to be a successful synthetic tannin has been discovered says *Capital*, by Dr. Edmond Stiasny. Assistant Professor of the Leather Industries Laboratories of the University of Leeds. The new tannin, which is called neradol, is made from tar distillation products, the synthesis being carried out by sulphonating cresylic acid and combining it then with formaldehyde. The white colour of the neradol-tanned leather and the brightening and bleaching effect of neradol when used in combination with other tannins (vegetable and chrome) are especially noteworthy. Neradol is somewhat similar to ordinary tanning extract, and forms a light-brown solution in cold water. It is pure tannin of 30 per cent. strength according to the hide powder method, and can be used in smaller quantities to obtain the same effects as those at present produced by the ordinary agents. Dr. Stiasny recently showed samples of leather ranging from light glazed kid to sole leather produced either with synthetic tannin alone, or with it in combination with vegetable tannin, chrome or wood pulp liquors. In every case the leather was supple, fine and strong in the case of the light skins, while the sample of insoling belly was flexible and clear and light in colour.

HEALTH AND HYGIENE.

Opium Poisoning.

According to the *Indian Spectator*, in poisoning by opium, coffee is one of the most useful antidotes, but it should be fresh, pure and strong, and taken without milk or sugar. The infusion of one ounce taken every twenty minutes is considered a suitable dose.

Water During Meals.

It is claimed that a healthy person may consume a goodly quantity of water with the meals, having it of a temperature to suit the stomach, with advantage to digestion. Ice cold water should not be taken, and there are conditions, of course, when it is imperative to limit the supply of liquids; but for a person in good health, liquids with meals are not harmful, according to latest investigators.

Scorpion and Snake-Bite.

A piece of cloth dipped well in kerosine oil, and applied over the affected part, will in a minute remove the keen pain and cure the scorpion bite once for all. This is also beneficial in cases of bites by centipede, wasp, bee, and other poisonous insects.

Living on Potato.

A well known American has just completed a two month's diet of potatoes and margarine proving that a man can live and work reasonably well on a potato diet plus a small amount of nitrogen or protein. For two months he limited his daily food to, from two to four pounds of potatoes and 1½ ounce to 4 ounces of margarine, and his only drink was water. He says he never felt better.

Exercise for the Lungs.

If one wants to keep well and fit through the winter months begin by daily standing in front of an open window and take thirty deep breaths. Test your breathing capacity by taking a deep breath, filling the lungs until it is necessary to raise the chest and shoulders. Then exhale until the lungs are quite empty. Do this systematically for the above-mentioned number of times, and you will find yourself altogether more full of vigour. Inhale slowly and deeply occasionally when you are out of doors.

HINTS AND RECIPES.

Cooking Vessels.

After washing and drying all iron and tin cooking vessels, lay them face forward in front of a good clear fire to ensure "bone dryness," and so save them from becoming rusted when stored away.

Uses for Lemons.

No family, writes "*Garden and Field*" should be without lemons. Their uses are almost too many for enumeration.

The juice of a lemon in hot water, on awakening in the morning, is an excellent liver corrective, and for stout women is better than any anti-fat medicine ever invented.

Glycerine and lemon juice, half-and-half, on a bit of absorbent cotton, is the best thing in the world wherewith to moisten the lips and tongue of a fever-parched patient.

A dash of lemon juice in plain water is an excellent tooth wash. It not only removes tartar but sweetens the breath.

A teaspoonful of the juice in a small cup of black coffee will almost certainly relieve a bilious headache.

The finest of manicure acids is made by putting a teaspoonful of lemon juice in a cupful of warm water. This removes most stains from the fingers and nails, and loosens the cuticle more satisfactorily than can be done by the use of a sharp instrument.

Lemon juice and salt will remove rust stains from linen without injury to the fabric. Wet the stains with the mixture and put the article in the sun. Two or three applications may be necessary if the stains are of long standing, but the remedy never fails.

Lemon juice (outward applications) will allay the irritation caused, may be, by the bites of gnats or flies.

Lemon peel (and also orange) should be saved. They are a capital substitute for kindling-wood. A handful will revive a dying fire.

Grease on Clothes.

When a garment gets spotted with candle grease it quickly dries hard, but no attempt should be made to remove the grease with a knife or other sharp instrument. Cover the solid parts with a clean sheet of blotting paper, and then pass a very hot iron quickly over it. A couple of applications are generally successful; or apply a little spirits of wine to the spots, rubbing gently until the grease has disappeared.

LITERATURE.

**The Kala-Bhayan Technical Institute,
Baroda.**

The calendar of this Institute for the 24th session, 1913-14, has been sent to us, and we find in it much useful information regarding the scheme of education in the Baroda State, of the main stem of which the Kala-Bhayan forms a branch. The calendar contains, moreover, the courses of instruction, fees and cost of study, cost of living, subjects which are not generally included in calendars of educational institutions. The inclusion of these items, together with many more makes the calendar an invaluable possession in the hands of the alumni of the Institute. There are four illustrations in it, one of them being that of the Gaekwar of Baroda to whom, the institution owes its origin.

Books Received.

The Eighth Report of the Indian Industrial Conference, Office of the Secretary of the Indian Industrial Conference, Amraoti, Price Rs. 2-8-0.

The Challenge to Asia, by C. F. Ryder, Price six pence.

Citriculture in the Philippines, by P. J. Wester, Bureau of Agriculture, The Philippine Islands.

Improved Methods of Handling and Marketing Cotton, by Charles J. Brand.

A Successful Method of Marketing Vegetable Products, by L. C. Corbett.

How the Produce Dealer may Improve the Quality of Poultry and Eggs, by H. C. Pierce.

Insects Injurious to the Onion Crop, by F. H. Chittenden.

Condensed and Dessicated Milk, by Leir Wells.

Agriculture in Public High Schools, by Dick J. Crosby.

The last six publications are from the Department of Agriculture, U.S.A.

Indian Administration, by V.G.Kale, M.A., Arya Bhushan Press, Poona, Price Rs. 1-4-0.

MISCELLANEA.

Agricultural Instructor.

The Government of Madras have approved the proposal of the Municipal Council of Anantapur to employ an agricultural instructor in the Municipal High School.

Free Pattern Books

The Madras Government consider that copies of the pattern book on brass and copperware should be distributed free to "bona-fide" artisans and to art and technical schools, museums, public libraries and other educational institutions and also to officers of Government and others interested in the publication.

Anglo-American Exposition.

It is announced that the Anglo-American Exposition will be held in London, from May to October next year "to celebrate the centenary of peace and progress in the Arts, Sciences and Industries of the United States of America and the British Empire."

British Capital.

British capital provided for railway construction in the agricultural countries of the world is stated to be ten billion dollars.

Value Payable Articles.

The statistics of value-payable articles of all kinds sent through the post in India during the fiscal year 1911-12, amounted to 7,984, 292.

Co-operative Credit.

Raja Sharat Chandra Roy Choudhury of Chanchal (Maldah) Bengal with a view to introduce co-operative credit system in his estate has asked the Registrar to open a few societies. He has promised to advance Rs. 25,000 at a nominal interest to the different centres.

Interlocking Directorates.

It is very likely that the U.S.A. Congress will pass a law within a few weeks against interlocking Directorates and Corporations. The important announcement is made that the firm of J. P. Morgan and Co., the dominant force in the American world of finance has severed its directorial connection with some of the greatest corporations in the country. How far this step has been forced by the expected legislation is a matter of guess.

THE WEALTH OF INDIA

A Monthly Magazine of Practical Information and Useful Discussions

EDITED BY MR. G. A. VAIDYARAMAN, B.A.

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MARCH 1914.

[No. 3

The Wealth of India.

Current Topics

BY ECONOMICUS.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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No money should be paid to any Agent. All remittances and letters should be addressed to the publishers, Messrs. G. A. Vaidya Raman & Co., 3 and 4, Sunkurama Chetty Street, Georgetown, Madras.

The report of the Royal Commission on Indian currency and finance is at last out and is not calculated to give unmixed satisfaction to any body. When the India Office management of Indian finance was attacked, the criticism was regarded by a considerable body of opinion as exaggerated though most people started the view that the existing system called for immediate improvement in certain particulars. The moderate opinion is represented by the London Times according to which the general effect of the report is that though certain of the criticisms of the India Office's control of Indian finances were apparently justified, the more extreme attacks were not substantiated. Those who have been viewing with anxiety and dissatisfaction the heavy absorption of gold in India have heaved a sigh of relief at the opinion of the Commission that a gold currency is not wanted in India and the *Morning Post*, for instance, says that the decision that the change to a gold currency was not worth making will be acclaimed by the bankers in the City. Some bimetallicists in India have likewise expressed their sense of satisfaction at the way the proposal to popularise a gold currency in India has been knocked on the head by the Commission. For ourselves we do not approve of the Commission's statement that India does not want a gold currency and that she ought to be content with rupees and currency notes. This would

indeed have been a weighty pronouncement if the suggestion had been in favour of the demonetisation of the rupee and the introduction of a gold currency. The existing gold exchange standard, with the token rupee as unlimited legal tender and the absence of a gold mint, have indeed worked well so far as the fixity of exchange is concerned, but no one would contend that it is an ideal currency system incapable of development and improvement. 'The people neither desire nor need a considerable amount of gold for circulation, says the report of the Commission; but the same thing might have been said about the Paper currency some years ago and even now the Commission is anxious to see the latter expanded and still further popularised. The pronouncement of the Commission therefore, in favour of the continuance of the existing gold-exchange standard system will commend itself neither to those bimetalists who want an honest rupee—not the present token—nor to those who wish to see the Indian currency considerably infiltrated with gold coins. If the Indian people are to be given the kind of currency they like, let them have the automatic silver standard and currency and if gold is superior to silver, let us make a slow but steady progress towards that goal. Speaking of a gold mint which the Commission have deprecated, Sir James Meston stated in his evidence that the mint would meet with a strong and reasonable sentiment in India and would be a great convenience to the masses in halting their gold hoardings, it being, besides, a definite step in the popular education towards a better system of currency. Though the Commission feel that the most suitable location for the gold Standard Reserve is London and opine that on the whole, the India Office management of finances has been good, they hold that the Secretary of State should not sell Council bills for what is called the convenience of trade but should do so only to provide funds for his own requirements on India's behalf. The much debated question of a State Bank, the Commission has left severely alone suggesting the appointment of a small expert committee to examine the

whole question in India, either to pronounce against the proposal or to elaborate a detailed and concrete scheme capable of immediate adoption. Comment on the other points in the report is held over.

The financial statement submitted to the Imperial Legislative Council by our new Finance Member, of which a summary is given elsewhere, presents few striking features. As usual for the past few years, Sir William has budgeted for a surplus of about two crores of rupees in the Imperial account, though a nominal deficit of about 5 crores is anticipated in the estimates of the provinces, reducing that surplus to a nominal total deficit of some 3 crores. Budgeting for a surplus in past years has been justified on the plea which has now become almost classical, that the Indian budget is 'a gamble in rain'; but this method of finance—under-estimating revenue and over-estimating expenditure—has been disapproved even by the Chamberlain Commission who observe:—"Caution is justifiable in framing budgets but it has been carried rather further than was necessary in recent years." The policy of devoting the surpluses coming out of the pockets of taxpayers and thus maintaining taxation at a higher level than is justified by circumstances cannot be commended. The Imperial surplus for the coming year is anticipated to amount to about Rs. 2 crores and the Finance Member observes 'that in present circumstances it is desirable to have an unallotted balance of about this amount to assist us in our heavy capital commitments. So far as the year 1913-14 is concerned, the revised Imperial surplus is almost what was budgeted for. But the revenue of the Provincial Governments exceeded the anticipated amount and they were not able to draw upon their balances to the extent expected. These balances which, at the beginning of the year, were £10,557,000 stand at £9,816,000 at its close. This year, again, the Local Governments hope to spend their balances so as to exceed their revenue by £3,209,000 but Sir William is sceptical as to their ability to do so. In the

new budget, after setting aside the funds required for the adequate maintenance of the various administrative services and the railways and reserving the surplus of £1,280,000 the Finance Member is in a position to dispose of some £240,000 not thus allotted. Of this sum £100,000 goes to Burma for the improvement of communications; £40,000 will be devoted to the remission of a number of miscellaneous contributions which local authorities at present pay to Local Governments for certain services rendered; and recurring grants of £60,000 and £40,000 will be made for Education and Sanitation respectively. One peculiar feature of Sir William Meyer's financial statement is its lucidity; especially, the manner in which the position of the Imperial Government and the Local Governments so far as their financial relations are concerned has been explained, is most instructive.

It is not possible for us, in this place, to do more than [make a passing reference to the many interesting discussions which have taken place in the Viceroy's Council on questions of financial and economic importance. Prominent among the resolutions of this nature was the one which had reference to the existing so-called 'permanent settlements' between the Government of India and the Provincial Governments. Honourable members representing the United Provinces have been pertinaciously clamouring for a more liberal treatment of their provinces, but the Supreme Government feels satisfied that the existing arrangements are quite satisfactory and that no change in them is called for. But a resolution of a more radical character in this connection was moved by Mr. Surendranath Banerjea recommending the appointment of a committee to consider the advisability of revising the system of provincial settlements now in vogue. The principal arguments with which he supported the resolution were that the provinces were dissatisfied with the settlements and the system under which they received doles from the Central Government from time to time, and that the ideal arrangement would be one under which the provinces would

enjoy financial autonomy towards which things were gradually tending. Mr. Banerjea thought that the time had come when the Government of India, instead of deriving the whole of its income from the growing revenues, should derive a part of it from fixed contributions from provincial revenues. Sir William Meyer made an elaborate reply, reviewing the history of provincial settlements and pointing out how the present arrangements had been gradually evolved. He emphasised the advantages of the present system from the provincial point of view itself and stated that a radical change in the system would land the Provincial Governments in serious difficulties. His conclusion was that the fundamental basis of the settlement system could not be further liberalised, and so far as the object of Mr. Banerjea's resolution was to introduce a sudden and large addition to provincial resources at the expense of the Imperial exchequer and of the Indian tax-payer, the Government of India could not hold out any hope of its being attained. The Government of India are not prepared to relax the control they now have over the Local Governments which they feel to be essential and thoroughly justified. It is not to be supposed that the last word in this controversy has now been heard. The question is bound to crop up from time to time and it will be better if it is fully threshed out by a strong committee.

It is often times very discouraging to realise that after so many years of continuous talk about indigenous industries and swadeshi enterprise, we are still almost marking time so far as the industrial development of the country is concerned. Some progress is indeed visible here and there and a few genuine swadeshi concerns are now and again started for which we must feel thankful. But they only serve to remind us of the vast distance Indian people must cover before they can be said to take their proper place in the industrial advance of the country such as the people of other nations occupy in their own lands. That spirit of enterprise and organisation which is essential to the healthy growth of industries and which was cal-

The Industrial Outlook.

culated slowly but surely to animate the people of India is still sadly lacking, and the swadeshi enthusiasm which widely prevailed in the country a few years ago, seems to have died away. Industries in connection with the extraction of minerals, tea and rubber plantations and other concerns on a large scale are owned and conducted by non-Indians. That there are unlimited natural resources awaiting development in India has been abundantly proved, but the same sad tale has always to be repeated that there is a lamentable lack of enterprise, capital, scientific knowledge and organization among the people which impede their industrial progress. Several industries which were started by Indians have unfortunately come to grief and the public confidence has been rudely shaken. This gloomy prospect is relieved by a ray of hope here and there and it is pleasing to notice that companies for the manufacture of cement and paper have been started under Indian auspices and others are in contemplation. The number of Indian paper mills, the capital invested in them and the quantity of the products turned out by them have remained almost stationary for several years while the imports of foreign paper have been steadily mounting up. Under these circumstances, we are glad to find that the question of the manufacture of pulp from wood and grass has been taken up in earnest in the United Provinces and the British and Wood Pulp Manufacturing Company has been floated there with a strong directorate. It is needless to say that the best wishes of the people will be with the enterprise and the experiment will be watched with the keenest interest.

Speaking of the industrial possibilities of

India, we are led to think of the great prospects there are before the cocoanut industry in this country. Every one knows how the price of the cocoanut has been steadily going up and larger quantities of that product are being exported to foreign countries. The value of the 'copra' or cocoanut kernel is being more and more appreciated in other countries where it is utilised for a variety of purposes. The Indian exports of copra have nearly quadrupled during the past ten years and the foreign market for the same is gradually expanding. It is calculated that the cocoanut industry in its various branches represented, in 1912, an annual value of about 135 crores of rupees, and one English expert who has himself embarked on the cultivation of the cocoanut on a large scale is said to have remarked: "I do not think in the whole world there is a promise of so lucrative an investment of time and money as in this industry." A writer in *The World's Work* for March observes:—"At present most of the estates are in the hands of native planters, financed by Chinese and Indian money lenders. The introduction of British capital and scientific methods of exploitation would provide profitable occupation for many of our young men, prepared to qualify for positions in Malabar, Ceylon, the West Indies, Malaya and other British Possessions." It has been discovered that the oil expressed from 'copra' which was formerly used mainly for the manufacture of soap makes a splendid substitute for butter and it is now being extensively used for this purpose. India is one of the largest producers of cocoanut in the world and there is here a splendid field for indigenous enterprise and organization. Shall we improve our opportunity or let it slip off our fingers?

Special Article

INDIAN FINANCE AND CURRENCY—I.

BY THE EDITOR.

The report of the Royal Commission on Indian Finance and Currency has just been received in India and a summary of its conclusions is printed elsewhere in this issue.

The report is, in many respects, disappointing. In the first place, the report is by no means clear, though we must confess it is difficult to write one which will be intelligible to the lay reader.

Secondly, some of the recommendations are halting and inconclusive. On the question of the sale of Council Drafts, the master key for the solution of the whole Indian Currency problem, the Commission's recommendation is simply an apologia and merely justifies and authorises the Secretary of State to continue his present policy. We shall notice the recommendations of the Commission in detail in later issues. Meanwhile, the questions for consideration are complicated and so much interwoven with one another and will be unintelligible to the ordinary reader, unless the whole problem is understood and always kept in view. We give below the main outlines of the principles involved and practices followed, leaving details for discussion in later issues.

Ordinarily, the settlement of foreign trade accounts is not done directly by the importers and exporters among themselves but through the medium of Exchange banks by means of Bills of Exchange. In other words, the credits and obligations as they arise from time to time in each country are collected by the Exchange banks and their branches or agencies in that country, a set off is made by book credits and debits, and the over plus alone is remitted by the Exchange banks to the country to which it is due, by shipping specie.

Except in rare years, the exports from India considerably exceed the imports, so that foreigners have to pay to India large sums in settlement of their trade accounts. The difference is and has necessarily to be paid in specie.

Owing to the peculiar political connection between India and England, the expenditure on account of the Government of India is incurred partly in India and partly in England. Roughly, three-fourths of the disbursements are in India and the remaining one-fourth is in England on account of what are called the 'Home Charges.' On the other hand, putting aside small loans raised in England on behalf of India, practically the whole of the revenue is raised in India. Therefore, the charges payable in England on account of India have to be remitted from India from year to year. Such amounts, if any, due from one country to another are ordinarily paid

through the Exchange banks but for the historical reason that India was transferred from a trading company to the Crown and also because the amount to be remitted to England is considerable, the method of remittance is peculiar to India alone and it is done this way.

As stated above, there is a very large trade balance which has to be remitted to India almost every year. The Secretary of State takes such portion of this amount due to India on the trade balance as he requires in England, in sovereigns, and sells to the parties who pay him there, what are known as Council Bills (so called because they are issued by the Secretary of State for India in Council). These Council Bills are merely orders on the treasuries in Madras, Bombay and Calcutta, to pay in those places specified amounts to the parties concerned in rupees as the equivalent of gold tendered to the Secretary of State in England. The Exchange banks and financial houses who have to remit to India the amount due on the trade balance buy these bills. To the extent of the amount covered by these bills, they save largely the charges of sending specie, and similarly, the Government of India which otherwise will have to remit specie to the Secretary of State for Home Charges are saved the charges of sending specie to him. So far, the transactions are perfectly legitimate. Until 1893, only such amounts due to India on the trade balance *minus* the amount taken by the Secretary of State in England on account of the Home Charges were sent to India by private shipments of specie, *i.e.*, silver bullion which was freely coined in India.

The amount payable in England has to be paid in sovereigns whereas only silver rupees are available in India. Therefore it is clear the silver in India has to be converted into gold for remittance to England. Until 1893, this conversion was effected at about the market prices of the metals contained in the rupee and the sovereign. But since that year, this is no longer the case, owing to the interference of the Government with the currency and consequently with the management of the finances of the country.

For some years previous to 1893, the price of silver in relation to gold fell considerably and the Government of India which had to make remittances to England in gold on account of the Home Charges had to find a larger number of rupees for each sovereign they had to remit. This had to be done by levying extra taxation. Similarly, the merchants also suffered as they were not sure what number of rupees per sovereign they would have to pay for the goods imported by them. In view of these inconveniences, on the advice of a committee presided over by Lord Herschell, the Indian Mints were closed to the free coinage of silver in 1893. The silver rupee was retained as the legal tender coin of India and as every one in India wanted it but no one except the Government could coin it, the rupee became scarce and consequently its value began to rise in relation to gold and exchange became steady, thus relieving a good deal of anxiety both to the Government and the public.

In 1898, the Government of India made proposals for making effective the policy of restricting free coinage of silver adopted in 1893 and for establishing a Gold Standard in India. These proposals were referred to a Committee presided over by the Rt. Hon'ble Henry H. Fowler. This Commission decided that the Mint in India should not be open for the free coinage of silver and that the exchange value of the rupee should be fixed at 1s. 4d. Other recommendations made by the committee favoured :—

(1) The establishment of a gold standard and a gold currency ;

(2) Making the sovereign legal tender along with the rupee ;

(3) Stopping silver coinage by the Government of India until the proportion of gold in the currency is found to exceed the requirements of the public ;

(4) Forming a special reserve in gold out of the profits on the coinage of rupees, this Gold Reserve being used to give sovereigns in exchange for rupees when wanted for export, or for internal use when plenty of gold should be available in the Gold Reserve.

The administrative measures taken by the Government in connection with the currency policy may be briefly stated as follows :—

(1) The rupee continues to be legal tender to an unlimited extent as before ;

(2) By a notification issued in 1893, the Government undertook to pay Rs. 15 for a sovereign, and in 1899, the sovereign was made unlimited legal tender at £1 for Rs. 15, i.e., Government can be required to give Rs. 15 to a sovereign ;

(3) Ordinarily, as a rule, Government will give sovereigns for rupees at this rate but they cannot be compelled to do so and the practice is sometimes suspended and large quantities of gold cannot be had by tendering rupees ;

(4) Ordinarily, the Government will sell in Calcutta in return for rupees tendered there, Bills payable in London in sterling at a rate not more unfavourable than 1s. 3½d. per rupee, i.e., a sovereign for Rs. 15 less its cost of transmission to England. If Government did not do this, in years when exports fail, and several merchants have to pay for the imports, exchange will considerably fall consequent on the scramble for sovereigns to remit. Therefore, provision (4) above is the vital one for supporting the sterling value of the rupee, and although Government have given no undertaking to maintain it, a failure to do so will involve an utter break down of the currency arrangements.

Thus, provision (2) above prevents the sterling value of the rupee from rising above 1s. 4d. by more than the cost of remitting sovereigns to India. That is to say, no one will pay for a sovereign in India more than Rs. 15 (its equivalent at 1s. 4d. to the rupee) because he can get rupees at that rate from the Government for any number of sovereigns he might wish to change. Similarly, provision (4) above prevents the sterling value of the rupee from falling below 1s. 3½d. That is to say, no person in India need pay more than the rate of 1s. 3½d. for a rupee for changing his rupees into sterling because he can get sovereigns for remitting to England, from the Government at that rate.

Thus in practice the extreme limits of variation of the sterling value of the rupee are 1s. 4½d. (½d. being about the cost of sending a sovereign to India) and 1s. 3½d. In other words, all amounts payable to or from India may be remitted at a fairly fixed rate oscillating about 1s. 4d. the rupee. The exchange value of the rupee has been made steady at about 1s. 4d. because, if any one demands more than about this rate, the Secretary of State (including the Government of India) puts him out of the market by offering the exchange at about that rate either way. The Secretary of State has thus assumed the role of a powerful exchange dealer and has on that account to keep two reserves, one in silver to give it to those who want it in exchange for sovereigns and another in gold to give it to those who want it in exchange for rupees. The nature of these reserves may now be explained.

All reserves in India must have their origin in silver, because the revenues of India are raised in that metal. First of all, there are the general balances of the Government of India which are in rupees and held in the various District Treasuries, Presidency Banks and their branches and the Central Reserve Treasuries, at the important Presidency Towns. These are the surplus of revenue over expenditure retained for carrying on the ordinary administration of Government.

Secondly, there is what is known as the Paper Currency Reserve. Every currency note issued by the Government is payable in rupees on demand. The Government therefore to be able to redeem its notes, should logically always have a stock of metallic coin, equal to the total amount of the notes in circulation, ready to be issued to the public, if, and, when demanded. As it is exceedingly unlikely, however, that all the notes will be presented simultaneously for encashment, a certain portion alone fixed by law from time to time is held in specie, the balance being invested in securities which are easily realizable. Until 1898, the whole of the coin reserve was in silver.

Thirdly, there is the Gold Standard Reserve

which owes its origin to the recommendations of the Fowler Committee. Each Rupee weighs 180 grains, of which 165 grains is pure silver and the rest alloy. Assuming silver sells at 27d. per. oz. of 480 grains, the number of rupees that may be coined out of it is $\frac{480}{180} \times 165$, say roughly, Rs. 3 valued at 27d. equal to 27 annas. So, there is only about 10 annas worth of silver in each rupee and the Government gains about As. 6 or 40 p.c. for each rupee coined. It will now be clear why the rupee is only a token coin with a face value of 16 as. but with silver worth only about As. 10. These gains thus made by the Government are all accumulated in silver and the fund, converted into gold, is used to maintain exchange by issuing sovereigns to those who want them for being sent to England.

The Government of India at first intended that the Gold Standard Reserve should be held in India, but the Secretary of State decided that it should be held in London on the ground that London is its proper place because it is intended to meet gold obligations which have to be discharged outside India. Indeed, it may be stated that the policy of the Secretary of State is that silver obligations should be discharged in India and, gold obligations in England, thus avoiding movement of specie either way as far as possible. In pursuance of this policy, all rupee reserves are held in India, all gold reserves are held in England, all gold accumulating in the reserves in India is shipped to England, the budget provision made in India each year in silver on account of Home charges is transferred to England and converted into gold, and silver reserves in India are also converted into gold from time to time as required. In drawing funds from India and converting them into gold, the Council Bills play a prominent part. These Council bills may now be explained in somewhat greater detail.

As stated above, these Council bills are orders by the Secretary of State for India in Council to pay specified sums in rupees in India to parties mentioned therein as equivalents of gold paid by them to the Secretary of State in London. These orders are sent by post to

India. As it takes about 15 days for these Bills to reach India, it may be to the advantage of the parties concerned when funds are required urgently in India, to buy what are called Telegraphic transfers, *i.e.*, Telegraphic orders of the Secretary of State to pay rupees in India at once to the parties concerned. The Secretary of State does this if he is paid over and above the rate payable on a Council Bill sent through post, the interest for the 15 days which he would otherwise get. This interest ranges from $\frac{1}{2}d$ to $\frac{1}{8}d$, according as the Bank rate in India is below or above 6 p. c.

The present procedure *re* sale of Council drafts including under this phrase both Council bills and Telegraphic transfers is as follows:—Every Wednesday the Secretary of State offers to give Rupees in India for specified amounts of gold paid to him in London. Those who have to make remittances to India tender for these rupees. The Secretary of State does not, as a rule, accept tenders at prices lower than 1s. $3\frac{2}{3}d$. for Bills and 1s. $3\frac{1}{8}d$. for Telegraphic Transfers. Allotments are made to the highest bidders. If any one wants Council bills or Transfers after allotments have been made on a Wednesday and before the next allotment on the subsequent Wednesday, the Secretary of State sells Intermediate Bills for Transfers also at prices higher by $\frac{1}{2}d$ per rupee than those at which allotments were made at the previous Wednesday. The practice since 1904 is as follows:—

(1) Invariably to sell bills without limit when the price is as high as 1s. $4\frac{1}{8}d$.

(2) To sell Telegraphic Transfers without limit at 1s. $4\frac{5}{8}d$. if the Indian Bank rate does not exceed 8 p. c. and at 1s. $4\frac{6}{8}d$. if it exceeds that rate.

The Government of India provide in the annual budget for the Home charges each year. The rupees due to meet the Council Drafts up to the amount of the Home charges are ordinarily paid out of the general balances by the Government of India in India. But as stated above, the Secretary of State sells Drafts without limit when the rates of exchange are favourable. These Drafts also are, as far

as possible, paid out of the surplus general balances in the treasuries in India. If no such balance is available, the rupees held in the Paper Currency Reserve are released by cancelling to a corresponding amount either notes held in the reserve or by "ear-marking" with the Bank of England gold paid there against the Council Drafts. In this way, part of the Paper Currency Reserve which formerly was wholly held in India in Rupees is now held in England in gold. The reason for this practice is stated to be that when rupees in the Paper Currency Reserve run short, silver has to be bought for fresh coinage and as such silver has to be bought in London and paid for in gold, the gold against the Paper Currency Reserve is best held in London.

Similarly by selling Council Drafts, the Gold Standard Reserve, *i.e.*, the profits on rupee coinage are drawn off to England, converted into gold and placed in London in deposit with banks or lent out to approved firms on securities.

Finally, as the Secretary of State sells Council Drafts *without limit* at maximum of 1s. $4\frac{5}{8}d$. or 1s. $4\frac{6}{8}d$, he draws off to England as much as possible of the Indian balances, even though they may not be immediately required in England. Again, not only are the reserves not restricted to the use for which they were originally created but the General Balances, the Paper Currency Reserve and the Gold Standard Reserve are all used for all or any of the purposes for which the Secretary of State may choose to use them, making the necessary book debits and credits in the Indian and London accounts.

As there is a large trade balance in India's favour almost every year, the Secretary of State was and is able to catch an exceedingly large amount of gold in London, thus letting in very little gold which should otherwise have come into India in very large quantities in settlement of the trade balance.

The Secretary of State's action in doing as above, created much discontent in India and the Chamberlain Commission was accordingly appointed to examine the matter and report. The recommendations of the Commission will be found printed elsewhere in the "Financial World." We hope to notice them in later issues.

Books of the Month.

THE STANDARD OF VALUE.*

REVIEW BY V. G. KALE, M.A., *Professor of Economics, Fergusson College, Poona.*

It is a common belief among economists that bimetallism is now a dead issue, the 'battle of the standards' having been fought furiously and long and having ended in a victory for the gold standard. The world's currency history for the past forty years is a story of the frantic efforts of governments to maintain both gold and silver as legal standards of value, the continued depreciation of the white metal, its abandonment by one country after another as a standard and the ultimate adoption of the gold standard by the majority of the prominent countries in the world. In the opinion of some writers, the evolution of the money standard has completed its natural course. Professor Seligman thus observes:—"At the outset of civilization a metal of slight value suffices; with the growth of trade a more precious metal is necessary; and finally with the highest development of industry the most valuable metal becomes the standard. . . .

. . . In mediæval Europe we find first copper, then silver, then both silver and gold, until the demands of modern life have almost everywhere witnessed the selection of gold as the standard most adapted to the needs of large transactions and most convenient for the reserves of governments and banks." At the present moment then, the gold standard has been well nigh universally adopted in one of several ways. The gold standard proper, with a gold coinage and silver coinage as a mere token currency which is not full legal tender, obtains in England, Germany and the United States. The countries of the Latin Union, India and Mexico have what is called the 'limping standard', and the exchange standard maintained either by the gold-exchange method or what has been characterized as the fixity-of-exchange method, is to be found in the

Philippines, in Panama and the Straits Settlements. While there was a scarcity of gold compared with the supplies of silver, by whatever causes it might have been brought about, the extreme urgency of using both metals as legal tender was obvious. But during the last few years, the question which has caused anxiety to States and Financiers has had no reference to the inadequate supplies of gold but rather to its depreciation on account of its heavy annual output. The high prices prevailing in gold-using countries have been attributed by many to the large quantities of gold which are being thrown on the world's markets and if there is any truth in the quantity theory of money—and we believe there is—this explanation appears to be satisfactory. In the face of this phenomenon when it is suggested in certain quarters that a relief may be given to gold-using countries by draining a quantity of gold, to India, for instance, the concurrent use of the two metals seems to be out of the question. But it is interesting at the same time to notice that western nations are scrambling to obtain possession of gold and men like Sir Edward Holden and firms like Messrs. Samuel Montague, & Co., are deprecating the absorption of gold in India. Even the Chamberlain Commission on Indian finance and currency, which has just reported, feels that it will not be to India's advantage to encourage the increased use of gold in internal circulation.

There is, besides, considerable uncertainty as to the present rate of the world's gold production being maintained in the future. If the supply of that metal falls off, as it is apprehended it will in the near future, there will be a terrible scramble for gold among nations, a majority of which, as shown above,

* By William Leighton Jordan: Eighth edition. Simpkin, Marshall, Hamilton, Kent & Co., Ltd., 7/6.

are either gold-using countries or are on the gold basis. If such a contingency occurs, and it is not unlikely, the question of bimetallism will be reopened. So far as theory goes, there can be no doubt that the double standard is an ideal system and even in practice, it may be said, bimetallism ought to be adopted by international agreement by the principal countries of the world. The history of this question lends support to the view that bimetallism broke down not an account of any intrinsic defects in it as a system, not also on account of any practical difficulties attendant upon its adoption, but mainly owing to the abandonment of silver by one country after another in panic. An international agreement on which the success of bimetallism depends, has proved practically impossible in the past. And it does not appear possible at the present moment for three reasons indicated by Professor Gide:—"It does not appear so, in view of the fact that all nations seem to regard it as a matter of national honour to adopt and maintain the gold standard. Moreover, the nations that have adopted a legal ratio for the two metals did not establish the same ratio—in Austria-Hungary it was fixed at 1 to 18.22, in Russia 1 to 23.25, and in Japan 1 to 33½. Besides, the English Government, whose co-operation is regarded as indispensable, has always rejected the idea of international bimetallism." In spite of these facts, a few writers have been, with wonderful pertinacity fighting for the cause of the double standard and they look with dismay at the introduction of the gold standard in India and the increasing absorption of the yellow metal in this country. A prominent writer of this type is Mr. William Leighton Jordon whose work 'the Standard of Value' has now seen the eighth edition. The first edition was published in 1880 and the seventh in 1896. The time that has expired since the latter year was a period when the revival of bimetallism appears to have been regarded as hopeless. The currency legislation of the Indian Government, however, made it a burning question. Mr. Woodrow Wilson's election as President of the United States of America also imparted a

fresh interest to the problem as during his elctioneering campaign, he urged that 'the currency question could not be brought to a satisfactory solution as long as the government listen only to the advice of the banking community' and there is a hope that 'agriculture and industrial enterprise may now perhaps rely on their interests in the currency question being fairly considered.' Another opportune event, Mr. Jordon tells us, was the publication in 1912 of the important work on 'The Standard of Value' by Sir David Barbour who has played a leading part in controlling the legislation which has recently extended the gold standard. Mr. Jordon's book would have been stale though it contains a vigorous exposition and defence of bimetallism, had he not added to each new edition, fresh evidence to support his views from contemporary events. The main thesis of his work, propounded in the very first chapter and hammered in in the later parts is that through oversight which produced tremendous consequences, the British Parliament on the advice of Lord Liverpool, abandoned the double standard and followed the blow by the legislation of 1870 'which for the first time in the history of the country discarded silver from the legal standard, and thus made gold alone our legally established standard of value.' This measure, Mr. Jordon points out, deprived the English national debtor of his right of paying in silver on account of the appreciation of gold, and added to the burden on the shoulders of the British tax-payers. The change of the standard of value was, according to him, equivalent to an increase of the national debt which he estimates at not much less than £150,000,000. This has only enriched the rich and impoverished the poor and discouraged industry and commerce. In his chapter on the double standard, the author puts in a strong plea in favour of the Government of Great Britain throwing the mint open again to coinage of silver in the name of justice and the best interests of the people. I do not advocate this course, he contends, on the plea of the double standard being better than either a gold or a silver standard; but on the plea of

the standard of value having been improperly tampered with in 1816-70, and of its being expedient that 'that sole breach of faith which has occurred between creditor and debtor since the establishment of the national debt, should now be repaired.' Being a staunch advocate of bimetallism, Mr. Jordon urges that if international agreement be not possible on the question of the rehabilitation of silver, England should take the lead and other nations through self interest, if not through other motives, are bound to follow her.

The fact that the gold standard has been established almost universally ought not to lead us to think that the existing system has necessarily any permanence in it. We are living in times when the gold standard has become fashionable. But the fashion may prove inconvenient, the scramble for gold may increase in fierceness and the nations of the world may feel called upon to fall back upon the double standard. To-day the chief obstacle to the adoption of bimetallism is to be found in national rivalries which prevent them from taking concerted action. It is, however, well to place in the forefront the advantages of the double standard system and be ever prepared to adopt it when circumstances are propitious. In the latter half of his book Mr. Jordon has given the contributions he has made to the discussion of the subject since the publication of its first edition and it goes still further to elucidate the intricate subject. He has answered various criticisms of his views and in this way has brought down the discussion to the year of its latest edition. The great merit of the book is its perspicuity; the author is ever clear and precise and in him bimetallism has found a very strong advocate. The book contains frequent references to the changes in the Indian currency system made in 1893 and 1899, and as a staunch advocate of bimetallism, the author expresses his strong disapproval of the policy of the Government of India in that connection. We ourselves believe in the double standard and should be glad to see it rehabilitated. But now that the gold exchange standard has been fairly firmly established in

this country, we see no harm in the infiltration of our currency with a circulation of gold coins. A currency which consists mainly of silver tokens can never be regarded as satisfactory and here we are at a great disadvantage when we compare our position with that of France and other countries which have what is called the 'limping standard' in as much as with them the principal legal tender money is coined out of gold in the State mints. And we do not believe that our currency situation will be worse on account of a considerable circulation of gold coins in the country, if it does not improve thereby. We are free to admit that in spite of the embarrassment caused by the falling exchange, our Government could have held out and should not have been hurried into abandoning the silver standard. Apart from the exchange difficulty, which, so far as the finances of the State, particularly its payments in gold abroad were concerned, could have been forced, it was quite an admitted fact that the fall in the gold value of silver entailed no loss on the Industry and Commerce of India. On the contrary it was believed that a change of the standard would prove detrimental to the interests of the people of this country. General Strachey's scheme to make such a change was thus criticised by Mr. R. Hardy, Treasurer and Secretary, Bank of Bengal, in his memorandum of 22nd May 1886:—"His measure appears to be the result of giving undue attention to minimising the loss arising on the Government's gold obligations and to protecting the interest of Anglo-Indians and the foreign capitalist with investments in India. But the interests of such as creditors, it is clearly not the duty of India, as the debtor, to protect against loss, to her own injury." Mr. David Barbour and others who had given deep thought to the subject were also opposed to the change which was calculated to inflict considerable loss on the people of India, though in his 'Standard of Value' Sir David observes that the establishment of a gold standard in India saved this country from a greater fall in exchange which was imminent, and he would not like to see silver restored to its former position.

What deserves particular notice, however, in this connection is the fact that writers like Mr. Jordon look at the Indian currency question from the western point of view rather than from the purely Indian, and thus their arguments and conclusions lose much of their force in our eyes. They want silver to appreciate by the depreciation of gold, and the Indian absorption of gold is looked upon with disfavour as it prevents this from happening. Mr. Jordon remarks:—"But the full benefit which might have accrued from the new supply (of gold) is thwarted by our action in forcing a gold standard on India, which that country does not want. We are destroying their silver standard to their detriment and forcing gold on them to the detriment of our own industrial classes." Again:—"It seems to me that the flow of gold to India artificially created by Indian legislation is thwarting a demand for an equivalent value of silver, and is making the London quotation for silver lower than it would otherwise be. But Sir James Wilson seems to be quite unconcerned with the effect of the enhanced value of gold in this country (England). It is his business to consider the finances of India. But in fact the 'cross of gold' which the tax payer in this country is now compelled to carry has become heavy for even his broad shoulders and the supply of gold which would facilitate his payments ought not to be artificially forced into other directions to his detriment." Men holding the views of Mr. Jordon, like Mr. Moreton Frewen, let the cat out of the bag in this manner and give us a clear insight into the thoughts by which they are moved in their attack upon the Indian currency system. The attitude of people in England who do not want to see a larger circulation of a gold currency in this country and are alarmed at the Indian absorption of gold, is likewise easily explained if we bear in mind the main object they have in view in preventing an outflow of gold to this country. Mr. Jordon further states:—"Put in a nutshell, the position is

that it suits the banking communities in all gold standard countries—of which India has now the largest population—to create a demand for gold in India, because it enhances the value of their cash capital and the income derived from it. But that advantage is gained to the detriment of all industrial and agricultural enterprise throughout the same gold standard countries, and the permanent welfare is dependent on these latter, not on the banking community." If the scramble for gold which, the author believes, is imminent, and has been brought about by the action of the Government of India 'opening a sluice to turn the gold supply of the world into Asia', compels the gold standard countries and, England in particular, to return to the double standard of value, India's position will be far from disadvantageous. Gold is admittedly superior to silver and every body and every nation will always desire to have it. The opinion of the Chamberlain Commission notwithstanding, we do not apprehend any evil consequences from the larger circulation of gold coins in India and want to see our people encouraged to use them though of course a full fledged gold currency in this country is impracticable and is not desired by any one. Our present exchange standard is a transitional stage in the development of Indian currency and the system cannot be regarded as permanent.

Citriculture in the Philippines.

Mr. P. J. Webster is the author of a book on the above subject, issued by the Bureau of Agriculture of the Philippine Islands, as a bulletin (No. 27). Two of the citrus fruits are native of the Philippines, but now all the cultivated species of the genus are grown in the islands. Mr. Webster treats of their propagation, field culture, harvesting and marketing, the diseases to which the plants are subject, etc. The bulletin is profusely illustrated and should form a practical handbook on the subject.

The Agricultural World.

Selection of Seed Potatoes.

In selecting seed potatoes, experience seems to prove that it is wise to secure *immature* tubers from a different neighbourhood each year. In other words, it is bad business for a man to plant his own home-saved seed potatoes.

Agricultural Demonstration.

"An act to establish stations for practical instruction in matters concerning agriculture and a system of agricultural demonstration and development," was recently enacted by the Third Philippine Legislature. This act provides for an annual expenditure of one hundred and fifty thousand dollars for co-operative demonstration work and assures the establishment of this work on a permanent and substantial basis.

The two main features of the demonstration work are the demonstration stations and the co-operative demonstration plots. The stations serve as headquarters for the demonstration work in each district or province, while the demonstration plots make it possible to carry the work into each municipality. The stations that have thus far been established are receiving the cordial support of the people.

Cane Planting.

An interesting fact in connection with cane planting has been noticed in Queensland. With an ordinary plant, says the *Australian Sugar Journal*, after the first shoot from the eye has made fairly good growth, half-a-dozen or more shoots come from the same eye. These have to make their way against the competition, so to speak, of the more forward shoot, and are thus prevented from making the growth which they otherwise would have made. It was found that by cutting off this leading shoot, the growth of the cane was eventually much greater than if the first shoot had been left.

Public Granaries.

By a recent Executive Decree, the Government of the Republic of Salvador has decided that public granaries or store-houses shall be founded in the chief towns of the department for storage of agricultural produce the farmers may desire to keep back in order to get their prices and for more favourable markets. The depositors will pay storage and the proceeds will be used to meet the cost of maintaining the granaries. The depositors may withdraw all or part of their produce at pleasure.

It is clear what evident advantages these granaries will obtain for farmers of medium sized farms who hasten to sell, often at a loss, for want of storehouses in which to keep their produce while waiting for more favourable opportunities for sale.

State Aid for Agriculture.

Mr. Arno Schmidt, Secretary of the International Master Cotton Spinners and Manufacturers' Association, made a strong point in his recent speech at Coimbatore as to the small expenditure by the Government of India on agricultural improvement. He put the figure at something under £216,000 and remarked that even a large percentage of this sum was spent on the teaching staff of Agricultural Colleges which was of hardly immediate profit to the land. The amount was only 1 per cent. of the land revenue and he pressed for a much more generous policy on the part of Government. We can furnish him with other figures, says the *Pioneer*. The Government of India spends only about £1 per 1,000 of the population on agriculture, leaving out veterinary and forest expenditure. Comparisons with other countries show how absurdly small this outlay is. The United Kingdom is better with £4.6 per 1,000; but in Queensland the figure is £92.5; in Austria £86.5; in Prussia £62.5; in the United States and in Canada a little over £36; and in France and in Hungary about

£27. This comparison is very instructive and no one can fail to see that State expenditure on agriculture in India is only in its infancy and that an unanswerable case exists for its expansion.

Keeping Onions.

The chief difficulty with onions is their liability to sprout. Whenever growth is set up in any bulb or seed, that seed deteriorates in proportion to the extent of growth. So, onions, when pulled, should not be stored away at once, but should be left on the ground for a few hours to dry. Then they should be put away dry, in the coolest shed or barn available. They require constant looking over to sort out any bad ones, for, as in the case of fruit, such as oranges, apples, pears, etc., a single rotting onion will infect all those in its immediate neighbourhood. It used to be the custom to hang the onions in strings to the kitchen rafters in company with hams, etc. This hanging in strings is a good plan where it is only a question of keeping a few for home consumption, but, in the case of many tons, the labour entailed would not be recompensed by the profit.

In an article on this subject in a French journal, reported in the *Queensland Agricultural Journal*, mention is made of an observation of great importance which deserves the attention of farmers and market gardeners. After some experiments made on ten plots manured with chemical fertilisers, the resulting crops of onions were put away in bags and carefully numbered with a view to planting them out in the following season to obtain seed from them. When the time for planting had arrived, it was found, that, under identical conditions of temperature and light, certain lots had sprouted, and were exhausted by young, premature shoots, whilst the other lots still remained hard and solid, without a trace of a shoot. The collections having been carefully ticked, it was proved that the produce from plots deprived of sulphate of potash were exhausted by a too-hurried vegetation, whilst that which had received the potash manure was perfectly preserved. One hundred weight of sulphate of

potash per acre will have the effect above described.

Different Light Intensities and Plant Assimilation.

The subjects of the research were *Teucrium scorodonia* and *Pisum sativum*, chosen as being typical shade and sun-loving plants respectively. The various light intensities were obtained by using shelters covered with woven material of different textures. Amongst the conclusions drawn, and published in the *Agricultural News*, were the following:—(1) that a leaf developed in shade can exhibit a higher stimulating energy in direct sunlight than a leaf developed in sunlight (this is attributed to increased chlorophyll content); (2) plants developed in full light are at great disadvantage when transferred to shade compared with those developed in the shade (this emphasizes the modifications which the shaded plants undergo); (3) plants developed in low light-intensity increase their energy when transferred to sunlight; (4) when the light intensity is reduced to one-ninth, the assimilating energy is very low, and the adaptation has been carried to such a point that the leaf is unable to profit by increased illuminations when placed in direct sunlight; (5) an analogous effect is obtained when young plants are transferred to increased light-intensity, and it is probably due partly to lack of protective tissues and partly to deeper causes depending upon the activity of the protoplasm itself.

In general, plants seem to have the power of modifying their structure and chlorophyll content within their individual limits of adaptability, so that under natural conditions, their assimilating power tends to remain constant through the different light intensities.

The Indian as a Market Gardener.

Here is an interesting description of the Indian land labourer from the *South African Farmers' Weekly*:—

He has no need of oxen and ploughs, his family is the substitute—each member, armed with a hoe and wonderful dexterity, they soon have their acre of ground turned over. And here many a white man may well learn a lesson

Will a coolie dig deep of his own accord for his employer? Not unless one stands by to inform him. But watch him on his own acre, twelve, fourteen, sixteen, eighteen inches deep; he trenches his soil, he banks it, he drains it. He has the wonderful knowledge of the adaptation of varieties to soils, knowledge accumulated and inherited through long lines of ancient agricultural pedigree, knowledge which is not possessed by more than one white man in ten throughout the length and breadth of South Africa. His system of rotation is unique, or rather his system of succession of crops is equalled only by those countries where market gardening has been reduced to a fine art. After his land is deeply ploughed he has his beans in three feet by one foot apart, and when these are half-grown he is busy sowing "monkeys" nuts between the rows of beans. By the time the nuts are well growing the beans are off and mealies (maize) growing in their place. When the mealies are three feet high the nuts are reaped and cabbage, cauliflower and tomato seedlings substituted in their place, and by the time the mealies are harvested he has a wonderful crop of "winter" small truck ready, for which good cash prices are always obtained.

All this in one season, on the one piece of ground which, had it been farmed by a white man would have been under one crop the entire season. Our coolie nets a clear £60 profit off his acre, and is ready for the same round again next year.

This is the sin for which the Indian is not wanted in South Africa.

Eggs and Their Designation.

Mr. Edward Brown writes in the *Farm and Home*:—

The term "new-laid" means what it says, namely, of recent production, and something more. Selected for size, shape, brightness and smoothness of shell, it must be full—that is, the air-space very small—clear when tested by light, and firm in both the white and the yolk. Within a very few days the contents shrink by evaporation, the air-space enlarges, and the albumen becomes cloudy. Anything in the shape of interior blacks or spots disqualify an egg for

this class. No long-distance imported, or native egg more than a few days old, can possibly retain the features named.

It is frequently thought that the designations "new laid" and "fresh" are synonymous and interchangeable. I have said what the former means. The latter term indicates that it has not been preserved and nothing more. A "fresh" egg may be three months old, but it cannot be called "new-laid" by the greatest effort of imagination.

What we want to arrive at on the part of producers, traders and consumers alike is a clear appreciation of terms used, which in the best trade are:—

"New-laid."—Three to five days old, in accordance with the season of year, and in other respects as laid down above. These alone are recommended for boiling;

"Breakfast."—In all respects the same, save that as they are a few days older there is a slight shrinkage and the bright appearance has gone. For poaching or frying these are excellent;

"Fresh."—Not preserved. Good eggs for cooking, but nothing more. Usually, foreign and inferior native supplies, in which value has been lost by delays in marketing;

"Cookers."—A varied class, including "pickles," often very doubtful indeed. Faith is necessary for their consumption; and

"Eggs."—Upon these the curtain may be drawn. A scrap-heap for the other classes.

The Agricultural Department and the Indian Public.

From time various criticisms have been directed against the Agricultural Department, its mode of work and its organisation, from European as well as Indian quarters. There is almost a plaintive appeal in the following words of the Director of Agriculture, Assam, who writes thus in his Annual Report:—

"The general attitude of the educated public towards our Department and their ideas of what our objects should be are a continual stumbling block; in the educated public I include most Europeans, non-official and official. Indians and Europeans seem to think that the

main, if not the sole, object of the Agricultural Department in this country is to grow fruit; they talk continually of mangoes, liches and pine-apples. Many Europeans would add the cultivation of vegetables as an important function and some would put it before that of fruit. A few European ladies think that we should supply pure milk, even if we did, as they suspect, nothing else. Some people would have us introduce long stapled cotton as an improvement altogether forgetting that the short-stapled article grows well, has a good market and brings in a large and constant income. One Government officer objected to the altered date of our agricultural show at Shillong on the ground that we should lose flowers and vegetables and, though the time suited potatoes and maize better, these articles were neither beautiful nor interesting. The criterion is whether they pay; it does not matter much about their artistic qualities."

In these last words, probably, the Director of Agriculture has summarily counterblasted hostile criticisms and justified himself. Again "Our duty is to increase, if we can, the income of the cultivator: in a manufacturing centre the proprietor of a factory would not abandon making shoddy articles which gave him a profit of 15 per cent. for the problematical advantage of turning out artistic goods which would bring him even as much profit. So in agriculture the object in view is profit; the material bringing the profit is a detail."

Referring to the opposition of the public to the opening of an Experimental Station, the Director writes strongly that such oppositions show a complete want of appreciation of the object of any Agricultural Department. "Why have an agricultural staff at all? We are not a showy Department and results are slow in coming; educated people live too fast now-a-days to wait for us."

Ill-informed criticism can have only one effect. It is sure to defeat its own purpose and considerably weaken the hands of the department. We may add here that the Agricultural Department is not manned by visionaries and some allowance must be made for the facts that

the department is young and that it takes time to move the farmers of any country.

Cross Fertilization.

This term means the transference of the pollen of one variety on to the flower of another resulting in the production of a hybrid plant. The subject is of the greatest importance for the following reasons:—(1) In performing selection cultivators are, as a general rule, unable to detect and eliminate hybrids. For example, in the important case of red grain contamination when a white paddy is crossed by a red, no trace of the crossing appears in the first year, the crossed grains remain white during that year and is passed as white by the cultivator. Next year, however, it produces a plant in which all the grains are red. (2) On the Experimental Station the facility with which such crossing occurs must be known in order that such arrangement may be made as will keep selected cultures pure. (3) While the above two reasons may be described as detrimental, the existence of first-year hybrids in cultivators' crops constitute a valuable source of material to the plant-breeder once he has detected them. The reason for this is that crossing leads to variation and the production of a large number of new types in the progeny of the hybrid and one of these types may prove to be superior to either of the present forms.

The question was studied at Hmawbi Agricultural Station in Burma during the season of 1912 by using the character of redness in the grain as an index; and by observing the number of white plants arising from a known number of red sowings and *vice versa*. So far as the work done shows, crossing is small, being for the particular case studied at between one and one-tenth per cent. of the whole crop. This result shows that cultivators themselves, by want of care in selecting out the visibly red grain are often most to blame for the contamination that exists.

The fact that natural crossing does occur, however, shows that the production of absolutely pure red-free grain is work that can only be done on the Experimental Stations. There is also a possibility that the occurrence

of natural hybrids may be greater in some localities than others.

American Windmills.

Mr. A. Chatterton, C.I.E., Director of Industries in the Mysore State, according to an American Consular Report, purchased not long ago a windmill made in Chicago for experimental use. From the results obtained he is of the opinion that American windmills are not sufficiently strongly constructed for work in India. "A good many minor breakages have," he remarks "occurred during the course of the experiments, but the most serious defects were due to the bad fitting of the valve in the pump chamber. The design seems to be excellent but the execution was bad and much trouble might have been obviated if the pivots on which the flap valves turn had been made larger and fitted into better designed sockets. A wind engine and pump cannot be placed in inexperienced hands; they require careful looking after and the slightest defect or damage should be remedied immediately it occurs. It will not pay to keep an experienced fitter to look after a single windmill, but the man could easily look after a dozen mills, and where such colonies of windmills can be established they should prove remunerative investments. A 16-foot aeromotor mounted on a 40-foot tower and fitted with an 8-inch pump will cost, when erected over a well, about \$500, and we may assume that the cost of maintaining the same in good order will be about \$1.75 a month. Such investments should yield about 6 per cent. interest on the capital expended, or \$2.50 a month. Ten per cent. for depreciation is perhaps an excessive amount to allow, but it will be well on the safe side if we do so. This comes to \$4.16 a month, making the total cost of the windmill \$8.41 a month. Now, this windmill will do as much work as at least two pairs of good cattle and if fitted with two pumps it will be equivalent to 3 pairs of cattle and the cost of lifting the water with them will amount to \$15 to \$22.33 a month, showing a margin in favour of the windmill of from \$6.66 to \$13.33 a month. This is the result that can be obtained in Madras, but there are thousands of square miles of country in

India where much more favourable results can be obtained, and I therefore conclude that there is a wide field in India open for the profitable employment of windmills in lifting water for irrigation."

Agriculture in Madras.

In a note submitted to the Government of Madras by Mr. D. T. Chadwick, I.C.S., Director of Agriculture, some interesting particulars are furnished regarding the action taken by the Agricultural Department to popularise the new and improved methods of agriculture. The note is interesting from two points of view, (1) as disclosing the attitude of the ryot towards the labours of the Department and (2) as providing a stimulus for the Department to continue and extend its operations. In the last Administration Report of the Madras Agricultural Department, Mr. Chadwick wrote:—"Two theories about the ryot are often advanced—not that either ever troubles him. This is perhaps fortunate because neither is true." Further, he expressed the view that the most permanent improvement in the agriculture of the Presidency can be won by fostering habits of better practice, more care with the seed, purer crops, better tillage, and better management of the land.

The note under review refers not only to the methods which have commanded success, but also to those which have been tried and abandoned; and one general characteristic is clear, *viz.*, that the degree of success attained has been directly proportional to the amount of the work done in the village either actually on the ryot's own lands or in prolonged discussion with him. "After his (ryot's) confidence has been gained in some such manner he may apply for help and visit a district farm to see what further he may learn, but till then he remains sceptical. The ordinary forms of advertisement which have often proved sufficient in western countries are generally insufficient in India, at least at the commencement."

The note records in succinct detail the results of all successful experiments undertaken to improve the agricultural methods of this

Presidency, such as the introduction of disease resisting sugar-cane, the culture of improved cotton, the extension of drill cultivation in Tinnevely, green manuring on paddy land, single seedling, the extension of Cambodia cotton and ground nut, etc., and the methods pursued by the Department to bring the above-mentioned improvements to the notice of the ryots. The key-note of the work undertaken by the Department is seen to be actual demonstration work in the village by men with agricultural knowledge, knowing what they are doing and so winning the confidence of the cultivator. It has been necessary, writes the Director, to send out the men with definite work to do and not with roving commissions.

Mr. Chadwick concludes his interesting note in these words:—

"The work has only just started and much remains untouched. The Agricultural Department may not have realised immediately all that was expected of it, but in several districts widely diverse, it has succeeded in gaining some foothold among the cultivating classes and in influencing their practice and knowledge. This had never been achieved before 1907. I make this statement with a clear conscience, for it is work in which I personally can claim no share."

As regards the steps taken by the Department towards a complete soil survey of the Presidency Mr. Chadwick writes that a rough survey of the soils of the Kistna delta has been made; that a much more complete chemical survey of those of Tanjore has been finished, and the results of this are now being issued as a bulletin; and that work upon the Guntur soils is to be started. He adds that it will be many years before anything like a complete soil survey of the Presidency is made.

The Choice of Manures.

The principles which guide the practical man in his choice of manures and fertilizers are simple and well known, writes the *Gardener's Chronicle*. In the first place the growing plant requires large quantities of water, if only to repair the inevitable and continuous loss of water vapour from the leaves. The plant itself

contains an extraordinarily large percentage of water, and all the chemical operations which take place in it depend for their fulfilment on a larger or smaller quantity of water in the tissues of the plant. Hence if he is to obtain larger crops the gardener must see to it that an adequate supply of water is available to the plant. It is not enough for him—even where it is practicable—to add water; he must build up a soil of such constitution that it will both hold water and part with it readily to the plant. Since decaying organic matter, farm-yard manure, for example, imparts this property to the soil, this class of substance is looked upon as an ideal manure.

In the second place, the practice of manuring depends on the well-established fact that certain mineral substances, and particularly nitrogen compounds, potash and phosphoric acid, are essential plant foods. Hence the art of manuring consists in the amelioration of the water conditions of the soil and in supplying deficiencies in what may be called the feeding capacity of the soil. There is, however, a third principle, which is no less important, but which is apt to be overlooked. That principle is an economic one. The gardener must secure the conditions which we have indicated at the minimum of cost.

By the addition of dung in sufficiently large quantities an adequate amount of essential food may be provided; but since dung contains relatively small quantities of such an essential as phosphoric acid it is evident that a more economical method of manuring consists in adding, together with a smaller amount of dung, some phosphatic fertilizer, such, for example, as basic slag.

In spite of the above, Messrs. Whitney and Cameron of the U.S.A. Bureau of soils, hold that all soils contain large stores of the essential foods, phosphates and potash, that the water in the soil—the soil solution—contains enough of these substances for the purpose of plant growth, and that one soil is not more fertile than another because it is richer in such mineral substances as potash or phosphates, but primarily because it is in better case to supply the crop

with all the water which it requires. A second cause of the inferior fertility of certain soils is found by Messrs. Whitney and Cameron to lie in the existence therein of toxic substances produced by the roots of previous crops, and left in the soil to the detriment of the growth of the plants which succeed these crops.

In order to meet the objection that artificial potash and phosphatic manures are known to increase soil fertility these investigators urge that the fertilizers act, not by supplying food to the plant, but by putting the toxic soil-substances out of action.

From the point of view of immediate practice the newer hypothesis is not important; but from that of the ultimate practice of manuring no less than from the point of view of scientific horticulture it is of very great importance indeed. Hence the investigations carried on by Mr. A. D. Hall and his Colleagues at Rothamsted, and published recently by the Royal Society, are particularly opportune.

The net result of these investigations is to vindicate the former view, and to show that the revolutionary toxic hypothesis is without foundation. The conclusions reached by Mr. Hall are, first, that the Rothamsted plots, which are to-day producing poor crops owing to the fact that essential foods—now potash, now phosphoric acid—have been withheld during the past 60 years, yield good crops when their particular deficiencies are made good. Thus phosphorus-starved soil gives a normal good crop when phosphatic manures are added to it and similarly a potash starved soil recovers its fertility when its defect of potash is made good.

Second, although the soil of such plots has carried continuously for the past 60 years crops of one kind only—wheat in some cases, barley in others—water extracts from the soil are found to have no toxic action whatever on the roots of similar or different plants.

Hence the toxic theory of soil-fertility may be dismissed or at most regarded as of very limited applicability.

Third, the Whitney-Cameron hypothesis that all soils contain enough potash and phosphates

for plant-feeding purposes is shown to be improbable. For Hall demonstrates that, as we might expect on the old view, the feeding value of a soil-extract increases within the wide limits with its concentration. That is to say, a solution which contains more potash or phosphates produces bigger crops than one which contains less of the substances. Naturally, there is a limit to this law that concentration increases crop, and an excess of soluble fertilizer may result in no crop at all. The role, therefore, of the artificial fertilizer is to bring the "soil solution" up to the maximum beneficial concentration, and fertilizers used as supplements to dung exert their beneficial effects by reason of the plentiful supplies of specific foods which they put at the disposal of the plant.

The Agricultural Department and Improvements.

"How improvements could be introduced into Indian Agriculture by the work of the Agricultural Department" was discussed by a sub-committee at the last Board of Agriculture meeting presided over by Dr. Harold Mann.

The report of the sub-committee dealt at length with the importance of the Co-operative Societies for the dissemination of agricultural improvements amongst the people. It stated that undoubtedly most striking advances during the past two years had taken place in connection with the development of the Co-operative movement. In 1912 an Act was passed which removed the limitation preventing Co-operative Credit Societies from doing anything but supply funds to their members and which allowed the formation of societies with other profitable objects in view. That had resulted in the immediate utilisation of the Co-operative Societies for the dissemination of agricultural improvements and in many cases with promise of every great success. In this connection the committee wished to emphasise the fact that it was desirable that the Agricultural Department should work if possible through organised bodies of cultivators and that one of the most suitable methods of organisation for its purpose was that of Co-operative Societies. Even without going beyond the old function of

the societies, that of supplying credit, the Co-operative Societies had been used and were still being used for spreading improvements. They had often been used to spread literature and were one of the most effective agencies in doing so. They had in some cases—as, for instance, in Eastern Bengal—taken the advice of the Agricultural Departments with regard to advancing money for improvements or so-called improvements to be made by their members, and if the Agricultural Departments got into close touch with these societies the latter would more and more frequently appeal to the Departments for guidance in making advances, and thus many promising schemes could be encouraged and many fantastic ideas (which would surely arise if money were available) could be check mated at the outset. These things could be done without any extension of their old powers, but as soon as it became possible for co-operative credit societies to extend their functions they began to do so in many cases under the guidance of the Agricultural Departments. One of the first signs of this was the wish on the part of a number of rural societies to carry a stock of implements, and sometimes of seed, for sale or hire to their members. This had been done in a number of provinces and often proved a very great convenience, besides being profitable to the societies themselves. The stocking of implements and spare parts was easy; that of the seed was more difficult, and a good deal of care must be exercised in recommending ordinary credit societies to undertake it.

The greatest development of miscellaneous agricultural functions had perhaps been reached in the case of some societies in the United Provinces. There, the relation between the Department and certain societies was very close. These must enlarge their functions and definitely recognise agricultural improvement as a duty towards the members. A certain amount of reluctance existed amongst credit societies to make these extensions of their functions and it was a question on which considerable difference of opinion existed in the committee as to whether they should be en-

couraged to do so or whether special societies or unions should be formed, side by side with the credit organisations, to undertake these trading functions in various forms, modified to suit local conditions. Co-operative organisations for the production and supply of seed would probably be the first results in many rural tracts of the success of the credit societies. Details of organisation would vary much but whether undertaken by credit societies, as in Burma, or by the societies together, it formed the probable first step in many cases to a very large development in these directions. On the whole enough had been done in various directions to indicate how, in many ways, Co-operative Societies might be used or encouraged or established to bring agricultural improvements into use. It must be emphasised, however, that a Co-operative Society was a business concern and could not undertake an agricultural propaganda for its own sake. Caution should probably even be exercised in recommending them to do anything which could not actually be productive to the society, as a society, even where it might be profitable to the members individually; and in these doubtful cases probably careful consultation with the local Registrar of Co-operative Credit Societies should precede any recommendation or even approval of action by a society which did not lead to a profit to itself as a co-operative body.

Other methods which the Committee suggested were the formation of agricultural associations and organisation of local demonstrations on a much more extended scale than hitherto and close co-operation with the Revenue Department.

Another method was the increased use of the vernacular press.

The success of itinerant assistants in some directions in Madras in instructing people in the transplantation of single seedlings in paddy cultivation was instanced as another method which could safely be undertaken.

The adoption of short courses in special subjects in various forms, similar to those at present given in the vernacular agricultural schools of Bombay; the establishment of school gardens was also suggested, which should be directly under the control of the Agricultural Department, while very close co-operation with the executive head of the district was desirable.

After some discussion the report was approved by the Board.

The Co-operative World.

An Overdone Conference.

There is a feeling in several quarters that co-operative conferences are being rather overdone all over the country. No new problems are presented by co-operation every year and in the different provinces and districts. A triennial conference should quite do. But if it must be held every year, it is suggested it may with greater advantage be made a peripatetic body as are our political, industrial and social conferences.

Co-operation in Madras.

The report on the working of the Co-operative Societies in the Madras Presidency during the year ending 30th June 1913, shows that there were 972 Societies at the end of the previous year and 106 Societies were newly registered during the year under review. The aggregate number of members rose from 66,156, to 82,713 or by 25 per cent. as against an increase of about 50 per cent. in the previous year, while the number of Societies increased by 11 per cent. as against an increase of 63 per cent. in the previous year. As regards the finances of the Societies, of the 1,078 societies including those registered during the year, 994 societies had a paid-up share capital of Rs. 9,73,944 as against 888 societies with a capital of Rs. 7,51,724 at the end of the previous year, showing a considerable increase per society. The reserve fund at the end of the year amounted to Rs. 4,43,357 as against Rs. 3,00,986 at the close of the previous year, thus showing a most satisfactory increase of 47.3 per cent. Another gratifying feature is that no fresh loans were granted to Co-operative Societies by Government during the year covered by the report.

Co-operation in Russia.

Russia ranks second among the countries of the world in regard to the number of its Co-operative Societies, Germany taking the first place.

In Russia there are two kinds of co-operative credit societies:—(1) co-operative loan and savings societies (System Schulze-Delitzsch); (2) co-operative loan societies (Russian System). These latter are institutions, neither of the Schulze-Delitzsch nor of the Raiffeisen system. They have no share capital nor dividends, while the Schulze-Delitzsch credit associations have both. Further, their field of action is usually very large, including sometimes from 2,000 to 3,000 households and even often more than 1,000 members. In the Co-operative societies of Russian system the members' liability is almost always limited, while in those of Raiffeisen system it is unlimited. Besides this, in the former the board of management is almost always remunerated, while in the latter only the accountant is paid; finally the co-operative loan societies do not grant loans for very long terms, that is for terms of over 5 years, and limit themselves for the most part to short term loans, while the Raiffeisen banks generally lend for long terms.

The Russian loan societies conform neither to the Schulze-Delitzsch nor the Raiffeisen type; they have really their own principles which may be styled the Russian system.

A number of co-operative Societies have organised co-operative granaries for the collective sale of wheat. A recent number of the *Monthly Bulletin of Economic and Social Intelligence* from which the above information is gathered, mentions also Federations of Credit Co-operative Societies. Their work is as yet hardly started. There are Distributive Societies but the movement in favour of the federation of the distributive Co-operative Societies is as yet little marked. There are also Co-operative Dairies, principally in Siberia.

The principal object of the agricultural associations is the organization of collective purchase and sale; however, 461 occupy themselves with dairy work, 77 with the use of

agricultural machinery on a co-operative system, 9 with wine making, 7 with bee keeping, 7 with horticulture etc. On an average each association has 200 members.

Co-operation in Baroda.

The following are extracts from the speech delivered by H.H. the Gaekwar of Baroda in opening the proceedings of the first Conference of the Co-operative Societies in his State :—

These Co-operative Societies are most beneficial institutions since their objects are the introduction of business habits amongst the people, the improvement of their industries, and the consequent raising of their standards of life. To me co-operation appears a splendid means towards the solution of those problems of town and country life which are so old and yet so new, ever insistent on our attention with a view to solution. Especially in rural life, the principles of co-operation should permeate all village activities, making of each centre a single economic unit. The trend of modern civilisation is towards the aggregation of these units. Amongst the villagers, if the whole community acts as one in buying and selling, in production and consumption, its income and happiness will proportionately increase. They will be able to make a better stand against the inevitable vicissitudes of every day life, they will develop habits of forethought which will help them to provide for the future, and they will be doing their part in the promotion of those reforms which my Government desire so greatly to foster.

AGRICULTURAL CLASSES.

I find that at present your activities are mainly confined to the agricultural classes, and I think for sometime to come they will and should be so confined. Agriculture is our most important industry, and more than 75 per cent. of our people are directly supported by it. Our agriculture is not in a very prosperous condition. The researches of the agricultural department of other countries such as Germany and the United States, and especially, here in India, of the British Government have achieved noteworthy results by

which we may hope to profit. The cultivators are poor, ignorant and sometimes improvident. They are not fully provided with farm implements and stock, nor do they know anything of scientific agriculture. They are slaves to old and expensive social customs. Their holdings are small and scattered, their incomes are meagre and uncertain and, I grieve to say, they are burdened with debt. They are divided by party factions and petty disputes, and are far removed in mind and thought from the currents of modern progress and civilisation.

SUCCESS OF CO-OPERATION.

It is impossible to banish these economic evils by means of legislation, however benevolent in intention. The obvious, outstanding remedy is co-operation in each rural community. Where there is ignorance and poverty, imprudence, and vice, co-operation will come to our aid. Those of you who have studied the history of the movement in Germany, Denmark and Holland, for instance, must have been convinced that if we desire, as desire we surely must, to introduce the benefits of civilisation amongst our people in rural areas, there is nothing more potent, more stimulating to that end than the Co-operative Society. In the countries I have cited the principles of co-operation have worked miracles amongst the peasantry. Peace and plenty have replaced poverty and all its distressing accompaniments, and real solid foundations have been laid for national prosperity. The farmers have been made enterprising, thrifty and progressive in thought and action, and rural life has been awakened to the highest degree of efficiency. To the student of rural economics there can be no more inspiring chapter than that in which we read the record of the success of co-operation in Europe. And the problem which awaits our attention, differs in no very material point from that which the leaders of the movement, found confronting them at the outset of their labours.

PECULIAR FORCE OF CO-OPERATION.

Co-operation possesses a peculiar force of its

own. It affords easy credit to a man who has always been, like his fathers before him, a slave to the *savkar*, paying for occasional accommodation an exorbitant rate of interest. It enables him to obtain in the best market at the right time full value for produce which, previously, circumstances forced him to sell at less than its real worth. It procures for him farm and domestic requirements at wholesale rates and it opens a way for the acquirement of a knowledge and practice of scientific farming in place of the present more or less primitive methods. By means of various kinds of insurance it makes his industry stable, protecting it against seasonal changes and fluctuations. Besides these obvious economic advantages Co-operative Societies offer great moral and social benefits. The system of co-operation makes people thrifty in the use of their resources, helping them to save money, and to make the best economical use of their savings through agricultural banks. It checks vice, drunkenness and improvidence, and makes its followers prudent, honest and self-reliant. It teaches mutual help and brings harmony and contentment in place of faction and jealousy. Through the strong public opinion it creates the Co-operative Society checks improvident social expenses, and is a potent influence for social reform. By its means, too, village sanitation, education and administration may be strengthened and improved.

The success of the movement depends on the wisdom and tactfulness of its leaders.

CO-OPERATION A LIBERALISING FORCE.

For hundreds of years our country has not advanced as it should. The whole of Indian Society has been split up into numerous castes and creeds with the result that such progress as has been achieved, whether social or industrial, has been along very narrow lines. It is owing to the division of our people into many sections, a sad feature of our civilisation, that trades and professions are regarded as rightly to be confined to certain castes to the exclusion of all their available merit or vocation. And it has long seemed to me that in our practical politics we have carried the principle of

hereditary office too far. Under modern conditions a more liberal, less rigid development is essential. The Co-operative movement will make you think of these things, will put life and vigour into the old and inactive village community.

CO-OPERATION AND STATE AID.

I fully recognise, as I have said before, the importance of this movement, and am prepared to give it all necessary State aid. But you will fully understand that there must be limits beyond which State-aid ought not to go. It has been recognised that State help should be so used as to help the people to help themselves. Co-operative institutions are based on self-help, and are intended to teach self-reliance to the people. If State aid does not develop these virtues it is certainly misapplied. Mere 'spoon feeding' is most demoralising in its pauperising effect. Those of you who are entrusted with the administration of the Co-operative Societies, will, I hope, bear this principle in mind, and will guide them with wisdom and intelligence. No efforts however should be spared in the education of the people in the supreme necessity of village organisation for economic purposes.

I am glad to find that some of the officers of the Revenue Department are taking keen interest in this movement. I hope they fully realise the effects of the successful organisation of village life and improved agriculture. Not only will these simplify our general administration, but they will thereby also allow Government to devote their attention and energies to other equally important problems of the higher civilised life. It is my sincere desire that every officer of the Revenue Department should not only study the problems of agricultural economics, but should also try to introduce modern ideas into the rural life of my people. I need not say that any officer who does not show active and intelligent interest in these movements, is unfit to hold his post, since he shows by such lack of interest, that he is out of touch with the spirit of his duty to his Government and the people. We do not want to make this movement official, but to our farm-

ing communities Government patronage and encouragement will be a great help in the organisation of themselves into societies which will enable them to assist each other and so themselves.

BASIS FOR LOCAL SELF GOVERNMENT.

One of the functions of our Local Boards is the development of agriculture and co operation in the district. I find, however, that they have hardly paid adequate attention to these most important subjects. Therefore I have made use of this opportunity specially to invite you, gentlemen of the District Boards, to this Conference. I am glad to observe that nearly all of you have responded to my call, and I am anxious that you should see my Minister before your departure. By the time the Conference is over, you, gentlemen, will be convinced of the importance of the Co-operative movement and scientific agriculture. In addition to its economic advantages, the movement affords a great opportunity for the training of village leaders, and will supply you with good material for Taluka Boards. The leaders of successful Co-operative Societies will naturally take great interest in your work, and will conscientiously carry out all desirable improvements in their villages. They will represent to you the needs of their localities, and you can trust them to carry out your suggestions. In this way not only will economic development take place in villages, but a strong basis will be laid for the work of Local Self-Government. I exhort you, then, to take keen interest in agricultural organisation and to do your utmost to promote it individually, as well as through your Boards.

Marketing Vegetable Products.

Among the articles that are of general interest, included in the latest Year Book of the United States Department of Agriculture, is one by Mr. L. C. Corbett on the above subject. He throws out many valuable suggestions during the course of his most instructive essay, which can best be followed by reading the article in its entirety.

The existing practices of marketing perishable crops, such as vegetables, are susceptible

of improvement and modifications, in any country. Mr. Corbett styles the present method of marketing vegetables as that of independent action. The system of independent action, so far as it applies to the marketing of vegetable crops, is open to the following criticism :—

Independent action means wide variation in types of packages. Packages of all sizes and descriptions are received in the markets from various districts, so that a quotation on a basket, hamper, or container in one market may mean little in another section. The packing of the product is done according to the ideas of the individual directing the work; the grades are founded upon his personal notion of what constitutes a first, second, or third grade, judged by the product he himself handles and not by any market standard.

The shipment of products is haphazardly effected. The result is that any brand that the grower may adopt appears in the market, remains but a short time, and disappears until the succeeding year. Under such conditions it becomes very difficult to build up a reputation for one's product and to establish a standing for a brand or style of package which will serve to assist in the sale of the crop the following year.

Again, a product after it has reached the city and before it is ultimately delivered to the consumer, may go through any or all of the following agencies designed to promote trade : the commission merchant, the receiver, the jobber, the handler, the broker, the retail dealer and other minor bodies who intercept the products on its way to the consumer. The factors, therefore, which may enter into the ultimate cost of the product to the consumer are :—

- (1) Cost of transportation, including (a) freight of express, (b) terminal of switching charges, and (c) dryage ;
- (2) commission ;
- (3) jobber's or dealer's profit (change of ownership) ;
- (4) storage charges ;

(5) distributor's profit (change of ownership) ;

(6) the cost of growing, packing, and hauling to the shipping point is never taken into account in determining the cost of the product to the consumer, except in so far as the return made by the commission merchant jobber, or dealer affects this price.

The question of the cost of production plus a fair profit is not taken into account in agricultural transactions as in other productive enterprises. In fact, farmers themselves, with few exceptions, have no idea of the cost of producing many of the crops they offer for sale. The cost of production in any single year should not, however, be taken as the basis for the cost of a given product. Seasonal variations are so great that the only just basis for determining the cost of any product is its average cost on a given farm over a series of 5 to 10 years.

A careful analysis of trade conditions has indicated to the writer that only from 33 to 36 per cent. of the price which the consumer pays for a perishable product reaches the producer. This must cover the cost as well as the risk of growing, and must also provide the profit and money invested. About 26 per cent. of the cost to the consumer is required for transportation and from 5 to 10 per cent. for commission. Dealer's profits range from 50 to 100 per cent., for it is maintained that every time perishable goods change hands the selling price must be double the purchase price in order to meet losses. As the retailer receives the goods he again adds 100 per cent. or thereabouts to the cost to the consumer. It is easy to see how high costs necessarily follow such methods of marketing.

A system of marketing, based on co-operative action rather than on independent action, has been developed in some parts of America. The consumer really feels the stress of high prices and has come to realise and appreciate some of the factors which enter into them, and it is clear that the task of solving the problem of cheaper food products lies with him as much as with the producer.

Co-operation among growers solves the problems about package by making it uniform; it guarantees the pack by employing competent inspectors, and insures uniformity of grade. What is accomplished by the independent dealer might, however, be accomplished by co-operation among various local association of producers. Through a federation of such associations a marketing expert might be maintained who would move with the season from one centre to another. By so doing, the markets would deal continually with the same individual, and the grades and packs would be calibrated.

At harvest time, producers have little conception of the competition they will have to meet in the market, unless the crop is so short that it has become a matter of comment. Crop reports should be made at frequent intervals and should be based on accurate personal canvass by competent judges. A few seasons' records for any given locality will suffice to furnish a basis for determining the safe acreage for that section and to fix the planting and harvest dates, as well as to indicate the normal product which may be expected from a given acreage.

It is true that in a co-operative association for marketing purposes, the participants place at stake the return of their labour in the form of the crop produced, but in order to insure the patronage and the loyalty which is necessary to the stability of any co-operative action, a membership requirement must be made sufficiently large to prevent a member withdrawing from the association for slight cause. A method which has been successfully used in some of the associations is to require a cash membership fee sufficient to raise the required capital for conducting the business of the association. In addition to the cash membership requirement, a bond should be given in the form of a promissory note executed by each member in favour of the association, this bond to be held in trust as long as the member remains in good standing, to serve as a guarantee for faithful adherence to the constitution and by-laws of the association.

Besides the benefits to be derived from co-operative growing, marketing, and purchasing there might also be included banking and co-operative insurance, which is already an important factor in many rural communities. The bond which has already been mentioned in connection with the obligation of members can be used as the basis of the reserve or guarantee fund for the insurance feature.

The business of the association should be handled by a manager under the direction of a Board of Directors. Important transactions should be governed by the concerted judgment of the Board of Directors and the Manager.

The whole paper is summarised thus :—

It is within the power of the producer to co-operate in the sale of vegetable crops to the extent of standardising the pack and the package and guaranteeing the grade, to reduce the cost of transportation, and to reduce the cost of sales by establishing a reputation for a product.

Co-operative management facilitates business with common carriers and expedites the settlement of claims against both carriers and dealers.

Co-operative action between producers and distributors insures a quicker delivery and decreases the cost to the consumer by saving commission, brokerage, etc.

Co-operative interest enables growers to purchase consumable supplies, to secure short-time loans, to provide their own insurance, to conduct a system of crop reporting which will give them an accurate idea of the condition of the crop and the market at any time, and, when conducted on a broad basis, to prevent depression of the market by unwise distribution and transportation.

Agricultural Co-operation in Denmark.

The British Consular report on Danish trade happens to be more interesting than usual, because it deals with a subject now so much in the public mind—the organisation of agriculture. Denmark is pre-eminently an agricultural country for out of an export trade of £33,000,000, farm products account for as

much as £29,000,000, while grain and feeding stuff are the two chief imports. The little peninsula which lies between the Baltic and the North Sea has no special natural advantages, and its reputation in the provision markets of Western Europe, and especially in the United Kingdom, is due to the skill and industry of its citizens. In England, agriculture is still carried on by individual farmers; in Denmark it is carried on by associations of farmers. Nevertheless, as Mr. Erskine points out, the Danish co-operative movement got its first impetus from the Rochdale system although it has developed on contrary lines, practically all the 1,400 Danish co-operative stores being in the country, while the English stores flourish chiefly in the towns. Denmark, however, is more celebrated for its successes in agricultural co-operation. There are now 1,177 dairies, with membership of 154,602, which produce over 10 millions' worth of butter annually, taking the milk of 88 per cent. of the cows. Co-operation, the report continues, "is especially a movement among the owners of medium and smaller sized farms," and in general the milk yield per cow is largest on the small farms. Again, whereas the large farms used to be "considerably more advanced in all matters relating to dairy farming than the peasant farms, when the co-operative dairies were started the position was reversed." The bacon factories commenced a little later, and now they slaughter nearly 6 millions pounds' worth of pigs. Every pig killed in Denmark for export is inspected by a State Veterinary Surgeon, and those passed by him are branded. The Egg Export Society was founded in 1895, and has now 500 local centres. It introduced branding, insisted that its members should deliver only clean new-laid eggs, and submit them to the electric light test. "Danish eggs are now an excellent article of sale, equal to both the butter and bacon." The Consul observes that the enormous development of the Danish export trade in these three products and meat has taken place in the last 20 or 25 years. "A cause of this growth is the fact that the laws all tend to prevent the creation of new large farms, as it is forbidden to join smaller farms, and thus make large farms out of them." Most of the land, too, worked by the peasants, which used to be leasehold, has now been sold to them, so that only one-fifteenth of the agricultural population are tenants or leaseholders.

Agricultural Associations.

Agricultural Associations in India are of recent origin and in several places where they are not run by the agricultural department they are languishing. But there is no doubt that there is ample scope for these associations if they will do their work in a businesslike manner. There are several directions in which these associations may do good work and their scope will be found to be practically unlimited as may be seen from the purposes for which societies have been formed in Belgium.

According to an official report there were in Belgium 1,775 agricultural societies and federations on December 31st, 1910, and they were distributed as follows :—

- 3 agricultural "comices";
- 765 agricultural leagues;
- 13 farm-women's clubs;
- 234 horned cattle improvement syndicates;
- 3 horse improvement syndicates;
- 280 goat improvement syndicates;
- 1 sheep improvement syndicate;
- 12 dog improvement syndicate;
- 5 syndicates for the improvement of dogs for draught purposes.
- 85 rabbit improvement syndicates;
- 22 pig improvement syndicates;
- 17 bee-keepers' societies;
- 27 horticultural societies;
- 1 arboricultural society (pomology league);
- 18 market gardeners' societies;
- 1 society for the prevention of the adulteration of butter;
- 1 veterinary surgeons' society;
- 1 vine-growers' society;
- 150 poultry keepers' societies;
- 5 beetroot growers' societies;
- 13 chicory growers' societies;
- 12 tobacco growers' societies;
- 34 hop growers' societies;
- 23 strawberry growers' societies;
- 8 pea growers' societies;
- 1 agricultural labourers' society;
- 4 provincial federations of agricultural leagues;
- 1 district federation of agricultural leagues;
- 2 cantonal federations of agricultural leagues;
- 1 federation of chicory growers;
- 1 district federation of kitchen garden society;
- 1 national federation of poultry keepers' unions;

Total 1,775

Similarly in Switzerland there were—

	Number of Associations.	Number of Members on Jan. 1st, 1910
Agricultural Associations ...	494	60,084
Ornithological, Poultry & Rabbit Improvement Societies...	158	8,153
Beekeeping Societies ...	121	7,330
Agricultural Co-operative Societies ...	557	48,469
Dairy and Cheese Making Societies ...	2,785	77,227
Dairy Associations and Societies	17	1,419
Horned Cattle Improvement syndicates ...	913	28,434
Horse Cattle " " ...	44	3,821
Goat " " ...	220	8,265
Sheep " " ...	38	613
Pig " " ...	48	1,217
Associations for the cultivation of Trees and the Utilisation of fruit ...	68	3,648
Viticultural Associations ...	133	2,744
Threshing Associations ...	53	3,946
Distillery Associations ...	39	974
Agricultural Mills ...	3	6,059
Agricultural Bakeries ...	73	388
Farm Improvement and Irrigation Associations ...	227	3,628
		7,471

	Number of Associa- tions.	Number of Members on Jan. 1st, 1910.
Alpine Pasture Associations ...	15	1,874
Farming Associations ...	139	10,024
Banks for Loans on Cattle ...	5	457
Mutual Horse Insurance So- cieties ...	31	7,474
Total Local Associations ...	6,231	293,719
Federations with own mem- bers ...	95	86,410
Federations with Sections ...	81	346,225
Swiss Peasants' Union ...	1	144,377
Total ...	6,408	870,731

Some of the lines indicated above may not be suitable for India but they show the possibilities of associative work in agricultural matters.

Co-operation Among Farmers.

The Tenth Congress of Agriculture, held a few months ago in Ghent, discussed, among other important subjects, the following recorded in the *Monthly Bulletin of Social and Economic Intelligence*:-

Agriculturists generally, and above all the middle agricultural classes, have need of a credit organization suited to their special conditions. After conceding this, the Congress unanimously declared that the institutions best suited for conducting agricultural credit business are the small mutual banks for limited areas, firmly united and under good supervision.

The meeting also unanimously recommended the farmers to deposit their available capital in the agricultural credit banks "as the savings of the farmers should in the first place serve to advance agriculture."

It is consoling to observe that, with similar desires, all the States of Europe have rivalled each other in promoting credit associations and the movement has crossed the oceans and manifested itself in Japan, in the colonies, in French Africa and India, and even new countries, where there is much land and as yet the inhabitants are few, feel the need of credit establishments; so, in the United States, the agricultural world is now agitating for the organization of credit after the model of the European countries.

Another subject of not less interest was that of agricultural co-operation, now in favour in all countries and most variously applied.

The Congress considered it advisable first of all to define its conception of agricultural co-operation. It understood by the expression "the agreement by which farmers unite all or part of their economic activity for the accomplishment of definite operations for the special advantage of those associating and share the savings obtained by the elimination of the middlemen's profits." Two principles were therefore, accepted as characteristic of the co-operative societies; the first, that the eventual contributions of capital can only directly or indirectly give an income at a certain rate, now as a rule 4 per cent. The excess revenue each year may be repaid as refunds or set apart to form a reserve fund or employed for purposes of collective utility. The voting rights must be the same for all. The second principle was that the reserve fund can only be divided when the rules allow of it. Such division, as also that of the annual surplus, must be made among the associates in proportion to the business done by them with the society. The inalienability of the reserve fund is, however, to be preferred.

Desire was also expressed that local, regional or central co-operative societies should be formed by the agricultural associations, with districts of equal area under their supervision. The associations must, however, first decide whether it is not best for them to assume the functions of co-operative societies themselves, or create special organizations for the purpose.

Further, a remarkably important declaration was that of the legality and utility of the intervention of the State in organizing agricultural co-operative societies, on condition, however, that its financial assistance be subsidiary and temporary.

The Congress finally adopted the following classification of the rural co-operative societies into five groups, for various objects:-

1st, mutual agricultural credit; 2nd, collective production; 3rd, collective purchase of farm requisites; 4th, collective sale of agricultural produce, raw or manufactured; 5th, mutual agricultural insurance.

MUTUAL AGRICULTURAL INSURANCE.

With regard to this matter, the Congress, recognising the importance of insurance organized on mutual lines, both on account of the savings it permits of being made, and its moral effects, expressed the desire that the intervention of the State in the work of the mutual societies may be so ordered, that they may be able to preserve their co-operative character, in which their strength and their social value consists.

The Industrial World.

Refrigeration for Cut Flowers.

In an article in the *Information* it is observed that leading men in the industry have been giving special attention to the question of refrigerated transport for cut flowers. Recently fresh strawberries have been sent from the Herault to Berlin, where they are reported to have arrived in perfect condition. M. Aussel showed at the Toulouse Refrigeration Congress in 1912, that cut flowers can best stand a long journey if previously put into cold storage for twenty-four or forty-eight hours as soon as they are cut.

Tanning in India.

Mr. P. V. Mehd, lately a Government of India scholar and at present Professor of Chemistry at St. Xavier's College, delivered an interesting lecture recently in Bombay, on the tanning industry and its possibilities in India. In Madras of late years leather manufacture is on the increase but, in India as a whole, there is a restricted use of leather. Mr. Mehd pointed out that the so-called depressed classes in India had some hereditary skill in tanning and leather curing, and he emphasized the importance of taking these people in hand and improving their technical knowledge apart from the mere question of imparting to them a knowledge of the three R's. He urged the importance of opening at industrial centres a type of model school where some practical processes of tanning could be taught to our *chamars*, who can then work as skilled labourers in the Indian tanneries of the future. Here is a suggestion worthy of consideration by the workers among the depressed classes.

Cement Contract.

The *Sind Gazette* writes:-A contract has recently been negotiated between the Punjab Government and a London Syndicate which promises to attract considerable public interest. The Punjab Government have agreed to buy all

the cement required by the Government for the next ten years from the Syndicate who, on their side, have undertaken to supply the cement from a manufactory to be erected hereafter in the Punjab or elsewhere in India. The Punjab Government have further agreed not to allow any other firm to manufacture cement in the Punjab, thus checking local competition as far as possible. The price that Government will pay the Syndicate for its cement for the next ten years is forty rupees per ton, plus cost of bags, barrels, and railway freight. The Syndicate are now endeavouring to raise the capital in India for the new State Aided Cement Factory. The factory will cost £88,000.

Forest Industries in Mysore.

With a view to improve the working of the forests and to utilize them to a greater extent in future in providing occupations to the people, it is proposed in an order of the Government of Mysore to carry out a survey of the forest resources of the State and to investigate the means necessary for the exploitation of remote and inaccessible tracts and the development of forest industries. The following subjects will be taken up for investigation:-

(i) Study of important forest products of economic value and the publication of a commercial guide giving information as to the localities where they are found, the quantities available, their uses and the demand and markets for them.

(ii) Extension of forest communications with an eye to work distant forests.

(iii) Opening forest tramways and establishing saw-mills and providing other facilities for economical working of the forests.

(iv) Investigation of the possibilities of the following important forest industries and the preparation of brief monographs embodying the results of investigation:-

(a) Wood-distillation, including manufacture of charcoal.

- (b) Paper manufacture.
- (c) Match-making.
- (d) Sandalwood oil distillation.
- (e) Development of tanning industry.
- (f) Better propagation and utilization of lac, gum, etc.
- (g) Introduction and acclimatization of new varieties of timber from Malabar, Travancore and other places.
- (h) Improving and utilizing cane and rattan which are deteriorating in the Mahad forests.
- (i) Formation of a herbarium.

Decline of the Indigo Industry.

The indigo industry has steadily declined since Mayer of Munich announced in 1878, the successful synthesis of an artificial indigo from a coal-tar product. The decline has since extended; but we are reminded by a writer in the *Times* that there is still vitality left in the industry especially when it is remembered that natural indigo is an Empire product.

It is clear that although the unofficial European population may have diminished, yet the interest in the growth of indigo is as lively as ever, because the number of small owners of lands who are also occupiers tends to increase. After all, indigo growing is a farming operation, and like all such operations is dependent on the weather for a successful issue.

It would appear that some market will always be free for the natural product. At present the Eastern world takes about 80 per cent. of the total output of natural indigo, leaving the balance to be consumed in England and on the continents of Europe and America. Eighty per cent. is a large slice out of a whole trade of only 100. Provided the trade routes can be kept open, the unalterable customs of the changeless East are factors of serious import, all tending towards a continued demand for the natural dye in much the same quantities in which it is now being produced.

Another factor is made mention of by the writer in the *Times*. Not long ago Professor Armstrong declared that the margin between the cost of manufacture of the natural and synthetic product was only small. Such a de-

finite announcement should go far in reviving a dying industry. And, in spite of the whole school of synthetists, there is, an undoubted "something" in a natural indigo vat which is wanting in the synthetic vat. The dyers themselves will say they like an indigo with "body" in it, and will say, and rightly, that one mark of indigo is preferable to another on this account.

The writer in the *Times* draws a moral and urges the establishment of a practical dyeing school. If planters and users of the natural dye are not prepared to see their raw material disappear altogether or practically so from the English market, they ought to combine in the formation of a practical dyeing school for the natural dye only. Such a school would not be an expensive matter either in first cost or upkeep, and should undoubtedly receive the support of the Board of Education. Could a school of this kind be brought into being, it would do more to establish the claims of the natural dye than any scientific disputations, which, resting as they do on disputed chemical formulae, can only lead to a negative result. Nor is this quite all. From two or three sources, somewhat indefinite in origin but all tending in the same direction, information comes that a small setback in favour of the natural dye is beginning to make itself felt in certain of the English markets. It is to be hoped that the natural dye may again make some small headway in the world against its organised competitor, although it can never hope to resume its former supreme rule.

Fruit Preservation.

We take the following two methods from the *Burma Economist* as the cheapest ways of keeping fresh fruits in their raw state for a long time. They are easy, cheap and within the reach of every villager.

First method :—Take a number of any fruit you wish to preserve, mangoes or pine-apples or oranges, etc., pick out the sound ones carefully and wipe the surface clean with a sponge or wet cloth and expose it to fresh air so that the moisture may be dried. When it is perfectly dry, take each one and wrap it in silk or tissue paper and keep them on one side. Now

get a sufficient quantity of clean dry sand of uniform size (pass it through a sieve) and a bamboo or rattan basket. Place the basket at a convenient spot where you need not shift it afterwards and pour into the bottom a layer of sand. The depth of the layer depends on the heaviness of the fruit, that is, the fruit should be entirely covered up on all sides so that air may not get at it. On this layer, place as many fruits as you can without one touching the other. Let there be ample space between the fruits so that the sand may fill up the spaces well. Then spread another layer of sand on the top of this and lay another row of fruits and so on till the basket is full. Take good care that you do not overload the basket so that the bottom layers are crushed or displaced by the top layers of fruits. For pine apples, three-layers only, for mangoes from five to six, and oranges the same will do. Plantains in combs may be laid four to five. This method of keeping the fruits fresh may answer for local purposes but not for transport. It may be so arranged that the basket is let into a deal box with enough ventilators and which will fit the basket exactly. A box like that could be prepared with planks on top and bottom, and bottoms laid an inch or two apart at the sides. Anyhow the weight of the sand is against transport for long distances with this method. For that purpose the following method may be adopted.

CORK METHOD.

Powdered cork has been found very efficacious in the preservation of fruits. A pound of it is enough to preserve about 150 to 200 lbs. of fruit. It can be obtained in any quantities from Chemists and wholesale druggists. The fruits must be cleaned and wrapped before packing in the dealwood boxes. The process of packing is the same. Care must be taken that all spaces are filled in with cork dust. Cork is a better preserver as it has the property of protecting against heat, cold or any other source of fermentation.

In both methods, the principal points to be noted are :—The fruits should be thoroughly sound ones that were not crushed or injured or over-ripe previously. A little under-ripe

fruits are always best. Then they must be thoroughly cleaned of all dirt and dust before being packed and there should be no moisture left on the skin. The packing must be air-tight round the fruits and the load on each layer should not be heavy.

When they are taken out for use, they should be dipped in cold water before being exposed for sale. By thus preserving each fruit in its season, our fruit sellers can keep a continual supply of any of them out of their season and then command a higher price than when the market is overstocked. With a little capital and some ingenuity a large amount of trade can be commanded by this means.

Fish and Vegetable Oils.

The following should be read in continuation of the extract which appeared under this title in the previous number of the *Wealth of India*, page 106. It constitutes Sir F. Nicholson's concluding remarks :—

The oils and fats to which I would direct attention are: *Animal*—(1) Fish oil (sardine or liver). *Vegetable*—(2) mutton tallow—

Castor.

Cocoanut.

Cotton-seed.

Gingelly (til, sesame).

Groundnut (Arachis oil).

BUTTER SUBSTITUTES.

I have dealt with fish oils (except shark's liver which may be left out at first) and mutton tallow above and need not recapitulate. Edible mutton tallow, however, would be of great use in other directions than those for which I desire it, e.g., in making artificial butter by stiffening the vegetable fats which, in India, are usually in fluid form, melting at 80° to 90° F.

CASTOR OIL.

There is a large manufacture and export of this oil, but I am not acquainted with the details. I know, however, that there is an increasing Western demand for the beans; a German firm from whom I have bought cotton-seed oil have requested me to put them in touch with exporters, and I note that the Indian export of oil has considerably decreased in proportion to

the export of the bean, *e.g.*, in 1880, 2,003,973 bushels of beans were exported and in 1904, 3,509,717, while the oil exported in those years were 3,198,787 and 2,300,015, respectively, the increases and decreases being fairly progressive in the period. Obviously there is a large opening here for manufacture, especially of improved oils.

Moreover, castor oil either by itself or in combination with other oils is capable of making excellent soap by the cold process (see "cocoanut oil") and is therefore a desirable object of expert study.

COCOANUT.

We have already a large local manufacture of this oil, "Cochin" oil being perhaps the best in the world. But the copra export is still larger; the position should be reversed. Moreover, there are two directions in which development is greatly needed in India, *viz.*, the use of inferior qualities and of "cocoanut oleine" in soap-making, and the manufacture of vegetable butter. Rightly or wrongly I have for many years believed that the "cold" process of soap-making is particularly suited for India; it is extremely simple in method and in plant; it is eminently suited for very small installations run by small capitalists; it is speedy and free from the usual unpleasantness of soap-boiling; it is worked at a temperature in the soap pans of about 95° F.—a temperature which can easily be obtained by simple arrangements such as glass covered tanks—without fuel; and cocoanut oil and other members of that group readily lend themselves to this process; the soap is also particularly good for use with brackish or salt waters (marine soaps). Moreover, by using considerable proportions of cocoanut oil it is easy to saponify other oils and fats by the cold process and, by adding castor oil, etc., to produce cheap but good transparent or translucent soaps which have so considerable a vogue at present. Cocoanut oil is used in such enormous quantities for soap-making in other countries that attention should certainly be at once turned to it for similar use in the country of its growth and production.

Perhaps its use as "vegetable butter" is ever

more important. When in England in 1912, I went somewhat into this question and found that cocoanut butter, under a large variety of trade names, is immensely used in Europe; it is necessary in the enormous production of margarine, *i.e.*, "butter" produced from animal fat (oleomargarine) *plus* vegetable butter, milk, etc., while as "nut butter" and under various fancy names it is used wherever animal fats are inadmissible. As obtained for experiment with fishery products it is perfectly free from the specific odour of the cocoanut and is of a sweet, neutral, but agreeable flavour. Now in India the product is being manufactured on a small scale, but I was unable to use it in my experiments owing to the persistence of the specific cocoanut flavour; if this were removed, it might be used in India or exported to Europe in vast quantities. The process for removing the specific odour or the less agreeable odour due to rancidity are trade secrets, but their principles are generally known and are usually based on the use of high pressure or superheated steam (and air) with the fat in close vessels, and on the removal of the free fatty acids by the use of alkalis, etc.; the absolute freshness of the cocoanut oil in this country is a great factor in favour of the local manufacture of vegetable butter since there will be no unpleasant flavour due to rancidity for removal. Moreover, it is usual to remove much of the liquid glycerides from the fat by crystallization and strong pressure, and the expressed material (cocoanut oleine) is highly useful in soap-making.

I consider, then, that in this article alone we have a large field for work.

I need hardly go into minute detail as regard the oils from cotton-seed, gingelly and groundnut. That cotton-seed oil is not produced in enormous quantities is gross negligence; the seed is somewhat inferior in oil contents to American and Egyptian seed, but the kernels nevertheless contain over 50 per cent. of oil; the oil is a splendid edible oil, the "stearine" is very largely used in making artificial butter, while the lower qualities and "foots" are suitable for soap-making; it is also a semi-drying oil and is therefore useful in paint-making.

The preparation of fine quality oils, and the use of the inferior in soap making are subjects eminently suitable for research by an expert, especially as the difference between first and second grades lies in certain methods of manufacturing treatment, while the refinement of cotton-seed oil is easy. The neglect of these products in India is not singular, however regrettable, for it is only within 30 years that even the United States of America have developed the industry; in 1881 only about $\frac{1}{16}$ of the cotton-seed produced was worked into oil and cake, whereas in 1907, about $\frac{11}{16}$ were so used, and the product of oil had gone up from 7 million gallons to 175 millions, with a corresponding production of oil-cake.

With the recent enormous development of the groundnut crops (so lucrative that it is called in some places the "debt-cancelling nut"), the constituents of our soils are being removed with even greater rapidity than before, and it is urgently necessary that we should retain in this country the splendid feeding cake obtained from groundnut after the expression of the oil. Hence—as well as in the case of cotton and other oil-seeds—we have an additional reason for establishing a modern oil and soap industry in this country, *viz.*, the proper feeding of our cattle. Moreover, groundnut oil though possessing naturally a strong though pleasant flavour can, by attention to certain simple manufacturing details, be produced practically without flavour, and by simple treatment, *e.g.*, by filtration with fullers' earth or charcoal, even this slight flavour can be entirely removed. In Marseilles I can get cold-pressed first-sort arachis oil perfectly suitable for canning, whereas the very best which I could get in this country was useless by reason of its flavour. The second-grade Marseilles oil is also edible but is also used for soap, while the third grade and foots are used only for soap, etc. It is absurd and wrong that our seeds should go to Marseilles when we need the oil, the cake, and the direct and subsidiary industries, especially when it is remembered that groundnut has to be exported *in the shells* which weigh 25 to 30 per cent. of the whole nut; if exported without the shell the

kernels undergo on the voyage changes which unfit the oil for edible purposes; hence the French are saddled with freight charges on a lot of comparatively useless matter which would be avoided by Madras manufacturers and which would go far to counterbalance the heavy French import duties on oils exported from Madras.

Much the same might be said of gingelly oil which is largely used in margarine manufacture as well as for many other purposes in Europe. Here again the oil obtained by the first pressure (cold) is excellent, while oil of the second and third pressings is used for soap: the cake is excellent cattle food if the seed is sound to start with, as it might easily be in the country of its production. The oil has many other uses.

I may just mention that now that Para rubber is being so largely grown in this Presidency attention might be paid to the oil from the abundant seeds which yield 50 per cent. of kernel containing above 40 per cent. of a good drying oil. Iluppai fat is also worth attention.

BUTTER SUBSTITUTES.

Incidentally I have dealt with the manufacture of these *s. v.* cocoanut and cotton-seed oils. In this Presidency, probably all over India, butter from milch cattle is scarce, dear, and too often bad and adulterated; bad because badly prepared from tainted, impure, or even poisoned milk (poisoned, that is, by certain pathogenic or other germs derived from the places of its manufacture), and adulterated with fats which are not butter fats and which have not the merits of margarine which is prepared with the most absolute cleanliness in sanitary and scientifically arranged factories. If Indian butter is turned into *ghi*, it is immensely improved since it is sterilised by the process, but it loses above 20 per cent in the process, and the resulting *ghi* is then apt to be adulterated by all sorts of oils of varying qualities. Moreover, this butter or *ghi* is far too scarce; a most valuable and necessary food, it can hardly be obtained by the poorer classes. Hence I lay stress on the manufacture, for Indian use, of butter substitutes which are

as nourishing and digestible as true butter, much cheaper, and indefinitely producible.

Under this head I do *not* include margarine, the composition of which would be repugnant to Indian ideas both Hindu and Muhammadan; the butter substitutes in view may, in one class, be eaten by all, even by the highest caste Hindus, in the other by most Hindus and by all Muhammadans. I need not here discuss details and recipes; suffice it to say that these substitutes are wholesome and cheap. For my own (fishery) purposes I am experimenting in *pure* butter substitutes, and these experiments can be widened, made public and popularised, by a proper investigator.

Another purpose for which we need an oil expert is the detection of adulterations in oils and fats. I never converse with respectable men on the subject without complaints of grave adulteration of the more valuable oils and fats; the fact is notorious, and during my term of service as a District Officer, I frequently had complaints of this nature, complaints however which seem to take the grievance as an irremediable matter of course; *ghi* was especially mentioned by the respectable classes. An oil expert, trained like Kesava Menon, in the first class oil laboratory in England, could readily detect adulterations, and a few important prosecutions would strike at the root of adulterations which are always harmful to trade, which may be injurious to health, and which are, at best, a deliberate fraud.

For all the above purposes Government will require not merely one but several experts, a complete laboratory, and small but efficient manufacturing plant.

As regards experts, Mr. Kesava Menon may be appointed as the first expert and the staff left to develop as experience grows.

As regards a laboratory, I think that it is obvious that the Agricultural College and Research Institute at Coimbatore is the proper location for an oil expert, since he will there have every sort of apparatus, reagents, etc., as well as the supervision of the College scientists. Moreover, Coimbatore is an excellent centre as regards various oils, such as cotton-seed, ground-

nut, gingelly and castor, while the West Coast with its abundant coconut production and my own fishery work is close at hand. The Coimbatore forests also are probably rich in less known oils and resins, the latter being important in the production of soaps and also of varnishes. I prefer Coimbatore to Bangalore (Tata Research Institute) for many reasons. As regards the actual establishment of manufactories for oil, soap, butter substitutes, etc., consideration of this may stand over till experience is gained; they are necessarily mentioned in this letter to show the importance and scope of the enquiries to be undertaken.

The importance of the subject and the opportunity now offered for a new departure in industrial stimulation and education, must be my excuses for this letter. This Presidency is immensely rich in all classes of oil-seeds, and it has too long been treated as a mere source of supply of raw material to support the industries of other—often rival—countries which in some cases, at all events, have built up a tariff wall against the entry of manufactured goods, *e.g.*, oils and soaps, for the production of which this country is well fitted. Firms, largely foreign, in personal touch with the markets, industries, and manufacturers, in Western countries, exploit us for our oil-seeds but, perhaps naturally, give no thought to the establishment of manufacture *in situ*, partly, it may be, because of vested interests, but partly, at all events, because the export trade is simple and highly lucrative, while manufacture involves the employment of experts who have both technical and business capacity, considerable plant, and various risks arising from the absence of data. Moreover, indigenous enterprise and capital are small, timid, unaware of potentialities, and without technical knowledge.

These conditions justify, or rather compel, the entry of Government into the field of this business; it is for Government to provide trustworthy data and teaching on every matter connected with the proper production, refinement, and various uses of the several oils and fats, to experiment in and subsequently demonstrate

the manufacture of the directly derived products (such as soaps, varnishes, paints, etc.), and to provide type plants for the observation, instruction, and imitation of capital, especially local. Be it remembered that the manufactures above-mentioned are *all* eminently suited for small capital, small plant, and moderate technical skill for all ordinary work; there is no question here of the capital and skill demanded in, say, glass or iron factories, or of risks arising from scarcity of good raw material or of fuel. The raw material is abundant and of the best quality; little fuel is wanted; the factories may be small, almost domestic in character, with a corresponding demand on capital and enterprise; the skill such as can readily be attained; and the manufactured products in general demand. When conditions are such, manufacture is readily taken up as soon as the way has been authoritatively and visibly shown.

The Decay of Indian Industries.

Why are Indian Industries decaying? The *Indian Textile Journal* answers that the old Indian craftsmen are no organisers of working processes and devices for expediting labour while ensuring accuracy. The silversmith has not yet learned how to harden the pin of a brooch after it has been softened by soldering on the hinge; the cabinet maker must have sandpaper to help him to produce a smooth surface, the carpenter ties the legs of a table at the foot, as he cannot trust jointing at the top and not one self-styled watchmaker in a dozen is fit to be entrusted with the repair of a good watch. They have no trade literature, and if they can read English they subscribe to no trade paper. Certain Indian artificers have what they call their trade secrets which they preserve with jealous care. Even when engaged as teachers, they will not disclose their best knowledge to the pupils for fear any of them should become too expert and thus endanger the position of the teacher. To such an extent does this jealousy extend that a father in Baroda famed for his skill in lacquering turned work on the lathe would not instruct his son, preferring that the art should die

with him. This spirit seems to have existed for centuries while at the same time there were no schools for instruction in handicraft. There was concurrently with this condition the national habit of hard bargaining in which the buyer found every conceivable fault with the ware of the producer, until he reduced the price to the very lowest figure. The craftsman on his part was stimulated to reduce both labour and material on his work in order to keep pace with the beating down of the purchaser.

Business Organisation.

In a paper read before the Economic Science Section of the British Association, Prof. C. H. Oldham dealt with the scientific study of business organisation. He said that in the English Universities the faculties of Commerce are designed to provide university education mainly for the Employer Class, the persons who are to control and direct business enterprises. In their programme of studies an important place should be allotted to the scientific study of modern Business Organisation. Apart from this purely educational value, the study has great practical importance from wider standpoints, viz.—(1) the profitable development of large-scale business in British Industry and Commerce, and (2) the application of Economic Science to the changing structure of business under modern conditions.

The paper pointed out how this branch of study suffers in England from a lack of authentic material in the form of analysed examples of actual business organisation based on British practice and experience. At present she has to look to American business men and to American Universities for guidance in this study. This position is unsatisfactory; for American business organisation and practice differ in some important respects from British organisation and practice, and the interpretation of this difference is itself a curiously interesting economic problem.

Modern Business Organisation, as a subject for study, includes the following five branches, viz.: (a) Forms of the Business Authority, classified into types by noting the way in which

upon which they can make a just and necessary profit. Mr. Lehy complains that the grocer has lost the quality ideal. The grocer, above all things, must give value, and when the grocer departs from that course, he is pursuing a course from which originates all the minor reasons which tend to shrink his business. Again, cut prices must be met by quality. The grocer must fight the cutter with superior quality, meet him on price and give his customers a superior article. This will hold his trade.

The World's Commerce.

At a recent meeting of the Union of London and Smith's Bank, Sir Felix Schuster referring to recent Labour troubles said that a better understanding between Labour and Capital would be all the more necessary as there were signs of a coming re-action in the great activity of trade. He reviewed the causes of the diminution of industrial output, including the congestion of European stock markets, the difficulty of raising fresh loans, the condition of South-eastern Europe after the wars, the deplorable events in Mexico, the difficulties in Brazil owing to a fall in the value of coffee and rubber and poor crops, the political and financial disturbances in China and the calamities in Japan.

POSITION IN INDIA.

Referring to India, Sir Felix observed that a series of prosperous seasons had been followed by a partial failure of the rainfall, impairing her purchasing power. The failure of native Banks owing to wild speculation and the total disregard of the elementary rules of banking had perhaps provided a salutary lesson. Despite these temporary setbacks, there had been material progress in India. Her industrial and agricultural development had been remarkable and was likely to continue with the extension of railways and irrigation.

UNITED STATES FOREIGN COMMERCE.

The expansion of the foreign commerce of the United States and the increase in their exports gave the country great power over European money markets. The passage of the new Tariff and Banking Acts in the United States was a most important event in the commercial world

and must have a far-reaching effect and make the United States a more formidable competitor than ever both in international commerce and as regards the position of London as a centre of international banking. He did not doubt that British trade with the United States would be increased to the advantage of both the nations.

Who may be Auditors.

Under section 144 of the Indian Companies' Act, the Governor-General in Council has power to notify the names of institutions and associations of which the members will, without further examination or inquiry, be held to be fully qualified to audit companies' accounts. The following, according to a Delhi correspondent, are institutions which, it is understood, will be notified in the exercise of this power:—(1) The Institute of Chartered Accountants of England and Wales. (2) The Society of Incorporated Accountants and Auditors. (3) The Society of Accountants in Edinburgh. (4) The Institute of Accountants and Actuaries in Glasgow. (5) The Society of Accountants in Aberdeen, and (6) The Institute of Chartered Accountants in Ireland. There are a number of other institutions of Accountants in existence, but it is not at present proposed to exempt the members of these societies from the necessity of applying to Local Governments for certificates before they are entitled to audit companies' accounts. Five years' practical experience of audit will be a *sine qua non* for the grant of a certificate in the case both of members of non-exempted institutions and of applicants who are not members of any recognised institutions. It is intended in time to organise examinations in accountancy in convenient centres in this country at the commencement and provisional certificates, valid for a period of two years, will be granted by Local Governments to candidates who have not passed any examination, provided that they have the necessary experience of audit. These certificates will ordinarily not be renewed until an examination has been passed, although provision will be made for the grant of permanent certificates without examination in exceptional cases in which the

Local Government is convinced that the applicant for a certificate possesses all the qualifications required. The certificates to be granted under section 144 of the Indian Companies' Act will be of two kinds—"unrestricted" and "restricted." The former will entitle the holder to audit the accounts, not merely of Indian Companies, but also of Life Assurance Companies, and Provident Insurance Societies throughout British India. The latter will entitle the holder to audit the accounts of Companies and Provident Insurance Societies only within the province of issue. It is understood that the local Governments will shortly issue rules intended to give effect to the procedure indicated. It will be seen that these measures provide for the gradual improvement of the standard of audit of companies of all descriptions without introducing any sudden changes likely to inconvenience business concerns falling within the scope of the Indian Companies' Act or the Life Assurance and Provident Societies' Acts.

Indian Aluminium Industry.

Mr. H. A. Pearson sees in the above industry a possible asset of great value to India. In an article contributed to the *Commerce*, he explains the properties and utility of aluminium and the vast facilities that exist in India for the exploitation of that metal. He quotes some interesting figures, which go to show that there is an increasingly large and abundant market in India to warrant the establishment of factories for the manufacture of alumina and aluminium from the raw material. India, moreover, says Mr. Pearson, has inexhaustible quantities of this metal containing a higher percentage of alumina than anything mined in Europe and America. India is richer in dioxide of manganese than either of the continents above noted. In aluminous laterite and bauxite India still holds the field as the first.

The imports of aluminium into India (Madras) during twelve months, 1st April 1912 to 31st March 1913, amounted to 35,809 cwts. valued at Rs. 2,55,455.

Years.	In cwts.	Value in lakhs.
1904-05	890	1.05
1905-06	1,803	2.06
1906-07	1,964	2.89
1907-08	2,696	3.62
1908-09	3,734	3.21
1909-10	11,740	9.02
1910-11	11,784	9.24
1911-12	21,512	15.21
1912-13	35,809	25.51

Thus during a period of nine years aluminium imports have doubled nearly 40 times in quantity and nearly 25 times in value, from what it was at the beginning of the period.

It is reasonable to expect that the use of aluminium in India will continue to extend and there are good prospects, according to the writer, for establishing more aluminium factories in India.

Motor Trucks and Horse Drawn Vehicles.

In page 694 of the *Wealth of India* for October 1913, we mentioned that the design of colonial motor-vehicles with particular reference to India was the subject of a discussion at a meeting of the Imperial Motor Transport Conference held in London. Means of locomotion have latterly been greatly improved in the chief centres of India by the importation of motor lorries. Bombay would have got by this time a fleet of motor lorries and the chief commercial houses in Madras have already equipped themselves with these. We understand that Calcutta intends to follow suit. In view of this fact the following collection of interesting figures presented in a recent report of a large department store firm located in a Middle West city of the United States, regarding the relative cost and efficiency of motor trucks and horse-drawn vehicles, will be read with interest.

In the report it is stated that, although there was a 77 per cent. increase in business during a period of two months for which the figures were compiled, a saving of 33 per cent. in operation and maintenance cost was effected by substituting a three-quarter ton motor truck for three horse and wagon outfits formerly employed. During eight weeks the truck delivered

legal responsibility is fixed, with the merits and limitations of each type. The controlling authority undergoes transformation into new forms as the scale of the business grows larger. (b) The internal Industrial Organisation of the individual business. The proper Location, Lay-out, and Equipment of the plant. This establishes a departmental organisation and inter-relation for each step in the movement of a product through the factory from the raw material to the finished units of output. (c) The internal Staff Organisation of the individual business. There is not merely a division of labour, but a division of function and sub-division of authority. This sets up a departmental organisation and inter-relation from the head management right down to the last man who is to be possessed of authority. (d) Forms of Combinations between many individual firms, in order to regulate or to restrict competition, the descriptive side of what is loosely called the "Trust Movement" in industry. (e) Modern institutions organised for handling questions in dispute between Employer and Employed:—such as Trade Unions, Employers' Federations, Conciliation Boards, &c.

Of course, Business Organisation stands to Business policy very much as Anatomy stands to Physiology; the one is structure, the other is function. The study of both, in their general principles, is essential to the Higher Commercial Education.

The central problems of Business Organisation have to do with Staff Organisation and the sub-division into departments. The scientific clue to departmental division lies in the practical fact that different stages in the making or the marketing of goods require widely diverse experiences in the authorities that control those stages. In any properly organised business, it is possible to exhibit by a chart on paper the departmental divisions in such a way as to show how the authorities governing different departments are related to the industrial body as a whole; in other words, to show exactly where each authority is re-

lated to the others, and how far each authority may extend in the business.

Now, one finds in American text-books the Organisation Charts of many different types of business; for examples, an American railroad company, a large meat-packers' business, a ship-building yard, a typewriter (or motor-car) manufacturing company, &c. One learns from them that, while all factories are not alike, the principles of the accounting system used by one are applicable to another: the details may vary, but not the principles. Any business man, by following a similar analysis, can put down on paper the actual, or ideal, Organisation Chart for his own special business. This Chart will express all the mutual relations governing the organisation of his business; it will show clearly the very foundation upon which all the authorities, the accounting system, and the business operations are based and conducted. It is well known that large-scale production ceases to be profitable when its organisation becomes unmanageable: the limit to the size of the business-unit is fixed by the ability for administration. But this ability can be greatly extended by the scientific study of Business Organisation.

Copper Wire by Electro-deposition.

According to the *Brass World*, W. E. Gibbs has devised a process for the manufacture of copper wire by electro-deposition.

The Gibbs method requires a fine copper wire as a core for making the desired product, and the additional copper is deposited on it while it moves through a tank containing the solution. The fine copper wire is made endless and passed through a regular plating solution containing sulphate of copper and a little sulphuric acid. The wire passes over grooved rollers operated from outside while passing through the tank. After leaving the tank, the wire passes through a small rinsing tank to remove the solution, and then goes to a reel around which it passes a number of times, returning again to the plating tank. The plating may thus be continued until the desired thickness is obtained.

The Commercial World.

Milk from Dried Skin.

That milk made from a powder costing 4½d to 5½d. per lb., 1 lb. of powder mixed with water making about eleven gallons of milk, is being sold by some Indianapolis dairymen at 4d. a quart, says the *Cowkeeper*. The Board of Health, who are instituting prosecutions, describe the powder as manufactured from dried skin. The new milk has the colour of glue, but when mixed with water looks and tastes like milk.

Business Enterprise in India.

The business enterprise in India during the month of December, 1913, may be seen from the following abstract of companies registered in that month:—

	RS.
5 Banking and Loan Companies	6,09,781
4 Insurance Companies	1,60,000
2 Printing, Publishing and Stationery	80,000
3 Trading Companies (other than specified above)	5,00,000
1 Cotton Mills Company	10,00,000
1 Cotton, Jute, Screws and Presses	2,00,000
2 Mills and Presses other than specified above	6,00,000
2 Tea Companies	9,00,000
1 Coal Mining Company	40,000
Grand Total	40,89,781

Roller Skates to Promote Efficiency.

In the storerooms of a street railway company of New Bedford, Massachusetts, roller skates are worn by the attendants in order that time may be saved in getting at stock. Movements of employees are thus accelerated and, through the saving of time, a long step is taken toward the greater efficiency of the department. It has been found that the use of the skates in no way hampers the work of the men, for thus equipped they are able even to mount ladders leading to the elevated bins. This use of an adjunct of

sport as an aid to industry is, as remarked by the *Technical World Magazine*, indeed an innovation.

How to Hold the Retail Trade.

The December issue of the *Tea and Coffee Trade Journal* prints a paper on "How to Teach the Retail Grocer to Hold and Increase his Trade," read at the convention of the National Coffee Roaster's Association, Cincinnati. Mr. Geoffrey B. Lehy, the author of the paper, says that the retail grocer of to-day is precluded from exercising as much acuteness in the purchasing of many lines of merchandise as was exercised by the retail grocer of twenty-five years ago. This has been brought about by modern merchandising methods of manufacturers and controllers of food products, which has resulted in eliminating, to a greater extent, the grocer's standards of quality and value, and substituting therefor their own created demand, which minimizes the grocer's individuality and curtails the exercise of his ability as a merchant.

The grocer of twenty-five years ago was obliged to exercise judgment in the purchase of goods to a far greater extent than the grocer is permitted to do to-day. Everything was not arranged then as nicely as most things are arranged to-day. The grocer of twenty-five years ago bought in bulk all his life. To-day most of these come to him in packages on which both the purchasing and selling prices are made by others than himself and consist of various brands instead of various grades.

The grocer allows himself to be influenced by his customers calling for advertised brands to such an unreasonable extent that he drifts away from proper regard for quality. The quality of most of his stock is entirely unknown to him, simply because these have been forced upon him.

On the other hand, the grocer must be a real merchant. He must change his attitude towards the consumer and educate himself and his clerks to push goods of recognized standard.

9,246 packages per month as compared with 5,328 packages delivered by the horse-drawn wagons. The cost of delivery per package was reduced from $3\frac{1}{2}$ cents to $2\frac{3}{10}$ cents by the employment of the single motor truck. For the purpose of comparison, the department store officials placed a valuation of \$1.00 each on packages delivered and figured the net profit at 10 per cent. According to their compilation, using these figures as a basis, a total of \$391.80 per month was added to the net income of the store and a saving effected of \$110.95 per month, or \$1,331.40 per year, in the operation and upkeep costs of the delivery system. It is this last figure which is especially interesting, inasmuch as it represents nearly 95 per cent. of the original cost of the truck that was employed.

Vegetable Oil Trade of Marseilles.

According to a recent report issued by the United States Department of Commerce, the vegetable oil industry is centred in Marseilles and more vegetable oil is produced there than in any other city in the world. In all there are 42 mills, with 1,900 presses, and a yearly crushing capacity of 650,000 metric tons of 2,204 pounds. More than a hundred kinds of oil-bearing materials are crushed.

The most important material treated is the peanut (*Arachis hypogaea*), also called arachide, groundnut, earthnut, ground pea, goober, pindar, monkey nut, katjang, pistache de terre, Manila nut, and Chinese nut. The quantity of peanuts handled has doubled within the past 10 years and now amounts to 60 per cent. of all the material crushed. There are no less than ten varieties of peanuts quoted in the Marseilles market. Those arriving in the shell are chiefly Rufisque, Gambie, Casamanca, Rio Nunez, Bissago, and Boulama, in the order of the usual market prices. They are named from districts in the French colonies on the West Coast of Africa. Marseilles receives about one-half of the exports from this coast, most of the remainder going to Germany. The decorticated nuts come from China, Mozambique, Bombay, and the Coromandel Coast of India.

The best peanut oil is made from nuts that arrive in the shell. These come in first-class

dry, sweet condition in 2-bushel gunny sacks, and are stored by the mills until worked. Some relatively small quantities of decorticated nuts also make first-class oil, notably those from China, Mozambique, and Bombay districts, where great care is taken in the shelling. The Chinese nuts are shelled by hand, kept dry, and are not crushed or broken. The Mozambique nuts are flailed out dry with sticks and then separated from the shells by hand. This process always produces a certain proportion of broken kernels, but if kept dry they arrive in good condition. Some of the Bombay nuts are flailed and others are decorticated by machinery, as a rule those shelled by machinery being much broken. The whole nuts are sometimes separated and sold for a higher price.

On account of the favourable prices quoted for peanuts in the shell there has been a marked movement during 1913 toward shipping the Coromandel nuts without shelling. There is, the report adds, some small tendency to introduce shelling machinery there. The receipts of Coromandel nuts in Marseilles in 1912 amounted to 12,821 metric tons of the unshelled (about 6 per cent.), and 123,347 tons of the shelled (about 94 per cent.), whereas the receipts for the first four months of 1913 were 23,233 tons of unshelled (about 16 per cent.), and 123,347 tons of the shelled (about 84 per cent.) As soon as the Coromandel district can establish a good reputation for shelled nuts they should, it is thought, bring as much as the Bombay nuts instead of selling for \$4 to \$5 less. As the freight to Marseilles is about \$7.50 a ton, and as 25 per cent. of the weight is shell, there should be a final economy of more than \$1.80 in shipping without the shell.

In the present process of shelling, the Coromandel natives, as explained in an article published in a recent number of the *Indian Trade Journal*, wet the nuts so that many of them pop open of their own accord, the others being flailed out. The nuts do not get dry before shipping, and they invariably arrive in bad condition, heated and bad smelling. The oil produced contains 15 to 25 per cent. free fatty acids, is rancid and bitter, and is classed

as inedible. Until within the past two years this oil was used entirely for soap. But with the advent of quicker and better transportation nuts arrive in better order.

India as a Market.

The *Printers' Ink*, the technical organ of advertisers has a telling article on the above subject, which is calculated to make those English merchants and traders snap their fingers, that have let go their chance of reaching the Indian markets. A few figures taken from the article itself will illustrate their folly and expose their supineness. Foreign competitors are ahead, America and Germany are making themselves very much conspicuous. "India is the largest individual buyer of British goods. In 1912 the exports, from the United Kingdom to this market were valued at no less than £58,000,000, or about 12 per cent. of the total exports. England hears so little of the Indian market, however, that it is doubtful whether many Englishmen realize its importance as a buyer of their goods, and the necessity for keeping close watch so that as far as is possible it may continue to purchase from them rather than from their foreign competitors the goods it cannot as yet produce for itself.

Of the biggest competitors of Britain for foreign trade generally, America does £3,500,000 worth of trade with India, and Germany about £6,000,000; in both cases the figures show an increase of about £1,000,000 during the last five years, which, considering the comparative smallness of their total trade, is by no means insignificant.

If English merchants desire direct trade with India, it should be done seriously and systematically. With a combination of efficient representation and a well thought out advertising scheme, there is no reason why business should not be done.

For purposes of advertising the trade of India divides itself into two parts, *viz.*, articles for the use of the English educated Indians and those for the use of the vast and wealthy native population. There is an abundance of periodicals for both these classes, and for all their various sub-divisions.

For the native population it is necessary to advertise in the vernacular in the various native papers which are published. These vernacular papers are a legion and a careful choice should therefore be made of those which will cover the widest area or the class of natives to whom it is desired to appeal. It should also be notified that goods advertised are stocked at such-and-such stores throughout India.

The market to be served is enormous, and the possibilities of further expansion as industries develop are great. This should not be difficult if the opportunities are realized, and the possible methods of improving on them are adopted, but it is useless to hope that the trade will always come the way of merchants without an effort.

An Ideal Balance Sheet.

The December number of the *Financial Review of Reviews* contains an article on the above from the pen of Professor Lawrence R. Dicksee, a great contemporary authority on such subjects. The contribution deals exhaustively with the varied aspects of what may be termed one of the most ticklish questions in accountancy—namely, what is and what ought and ought not to be included in a Balance Sheet. Many do not appear to have altogether agreed, even those who are entitled to speak with authority, on the definition and the exact scope and object of a Balance Sheet, that it will not be amiss if we consider at some length what Prof. Dicksee has to say on what a Balance Sheet is, and must be, and what it might be under ideal conditions.

The function of accounts is to record business transactions, as and when they occur, classified under suitable headings according to the way in which they effect the various outside undertakings with which our own concern has relations, and the various employees or agents that operate on its behalf. The essential point is that while all accounts record business transactions (*i.e.*, transfers of some form of property, or wealth, in which the business is concerned), such accounts may broadly be divided into two classes:—(1) Those representing transactions which, in so

far as they may not already be regarded as settled transactions, will sooner or later have to be settled as between the business and those outside houses with whom it has relations, and in the meantime represent a legal liability to account hereafter for a sum equal to the unsettled balance; and (2) transactions between the business and its employees, or agents, which equally represent a liability to account hereafter, but in this case not necessarily by payment of an agreed sum in money, inasmuch as the liability to account may be—and perhaps more likely is—a liability to account for dealings in some particular class of property.

Yet, as Prof. Dicksee points out, there is a third class of accounts brought into existence by a concern, owing to its liability to account to its proprietors for all profits earned, and entitled to charge them (or at all events to charge the profits that have to be accounted for to them) with all losses sustained.

So, in the first instance, every business concern starts with a perfectly clean slate, no assets, no liabilities. Such Capital as may be contributed by the proprietors provides assets for the business, and also *pro tanto* creates a liability to account to the proprietors of exactly the same amount. No subsequent transaction can possibly disturb this balance between assets and liabilities, because every transaction appearing *prima facie* to disturb such balance must result either in a profit (which increases the liability to the proprietors) or in a loss (which reduces such liability).

And subsequently, when all accounts (representing profits or losses) with which the proprietors are concerned have been collected into the Revenue Account, or the Profit and Loss Account, and thus a net balance has been arrived at, representing the Net Profit which has to be accounted for as a debt due to the proprietors, or the Loss chargeable against future (or past) undivided profits of the proprietors, as the case may be, there still remain to be considered those accounts which have not been brought into the Revenue (or Profit and Loss) Account, because they represent

neither profits attributable to the period under review, nor expenses or losses necessarily chargeable against them. The balances of these remaining accounts are then marshalled into another statement, and it is that statement which is known as the "Balance Sheet."

The items comprised in a Balance Sheet thus represent the balances of unsettled transactions not proper to the Revenue (or Profit and Loss) Account. They represent either an excess of incomings over outgoings which will have to be accounted for hereafter, or an excess of outgoings over incomings, which it is at all events confidently hoped may be regarded as benefits to be received hereafter, the totals of the two groups necessarily agreeing at all times for the reasons already stated.

Further, Prof. Dicksee says that the popular view that a Balance Sheet is a statement of liabilities and assets set down at realisable values, requires considerable amendment—while on the other hand it is equally clear that nothing ought to appear in a Balance Sheet which cannot, at all events from some point of view, fairly be regarded either as some benefit received which the undertaking will hereafter have to account for, or as some form of outlay which it is hoped will hereafter produce some benefit or advantage sufficient to justify its not having already been charged against profits as a loss. Prof. Dicksee then discusses the different values put upon a Balance Sheet by directors, managers, investors, shareholders and others; and naively adds that it is important to bear in mind that the exact position of affairs disclosed by a Balance Sheet of a concern is not necessarily indicative of the normal position of its affairs throughout the year. It is only reasonable to suppose that every effort has been made to bring about a state of affairs on the Balance Sheet date that will look well. This practice (known as "Window-dressing") is one followed by practically all undertakings, the successful as well as the unsuccessful, the ably-managed as well as the badly or fraudulently managed. So long, however, as it is a position of affairs which can be brought about

for a special occasion, the practice is perfectly legitimate. What, of course, is not legitimate is a juggling with the actual facts, in the hope of suggesting a different set of facts.

Prof. Dicksee points out that in the nature of things, there is a limit to the number of purposes that a Balance Sheet can serve. The Balance Sheet is intended to show, in summarised form the outstanding commitments of an undertaking as a going concern. Of necessity, therefore, its value to those seeking to know what the position might be, if the concern were to stop business and be wound up, must be very limited.

One of the greatest uses of a well-designed Balance Sheet is to enable the intelligent observer to form some idea as to the probable ability of the undertaking to meet its liabilities as they fall due. Accordingly, a clear distinction between "fixed" and "floating" liabilities on the one hand, and "fixed" and "floating" assets on the other, is of primary importance to enable any definite conclusion to be arrived at as a result of the consideration of any Balance Sheet.

A serious barrier to the intelligent appreciation of published Balance Sheets is the fact that, as a rule, contingent liabilities are studiously ignored. It would, says Prof. Dicksee, be overstating the case to say that every Balance Sheet should provide a detailed disclosure of all future liabilities incurred by the company; but it is thought that at least some disclosure, over and above what is at present customary, is necessary to protect unwary shareholders from the inevitable consequences of this particular form of financial enterprise.

Another point, says Dicksee, where it is thought desirable that public opinion should be brought to bear, with a view to pressing the directors to make a fuller disclosure of the facts, is with regard to trading results.

Yet another point that is touched upon, is the degree of importance that one is reasonably entitled to attach to the auditor's report to the shareholders of a company. It cannot too strongly be insisted that the duty of the auditor is to the shareholders of the company, and to them alone; accordingly, while it is incumbent upon the auditor to warn the shareholders of any possible danger to them that may have come within his knowledge, it is emphatically not his business to place others, to whom he owes no duty whatever, upon their guard. Further, it should be borne in mind that the auditor is not responsible for the form in which the published accounts of a company are stated; nor is he entitled to criticise that form, unless he deliberately arrives at the conclusion that it is imperative in the interests of shareholders that facts apparently withheld from them should be disclosed.

To sum up, primarily it is the duty of company directors to issue balance sheets that are not merely correct, but also as complete in every respect as human ingenuity can make them; but that shareholders and others drawing conclusions from these Balance Sheets must learn that there are limitations to the inferences that can be drawn from them, and that in no case can a Balance Sheet—or any other document devised by human ingenuity—help them to forecast the future. It is admitted that in certain cases a reasonable measure of reticence is desirable for the protection of the proprietors of a company from those who may have different or opposing interests, but it is suggested that the need for such reticence is, in general, greatly exaggerated by directors; that in almost every instance far more information might be given than is at present customary, while in many cases the information supplied is so vague that shareholders would be almost as well off if no accounts at all were published.

Openings for Business.

[For particulars, address the Director-General of Commercial Intelligence, New Imperial Secretariat I, Council Street, Calcutta, mentioning the *Wealth of India*. Firms that may like to follow up any enquiry should give proper references and restrict themselves to those enquiries only which they are fully and seriously qualified to handle.]

BURLAP BAGS.

A firm in Colorado, U. S. A., is desirous of communicating with manufacturers of burlap bags. (C256).

EXPANDED METAL.

A firm in New York, U. S. A., is desirous of appointing an agent for the sale of expanded metal for reinforcing and expanded metal lath (C257).

LOCKS.

A firm in Wolverhampton, England, is desirous of (a) communicating with importers of locks, and (b) appointing agents in Bombay, Calcutta and Madras for the sale of locks. (C258).

HIDES AND MYRABOLANS.

A Calcutta firm is desirous of communicating with sellers of country tanned buffalo hides and myrabolans. (C259).

LIFTING JACKS.

A firm in Wisconsin, U. S. A., is desirous of appointing agents for handling lifting jack for automobiles, threshing machines, wagons of all kinds, and for general use of building contractors, mining companies, etc. (C261).

DUST-ABSORBING PRODUCTS.

A firm in Ohio, U. S. A., is desirous of appointing agents for handling such dust absorbing products as dust mops, mitten dusters, broom covers and dust-absorbent materials. (C262).

MORTOR CAR TYRES.

A firm in Ohio, U. S. A., is desirous of appointing agents for the sale of motor car tyres among automobile, accessory or hardware dealers. (C263).

GARMENT PRESSING MACHINES.

A firm in Chicago, U. S. A., is desirous of appointing agents for the sale of garment pressing machines. (C264).

SAW MILLING MACHINERY AND STEAM ENGINES.

A firm in New York, U. S. A., is desirous of appointing agents for the sale of saw milling machinery, log cutting and conveying machinery, wood cutting machinery (excluding drag saws, steam dogs and steam splitters) and vertical automatic steam engines from 3 to 25 H. P. (C265).

CASTOR OIL.

A Glasgow firm is desirous of communicating with exporters of castor oil in Madras. (C269).

JUTE.

A merchant in Buenos Ayres, Argentina, is desirous of communicating with exporters of jute used in the manufacture of grain bags. (C272).

BOOTS AND SHOES.

A Northampton firm of manufacturers is desirous of communicating with importers of boots and shoes. (C273).

RAMIE RIBBONS.

A London firm is desirous of communicating with shippers of ramie ribbons and is prepared to pay £10 per ton delivered at an Indian port for shipment to London. (C274).

TIMBER.

A Government official is desirous of communicating with sellers of first class Nepal Sisso (*Dalbergia Sisso*), Burma Padouk (*Pterocarpus macrocarpus*), and Malabar teak (*Dalbergia latifolia*). (C275).

PEARLS.

A Moscow merchant is desirous of communicating with sellers of pearls. (C276).

PUMICE STONE POWDER.

A firm in Jessore, Eastern Bengal, is desirous of communicating with sellers of Pumice Stone powder, a ton of which is required monthly. (C277).

HARDWARE.

A Glasgow firm is desirous of appointing a commission agent for the sale of iron and steel goods, viz., Plates, Angles, Channels, Tees, Bars, Sheets, Chains, Wrought Iron Tubes, etc. (C278).

The Economic World.

Egg Production and Cold Storage.

It is stated that the production of eggs in the United States has increased steadily during the last fourteen years. The price of eggs also has moved steadily upwards. In the opinion of the officials of the Department of Agriculture cold storage is responsible for the high price. Figures issued by the Census Bureau show that in 1899 American hens laid 1,293,662,000 dozens eggs, which was seventeen dozens for every man, woman and child in the country. Ten years later, in 1909, they produced 17.3 dozens per capita, while in 1913 it is estimated they will produce 17.7 dozens per capita. As to prices, the statistics show that in 1899 "average best fresh" eggs sold at wholesale in New York, highest price, at 36 cents; in 1904, at 47 cents; in 1908, at 55 cents; in November 1912, at 60 cents; in last November they were 55 cents. It is understood that a proposal is on foot for limiting the time within which eggs may be kept in cold storage, six months probably being the limit. This, it is considered, would put eggs on the market more uniformly and prevent them from being held for exorbitant prices. Further, that shipments of eggs from one State to another, except to retail dealers, should be prohibited, so as to prevent evasion of the proposed storage limit law.

Enhancement of Land Cess.

Great opposition is being raised in the various districts of the Madras Presidency against the proposed enhancement of the land-cess. Mr. A. P. Patro traces the early history of the cess in Madras in the pages of the February number of the *Hindustan Review*, and coming to the recommendations of the Royal Commission on Decentralisation, objects to the tax on the following grounds:—

1. It is suggested that an Imperial grant of 25 per cent. of the land-cess collected is made to the provinces and the Provincial Governments

have to distribute it among the District Boards in proportion to their income. The Provincial subsidy is now declared to depend on the general surplus in the Budget. It has yet to be stated if the provincial funds do regularly contribute 25 per cent. since 1905, either towards general revenue or for particular purposes.

2. The injustice of the cess lies also in its incidence. In the case of the zamindari ryot, though his share is one half yet the net income is about one third and yet he would pay cess on the full amount of his share. The cess being quinquennial he has to pay fixed cess for good and bad years; in the case of the ryotwari ryot, the Government which receives an equitable rent ought to contribute half-anna in the rupee towards the cess, which is not done now.

3. The readjustment of the charges as recommended by the Royal Commission will enable the Boards to save expenditure under one head in order to devote the same for other purposes.

4. Then, why should land alone be taxed. In an agricultural country there is no other resource than land but when it is admittedly burdened with taxes and cesses and relief is sought to be given to the ryot in abolishing village service cess imposed under Act II of 1894 and is still subject to a Railway cess, it is unjust that additional burden should be laid on it.

5. A professional tax or raising of the income tax for the purpose is suggested. A marriage-tax which was discussed at the passing of Act of 1871 is also suited to raise the necessary revenue in the area under the District Board, a tax of this kind proportionate to the income of the individual or family will be a self-adjusting burden; but the whole point of the case is that there is no need for increasing land-cess and that the additional expenditure, if any, can be adequately met from other sources already discussed above.

Incidence of Taxation in India.

We excerpt the following from the article on "Indian Progress and Taxation," contributed by Lord Cromer to a recent number of the *Quarterly Review* :—

"The danger of generalising about things Indian has been already indicated. But there are some exceptions to the rule. One generalisation which can safely be made is that the population generally is extremely poor. The other is that, both on political and economic grounds, taxation must be light. Some years ago, Sir David Barbour, after a very careful examination of this question came to the conclusion that the average annual income per head of population in India was Rs. 27. Mr. Ramsay Macdonald gives it as £2. Whichever figure is taken as correct, the fact is very striking; for Mr. Ramsay Macdonald is evidently justified in saying that if £2 be the average there must be considerable sections of the community whose income fall below that figure. The incidence of taxation per head of population, exclusive of the land revenue, has varied during the last decade from £0-1-10½d. in 1903-04 to £0-2-1d. in 1912-13. Two shillings a year does not appear to us to be a very heavy tax; but consider what it means to a man who has only £2 or perhaps less, on which to live for 12 months. It is the equivalent, and even in reality much more than the equivalent, of a tax of £5 levied on an Englishman with an income of £100 a year. If this consideration stood alone, it would be sufficient to justify the assertion that the fiscal system of India must of necessity be based not only on light, but on very light, taxation. But it does not stand alone. Political considerations point to a precisely similar conclusion. The wise words of Lord Lawrence hold as good to-day as they did half a century ago. 'Light taxation,' he said, 'is the panacea for foreign rule in India.'"

Arguments of this sort, it may be said, are mere commonplaces; but they are commonplaces which, albeit generally recognised in theory are very apt to be forgotten in practice, especially by democratic assemblies."

Some Aspects of Railway Nationalisation.

The *International Review of Commerce and Industry* has brought together in its review of the world's commercial press a few opinions of distinguished men and bodies on the question of Railway nationalisation in England. According to J. H. Balfour Brown, K.C., the future of railway companies in that country is not bright. They have lost and are losing their valuable suburban traffic owing to the increased popularity of (1) the tramways or light railways of companies and corporations, (2) the railless trolley system by which vehicles are run by electricity, and (3) the motor vehicles or omnibus undertakings. So much so, at the present time the railway monopoly is confined to long-distance passengers, parcels and goods traffic.

Indeed, railway companies themselves seem to have come to the conclusion that the only way to increase or maintain their dividends is by effecting economies instead of casting nets to secure more and more custom.

It is this idea that has led to the great pooling arrangements. The theory of these arrangements or amalgamations is that competition between railway companies is a silly thing. They have, therefore, ceased to canvass for traffic because the receipts by rival routes are now pooled and divided in agreed proportions. But railway companies seem to have over-looked the fact that they have been giving an object lesson of the advantages, not of State control, but of State ownership of railways. The recent policy of Parliament has been to allow companies to pioneer great public works, and at the same time to secure the transfer of these, after a certain concession, into public hands.

Tramways, light railways, and electric enterprises are all sanctioned on such conditions, and it is more than probable that the railways of this country will pass into the hands of the State.

According to Mr. Harold Cox, the primary objection to nationalization is that it involves a constant danger that the concern will be worked not from the point of view of commerce, but from the point of view of politics. A railway company, even if it possesses a monopoly within

its own area of operations, must be primarily guided by commercial considerations, for if it does not serve its customers reasonably it will lose custom, and dividends will decline. As regards political pressure being exerted by different localities to obtain railway favours, ample evidence is available from many countries such as Australia and South Africa. In addition there is the very important factor of red tape.

According to Mr. F. H. Dent, a railway official, if the railways were taken over by the State, the trader would no longer be able to choose the route for his traffic.

The London Chamber of Commerce has expressed its opposition to the principle of State ownership or nationalization of railways. Their general opinion was that the Board of Trade or some other authority should have power to determine reasonable working rates; hitherto traders had received no benefits whatever from railway amalgamations, but at the same time there was little foundation for the charges of undue preference given by railway companies. The Secretary of the Chamber suggested a tribunal of business men, partly representative of the State and partly of the public concerned, who could determine a reasonable working rate and arbitrate on matters in dispute.

Labour Troubles.

In the last seven years, more than 70,000,000 separate, individual working days have been lost by strikes and lockouts in the United Kingdom. The national loss in goods, wages, and profits must have been nearly £40,000,000. These huge and costly labour disputes have stimulated various industrial peace movements. Three remedies are being tried in varying degrees, namely, (1) compulsory arbitration, (2) co-partnership, and (3) nationalisation.

It is the considerate opinion of Mr. T. Good in the *Financial Review of Reviews* that every one of these is a quick remedy. In the February number of that journal, he writes :—

STATE CONCILIATION.

The logical outcome of this State conciliation,

which is a proved failure, will be compulsory arbitration, which will prove a worse failure. To set up courts of arbitration to hear both sides and then make awards binding upon both employers and workmen may seem quite fair, on the face of it; but how would it work out? Arguments would be based, of course, upon existing prices, profits, wages, etc., and judgment delivered upon that evidence. Assuming an increase of wages to be the outcome, there could be little effective guarantee of the men benefiting to the stipulated extent, unless they still retained the right to strike at will, and in spite of the award, which is not contemplated. Two things might easily happen to deprive labour of at least a part of its victory. The employers might re-arrange their working staffs, reclassify the grades of labour, and so change their processes that, without violating a letter of the award they could leave the men little or no better off. Or the employers might in some cases advance prices, as of coal for example, or railway fares, thus in an indirect way discounting the higher wages awarded. An arrangement for legally fixing the wages of labour, while leaving capital free to manipulate conditions of service and the prices of commodities, would be no real remedy for labour discontent.

On the other hand, assume a reduction of pay rates to be the verdict of the court of arbitration, the workmen might slacken their efforts and thus deprive the employers of justice.

CO-PARTNERSHIP.

1. The ordinary capitalist and the ordinary labourer occupy two such fundamentally different positions that the two cannot be brought into any partnership on fair and square terms. The capitalist can invest his capital in a variety of concerns, whereas the workman can only be employed at, and draw wages from, one place at a time. The capitalist can wait for his dividend, balance his loss against gain; the workman is differently situated.

2. There are strong grounds upon which co-partnership may be attacked even as a principle—on the grounds, for instance, that it involves divided responsibility, labour interference with the business side of enterprise, and the virtual

binding of men to one employer, restricting freedom to move about and learn the best processes in the various works—but the central and supreme fact is that the thing is not workable on general, broad lines, and even if workable it would do little or nothing to improve relationships between capital and labour.

NATIONALISATION.

If workmen are not satisfied with service under private employers they are not likely to be contented with servitude under the State. The idea, of course, is that private employers get inordinate profits out of industry, by means of paying low wages and charging high prices, and that the State, if it managed industry, could pay higher wages, sell at lower prices, and still make a profit for the common good, thus increasing contentment all round. But this idea is mistaken. If the State took the land, say, it would have to charge rent, the same as the present owners do, in order that it could meet the costs of draining, fencing, road making, the building and repair of cottages, etc., and whatever the owners take, in the aggregate, for their personal pleasures and services, would more than probably be exceeded by the new army of officials the State would create under nationalisation. Similarly with the railways. The State, in the event of nationalisation, would have to pay interest on capital, and provide for depreciation and improvements, just as the railway companies have. It would be utterly impossible for the State to pay much higher wages, or to materially reduce charges, unless the railways were subsidised out of public taxation.

MR. GOOD'S REMEDY.

Having said so much about the 'quack' remedies, Mr. Good naturally felt incumbent to mention some real one. So, according to him, the best that could be done for labour and the nation, would be to rid and relieve the industries of all unnecessary rates, taxes, and restrictions, to encourage the investment of more money at home, to stimulate production, to foster industry, to expand employment, and to leave men and associations of men as free as possible to bargain with one another and to

conduct their businesses on their own responsibility.

Cost of Living.

Everyone is keenly interested in the phenomenal rise in the cost of living which has taken place within the last sixteen years—a rise of no less than 19 per cent. ! And so everyone deems himself qualified to account for the phenomenon. Each naturally sees the cause of the condition in some circumstance that happens to be his pet grievance—the tariff, the trusts, trades unions, the introduction of machinery, or whatever it may be.

As a matter of fact, says the *Scientific American*, the theory of currency furnishes an explanation which is as simple as it is convincing. Yet few people had, until recently, taken note of this simple truth. It was first pointed out by Samuel Newcomb that the purchasing power of an ounce of gold (supposing for the sake of simplicity that all purchases are made in gold) depends on two factors: first, the total amount of gold in circulation, and secondly, the rapidity of circulation. To quote A. Del Mar ("The Science of Money"): "Suppose that 150,000 million dollars worth of exchanges are to be transacted in a year, and suppose the only kind of money to be used consists of gold dollars. If these dollars could be used but once during the year, it follows that it would take 150,000 millions of them to effect the exchanges. If they could be used and re-used fifty times a year, 3,000 millions of them would suffice to effect the exchanges;" that is to say, the purchasing power of the ounce of gold would be fifty times greater than in the preceding case.

If, then, the purchasing power of gold thus depends on these two factors, the total amount of gold in circulation, and the rapidity of circulation, we must expect that any marked change in either of these factors will be accompanied by a corresponding change in the price of commodities. The rapidity of circulation is subject to seasonable fluctuations, owing to the effects of the seasons upon trade and agriculture, and the "price of

money" fluctuates accordingly. Again, the total amount of gold in circulation has been increasing steadily for many years, as the output of the world's gold mines is many times greater than the loss of gold incidental to commerce and industry. This must necessarily bring in its train a fall in the purchasing power of gold, or, what amounts to the same thing, a rise in the cost of living, all the world over. No local legislation of any kind can possibly stem the tide, any more than we can hope by man-made laws to overcome the action of gravitation.

The fact that this simple fundamental law of the theory of currency was discovered by an astronomer and mathematician, and remained unnoticed by the bulk of "economists" for some twenty years, until unearthed and brought to light by Profs. Kemmerer and Irving Fisher, carries a moral of its own. No problem can be said to be completely solved until it has been cast into mathematical form. And many a "scientific" controversy rages for years, simply because the contestants have not sufficient mathematical judgment and training to count the number of variables involved in a problem, and the number of independent equations connecting such variables. So long as the former number exceeds the latter, the problem is necessarily indeterminate, and there are a number of possible solutions. A number of persons who, unaware of this, each insists on a solution of his own selecting, may evidently go on arguing forever without coming to an agreement.

A Coming World Shortage of Food.

Under the above title an important article by A. G. Gardiner appeared in the *Daily News and Leader* a few weeks ago, and some other articles on the same subject are so significant that they should be pondered by all interested in agriculture and trade. They put the vexed question of free trade and protection in something of a new aspect. The opening passages in A. G. Gardiner's article addressed to the Britisher will arrest the reader's attention anywhere.

"There is a more important matter than how

you are going to get your taxes. You are not going to get your food."

This is what a merchant friend of A. G. Gardiner told him. The following explanation gives some of the points:—

"There is not enough food to go round We are only at the beginning of the rise of prices. . . .

"The abolition and reduction of duties on food in the United States has turned the current of food from England to that country. England used to have the surplus food of the world for their share. It was the advantage of Free Trade. Whatever supply a country had over its own needs went to England, as the free market of the world. But now its 45,000,000 mouths are in competition with the hundred million mouths of the United States. Food will flow where prices are highest.

"The food of the world is being canalised to the United States, and the Underwood tariff will quicken the current.

"But there is another blow to be struck at the English food supplies. It will come from Germany. Germany will have to follow America and open her ports to free food." What do co-operative growers say to this? asks D. McEwen in the *Horticulturists' Review*.

A survey of international commerce reveals no more striking or significant phase than the apparent dependence of the nations of the world upon one another for food. Wherever manufacturing industries are being largely developed, there the balance of food imports is growing; in no such case is the domestic production of food keeping pace with the increase of population or with the growth of manufactures. This fact has been noticed in the pages of the *International Review of Commerce and Industry*, by Mr. Alfred J. Livingsedge who gives the following tables of the values of the food imports and exports of the principal nations of the world for the last three years for which the data are available, together with the amount, in each case, of the excess of imports over exports in the first group, and of exports over imports in the second group:—

porary to permanent settlement of land revenue. The foundation of the present land revenue system was an immemorial custom of the country under which the ruling Power was entitled to a certain share of the produce of the land.

The speaker said:—Our system of land revenue settlements tends to disguise this fact. Except in the comparatively rare cases of fluctuating settlements, we no longer vary our demand from year to year with the outturn of the crops, and in making our assessments we look, as a rule, to the gross produce rather than to the net produce or profits. The basis of the whole system, however, is the right to a share of the gross produce, and every departure from the strict application of this principle is based on the desire of the Government to reduce, as far as possible, the burden on the people, and to avoid any unnecessary expenditure on settlements.

If he accepted the resolution, he should be consenting to two assumptions; first, that there were parts of the country which had become ripe for permanent settlement in accordance with the conditions laid down in the Secretary of State's Despatch of 1862, and, secondly, that if there were such parts of the country, a fifty years' settlement of land revenue would be more appropriate than one of twenty or thirty years. He was not prepared to agree with either of those assumptions. And the resolution stood condemned so far as the Secretary of State's despatch of 1862 was concerned.

Referring to the question of a fifty years' settlement, the Government were not prepared to make any move in that direction. Assuming that the mover was right in his demand, how could he ask the Government to pledge themselves for a very long period? Should the Government be unwise to give such a pledge, would it be possible to prevent some future Finance Member from seeking to take, by some other tax, the profits from the land? Did the Members of

the Council believe that it would have been possible to refrain from doing so, had permanent settlement been extended, as had at various times been proposed, to the whole of India?

The Government could not agree to forego their share in the profits from land, and very long terms of settlement would entail many disadvantages even to the landholders. The resolution was a very modest request, yet he did not accept it, as he was not prepared to embark the Government on another discussion on revenue matters, which was likely to be very protracted, and almost certain to be entirely infructuous.

Free-trade and Protectionist Countries.

In the last session of the Supreme Legislative Council, Mr. Clark replying to Sir Ibrahim Rahimtoola's question *re* countries where the principle of free trade or protection is observed, said:—"It is impossible to answer the question raised by the hon'ble member in the general way in which he states it, since the terms protection and free-trade are often very loosely employed. An entirely free-trade country would be one where, as in the United Kingdom, import duties are levied for revenue purposes only and where, in the event of the country itself producing articles of like character to those imported, an equivalent excise is also levied. An entirely protectionist country would be one where the customs tariff was framed throughout with the intention of encouraging local industries to the detriment of foreign imports by the levy of specially large duties on the latter, while the former were left free or might even receive bounties. Between these extremes there is a large number of cases in which, while a tariff is levied primarily for revenue purposes, it is also applied in a degree which may be of a very varying character, to the protection of local industries or some of them. Mr. Clark said it was impossible to furnish the information asked for, as that would imply an exhaustive study of the existing traffic of each country and its history."

The Financial World.

The Indian Finance Commission.

THE REPORT.

The Final Report of the Royal Commission on Indian Finance and Currency was issued on the 5th March, accompanied by Volume II of the Minutes of Evidence taken before the Commission, the Appendices thereto and the Index to the whole of the evidence.

The Report is signed by all the Commissioners. They are:—Mr. Austen Chamberlain (Chairman), Lord Kilbracken, Lord Faber, Sir Robert Chalmers, Sir Ernest Cable, Sir Shapurji Broacha, Sir James Begbie, Mr. R. W. Gillan, Mr. H. N. Gladstone, and Mr. J. M. Keynes. The Secretary was Mr. Basil P. Blackett.

The Report, which is dated the 24th February, though practically unanimous, has appended to it a Note by Sir James Begbie, stating that he is unable to concur in the conclusions and recommendations of the Commission on the subject of currency policy.

SUMMARY OF THE REPORT.

A careful summary of the Commissioners' conclusions is given in the Report, which will be found invaluable by those who study it. We give it in full:—

(i) The establishment of the exchange value of the rupee on a stable basis has been and is of the first importance to India (par. 8.)

(ii) "The measures adopted for the maintenance of the exchange value of the rupee have been necessarily and rightly rather supplementary to, than in all respects directly in pursuance of, the recommendations of the Committee of 1898 (pars. 7 and 44 to 46).

(iii) These measures worked well in the crisis of 1907-8, the only occasion upon which they have been severely tested hitherto (pars. 48, 49).

(iv) The time has now arrived for a recon-

sideration of the ultimate goal of the Indian Currency System. The belief of the Committee of 1898 was that a Gold Currency in active circulation is an essential condition of the maintenance of the Gold Standard in India, but the history of the last 15 years shows that the Gold Standard has been firmly secured without this condition (pars. 47, 50).

(v) It would not be to India's advantage to encourage an increased use of gold in the internal circulation (par. 64).

(vi) The people of India neither desire nor need any considerable amount of gold for circulation as currency, and the currency most generally suitable for the internal needs of India consists of rupees and notes (pars. 50, 76).

(vii) A mint for the coinage of gold is not needed for purposes of currency or exchange, but if Indian sentiment genuinely demands it and the Government of India are prepared to incur the expense, there is no objection in principle to its establishment either from the Indian or from the Imperial standpoint; provided that the coin minted is the sovereign (or the half-sovereign) and it is pre-eminently a question in which Indian sentiment should prevail (pars. 69, 73).

(viii) If a mint for the coinage of gold is not established, refined gold should be received at the Bombay mint in exchange for currency (par. 73).

(ix) The Government should continue to aim at giving the people the form of currency which they demand, whether rupees, notes, or gold, but the use of notes should be encouraged (par. 76.)

(x) The essential point is that this internal currency should be supported for exchange purposes by a thoroughly adequate reserve of gold and sterling (par. 76).

THE GOLD STANDARD RESERVE.

(xi) No limit can at present be fixed to the

FOOD VALUES.

Three years—1910-12 or 1909-11.

GROUP I.

Countries with a Balance of Imports.

	Imports.	Exports.	Excess of
	£000	£000	Imports.
			£000
United Kingdom (Great Britain and Ireland) ...	802,228	120,073	682,155
Germany ...	429,100	103,050	326,050
France ...	205,048	97,813	107,235
Belgium ...	139,644	57,517	82,097
Switzerland ...	69,397	20,635	48,762
Netherlands ...	251,731	231,602	20,129
Union South Africa ...	18,629	2,674	15,955
Austria-Hungary ...	38,700	27,700	11,000
Chile ...	8,554	1,981	6,573
Egypt ...	11,559	5,087	6,472
Italy ...	73,604	67,179	6,425
Sweden ...	16,758	11,444	5,314
Norway ...	18,500	15,402	3,098
Japan ...	17,113	15,000	2,113

GROUP II.

Countries with a Balance of Exports.

	Imports.	Exports.	Excess of
	£000.	£000.	Exports.
			£000.
Russia (European) ...	41,769	283,369	241,600
British India ...	43,320	134,943	91,623
Brazil ...	33,814	124,608	90,794
Argentina ...	11,539	67,685	56,096
Australia ...	16,500	65,000	49,000
Canada ...	45,939	96,835	50,896
United States ...	209,573	244,420	34,847
Denmark ...	25,786	57,147	31,361
Spain ...	20,960	47,825	26,865
Mexico ...	3,600	7,936	4,336
Portugal ...	9,550	12,258	2,708
China ...	33,727	36,778	3,051

The facts revealed by the figures of these two statements will probably come as a great surprise to many. As a matter of fact, the figures do not disclose one of the most important features of the international situation, that is to say, the rapidity with which the balance of imports of food substances is increasing in practically all the countries of the first group, and the balance of food exports diminishing in many of the countries in the second group.

In the situation thus exposed we find, in the words of Mr. Liversedge, the most important economic factor of our time.

Land Revenue.

In the last session of the Imperial Legislative Council, the Hon'ble Rajah Kushalpal Singh moved a resolution for the extension of the period of settlement of land revenue from twenty or thirty years to fifty years. Though, in the end, the resolution was negatived, the discussion laid bare the strong views held on the question by officials and non-officials.

FOR THE RESOLUTION.

The Hon'ble Rajah Kushalpal Singh, in moving the resolution said that quite a distinguished body of Anglo-Indian and British statesmen had expressed themselves in favour of a permanent settlement. Three Governors-General under the East India Company and three Viceroys under the crown had exerted all their influence towards imposing a permanent limitation on the land tax in India, but were overruled by the authorities in England. If the duration of the settlements was extended, the expense and harassment incidental to the present mode of assessment operations and recurring every twenty or thirty years would be materially lightened, and accumulation and investment of capital would be directly encouraged. The people would lead a fuller and contented life, and the indirect benefit thus accruing in the future would more than compensate for any immediate loss of revenue.

The mover quoted from the Secretary of State's Despatch of 1862 and from the writings of Mr. Seton-Carr in illustration of his argument about the disadvantages of the present settlement system, and mentioned that many high officials, including Viceroys, Secretaries of State and Lieutenant Governors and Royal Commissions had acknowledged the harm which the periodical revision of the land revenue demand entailed, and said that Sir Auckland Colvin and Mr. Carpenter had fully described the harassing nature of the operations which led to corrupt and oppressive practices. The speaker gave a graphic account of what generally took place at the time of the settlements and their dire effects on the agricultural population. He said that the system of extending the period of settlement from time to time also caused loss to the

Government. On the approach of an impending revision of settlement, cultivation was neglected, and lands were purposely thrown out of cultivation, and the very thought of the revision of the assessment at short intervals lay heavy on the landholders.

He said that it was no doubt true that the Settlement Officers themselves did not make an excessive demand, yet the anxiety to show some increase in the revenue animated all officers, from the highest to the lowest, and every increase in the revenue meant a corresponding decrease in the resources of the people and in their ability to provide against years of bad harvest. It was now twenty years since the last examination of the general question of the terms of settlement by the Government of India took place. A vast change had since then taken place in the country, and the time had now come when the question of the term of the settlement should be re-examined in the light of the altered economic conditions.

Many members spoke in support of the resolution, instancing the grievances of their special provinces occasioned by periodical settlements at frequent intervals.

AGAINST THE RESOLUTION.

The Hon'ble Mr. Rice gave an interesting history of the settlements in foreign countries, and, in opposing the resolution, said that no country had a settlement beyond thirty years. He referred to the systems which obtained in Europe and America. He held that the Indian landholders were in as good a position as others in civilised countries.

The Hon'ble Sir Reginald Craddock said that the proposal of the Hon'ble Rajah Kushalpal Singh was untenable. First, no rule of land settlement could be applicable to the whole of India all at once; and, secondly, the suggestion of the Hon'ble mover was not a case of concession to tax-payers, but in effect would be a distribution of various interests.

In some Provinces there were two parties in the transaction:—first, the state, which was the trustee of the people, land being the property of the country; and, secondly, the tiller of the soil. In some Provinces there was a

third party, the landlords who acted as a medium between the State and the tiller of the soil. Sir Reginald Craddock said that the question of the origin of the landlord was a big question and could not be dwelt upon at length in the Council.

He referred to the question of absolute occupancy and ordinary tenants, whose term of settlement was liable to enhancement. He did not understand from the speeches that were delivered, in support of the motion, whether the landlord wished to abandon the share of profits and give the ryot a permanent fixed rental.

In conclusion, Sir Reginald Craddock said that, if they were to accept the proposal of the mover, they would be making a great sacrifice as the trustee of the people to the benefit of the middle-man.

The Hon'ble Sir Robert Carlyle was unable to accept the resolution. He said that it was twelve years since the Government of India published their well-known resolution on their land revenue policy. He affirmed the Government's desire that the assessment should be equitable in character and moderate in incidence, and that there should be left to the proprietor, or the cultivator of the soil, as the case might be, that margin of profit that would enable him to save in ordinary seasons and to meet the strain of exceptional misfortune. In several Provinces the term of settlements had been increased. Great efforts had been made to simplify and cheapen the proceedings connected with settlements. The imposition of large enhancements was now progressive and graduated, and there was far greater elasticity in revenue collection, suspensions and remissions of revenue being given on a scale hitherto unknown. Whatever the basis of settlement, whether net assets, or rental, or general consideration, the most careful attention should be given to the well-being of the revenue-payer in applying the local settlement rules whatever they might be, while the keynote of Government's policy was moderation. But they were not prepared to take any steps towards a change from tem-

amount up to which the Gold Standard Reserve should be accumulated (par. 86).

(xii) The profits on coinage of rupees should for the present continue to be credited exclusively to the Reserve (par. 89).

(xiii) A much larger proportion of the Reserve should be held in actual gold. By an exchange of assets between this Reserve and the Paper Currency Reserve a total of about £10,000,000 in gold can be at once secured. This total should be raised as opportunity offers to £15,000,000, and thereafter the authorities should aim at keeping one half of the total Reserve in actual gold (pars. 93 to 100).

(xiv) The Indian branch of the Gold Standard Reserve in which rupees are now held should be abolished, the rupees being handed over to the Paper Currency Reserve in exchange for gold (par. 98).

(xv) The proper place for the location of the whole of the Gold Standard Reserve is London (pars. 90 and 100).

(xvi) The Government should definitely undertake to sell bills in India on London at the rate of 1s. 3½d. per rupee whenever called upon to do so (par. 101).

(xvii) The Paper Currency system of India should be made more elastic. The fiduciary portion of the note issue should be increased at once from 14 crores to 20 crores, and thereafter fixed at a maximum of the amount of notes held by Government in the Reserve Treasuries plus one third of the net circulation, and the Government should take power to make temporary investments or loans from the fiduciary portion within this maximum in India and in London, as an alternative to investment in permanent securities (pars. 112 and 113).

(xviii) We recommend the immediate universalisation of the 500-rupee note and the increase of the facilities for the encashment of notes (par. 115).

BALANCES.

(xix) The aggregate balances in India and London in recent years have been unusually large. This has been due mainly, though not entirely, to accidental causes and to the exceptional prosperity of India (pars. 125, 126).

(xx) Caution is justifiable in framing Budgets in India, but has been carried rather further than was necessary in recent years (pars. 126 and 128).

PROPOSED CHANGE OF DATE FOR THE BUDGET.

(xxi) A change in the date of the commencement of the financial year from the April 1st to the November or the 1st January would probably enable the Government of India to frame more accurate Budgets. Such a change would also enable the India Office to fix the amount of their borrowings in London with closer regard to immediate needs. We commend this proposal for favourable consideration (pars. 128 and 190).

(xxii) The practice of transferring revenue surpluses to London to be used in avoiding or reducing fresh borrowings for capital expenditure has been thoroughly justified in the interests of India, and the Secretary of State has made good use, for this purpose or for actual reduction of debt, of the balances from time to time accumulated in his hands (pars. 130 to 133 and 179).

(xxiii) But the recommendations which we make as regards loans by Government in India may lead to a revision of the occasions, though not of the extent, of transfers of money to London (par. 133).

(xxiv) The independent Treasury system of the Indian Government is not an ideal one. It is partly responsible for the stringency which recurs annually in the Indian Money Markets (pars. 137 to 143.)

(xxv) We recommend that the Government of India should make a regular practice of granting loans to the Presidency Banks from their surplus balances in India against security on terms to be negotiated with the Presidency Banks (pars. 150, 163, 164.)

(xxvi) In deciding upon the location of surplus balances the Government of India and the Secretary of State should act in consultation, and while the transmission of the necessary funds to London at favourable rates of exchange is the first consideration, the authorities should have regard to all the factors, including the

possibility of utilising surplus balances for loans in India (pars. 159 to 161.)

(xxvii) In carrying out these recommendations the authorities should proceed tentatively and with caution (par. 165).

(xxviii) We recommend that the amount of the annual rupee loans in India should be increased as much as possible. The figures of recent loans appear to have been somewhat over cautions. We call attention to the questions of relaxing present regulations in regard to endorsements on rupee paper and of creating new forms of securities (pars. 167 to 169).

COUNCIL DRAFTS NOT SOLD AS A CONVENIENCE TO TRADE.

(xxix) The Secretary of State sells Council Drafts, not for the convenience of trade, but to provide the funds needed in London to meet the requirements of the Secretary of State on India's behalf (par. 186.)

(xxx) The India Office perhaps sold Council Drafts unnecessarily at very low rates on occasions when the London balance was in no need of replenishment; but we do not recommend any restrictions upon the absolute discretion of the Secretary of State as to the amount of drafts sold or the rate at which they are sold, provided that it is within gold points. The amount and occasion of sales should be fixed with reference to the urgency of the Government's requirements and the rate of exchange obtainable, whether the drafts are against Treasury balances or against the reserves (pars. 181 to 185.)

(xxxi) There has been some excess of caution in the renewal of debt by the India Office during recent years (par. 192.)

LOANS TO BORROWERS IN THE CITY.

(xxxii) The system of placing portions of the India Office balance out on short loan with approved borrowers in the City of London is, on the whole, well managed; but we draw attention to—

- (a) The term for which loans are made.
- (b) The desirability of giving greater publicity to the methods by which admission is gained to the list of approved borrowers.

(c) Some defects in the list of approved securities and especially its narrow range (pars. 196 to 200).

(xxxiii) There is no ground for the suggestion that the City members of the Secretary of State's Council showed any kind of favouritism in placing on deposit with certain banks with the directorates of which they were connected, a part of the India Office balance at a time when it was too large to be placed entirely with the approved borrowers. But we call the attention of the Secretary of State to the desirability of avoiding as far as possible all occasion for such criticism, though it may be founded on prejudice and ignorance of the facts (par. 202).

(xxxiv) We observe that in our opinion the time has come for a general review of the relations of the India Office to the Bank of England (par. 203).

(xxxv) The working of the present arrangements for the remuneration of the Secretary of State's broker should be watched and, if necessary, they should be revised (par. 204.)

(xxxvi) We record our high opinion of the way in which the permanent staff, both in India and in London, have performed the complicated and difficult financial duties placed on them (par. 7).

(xxxvii) We recommend a continuance of a Finance Committee of Council as providing the machinery most suitable for the work required (par. 208).

CONSTITUTION OF FINANCE COMMITTEE.

(xxxviii) The Finance Committee should, if possible, contain three members with financial experience, representing—

- (a) Indian Official Finance.
- (b) Indian Banking and Commerce.
- (c) The London Money Market.

In any case there should be at least one member with Indian financial experience. The absence of any representative of Indian finance on the Committee since 1911 has resulted in giving undue prominence to the representation of London City experience (par. 210.)

(xxxix) While we suggest that the changes recently proposed, and now under discussion, in the constitution of the India Council may require some modification in order to provide for the continuance of a Finance Committee of Council, we are in sympathy with the desire for expediting financial business, which is one of the objects in view (par. 214.)

(xl) The present arrangement under which the Assistant Under Secretary of State, having financial experience, is able to share with the Financial Secretary the responsibility for financial business in the India office has many advantages. For the future we recommend that either—(1) the Under Secretary or Assistant Under Secretary of State should have financial experience as at present, or (2) there should be two Assistant Under Secretaries of whom one should have financial experience (par. 216.)

(xli) We are not in a position to report either for or against the establishment of a State or Central Bank, but we regard the subject as one which deserves early and careful consideration, and suggest the appointment of a small expert Committee to examine the whole question in India and either to pronounce against the proposal or to work out in full detail a concrete scheme capable of immediate adoption (pars. 221, 222.)

Enquiry into Bank Failures.

During the last Session of the Imperial Legislative Council, the Hon'ble Sir Gangadhar Chitnavis moved a resolution on the advisability of appointing a committee composed of persons with judicial, financial and commercial experience, to enquire into the causes of the recent bank failures and to report what, if any, measures are desirable to regulate and control banks and banking business in this country. The occurrence of the recent bank failures created a *prima facie* presumption that there is something radically wrong which requires a radical remedy. The Hon'ble mover said that the present was an appropriate time for holding such an investigation. Public feeling has been aroused by the occurrence of the disaster, and keen interest and assistance

might reasonably be expected. Further, the Hon'ble mover submitted that the method he suggested was the most suitable in which an investigation could be made. Sir G. Chitnavis said that the lines of investigation of the proposed Commission's proceedings would be quite different from the judicial proceedings now taking place. "The provisions of the Indian Law relating to liquidation, compulsory or voluntary, invest the Court with powers sufficient to enable it to collect the assets of the bankrupt company and to distribute them among the creditors. Certain powers ancillary to these authorise the Court to determine the assets and settle the list of contributories. It might also be conceded that a thorough judicial enquiry into the suspected fraud in the management would be not only justifiable, but a necessary procedure. But, as can well be seen, an investigation of the various subterfuges and malpractices by which the depositors and shareholders have been duped by an unscrupulous and scheming Manager is certainly not within the primary function of the Court. To illustrate my meaning, suppose it transpires in the course of liquidation proceedings that the Manager has systematically misapplied the funds of the Bank and has successfully cooked the accounts even without the knowledge of the Directors. Now on this hypothesis an enquiry into the criminality or otherwise of the procedure is the utmost that the Court can undertake consistently with the object of the law. But this is not enough. There is yet another stage in the investigation absolutely necessary in the public interest, but not affecting the interests of the parties to the proceedings, and that is a scrutiny into the method of management and the devices adopted to circumvent the law. And this is exactly the investigation which the Court may often not be competent to undertake for the purposes of liquidation, and will be most reluctant to undertake.

In this view of the matter, the investigation recommended in the resolution is not, and cannot be, superfluous. There is nothing in the liquidation proceedings to make a thorough

investigation by a commission injudicious either absolutely or in point of time.

The Hon'ble member instanced the institution of similar commissions in identical circumstances in other countries and strongly recommended the resolution to the notice of the council.

In the discussion that followed many spoke in support of the resolution.

Sir Fazulbhoj Ebrahim opposed the appointment of a commission on the grounds that it would be a costly machinery and that it was common knowledge that where banking transactions committed gross frauds, there was an effective law for swindlers. He also said the sudden run made by depositors had largely hastened the smashes. He took a happy view of the position of existing banks, and said the time was most inappropriate for such an enquiry.

The Hon'ble Mr. Clark did not accept the resolution. He said that the action suggested by the Hon'ble mover would necessarily interfere with the proceedings now before the courts, when those proceedings have been completed and the views of the local Governments on the proposed Banking legislation received. Government would consider whether the information thus obtained afforded sufficient material for them to take action or whether some further special enquiry is desirable.

In the end, the resolution was withdrawn.

Silver Standard in China.

The following official reasons are given for the adoption of the Silver Standard in China:—

"In reforming the currency system, the most important step is to select a definite standard. There are four standards in all, namely bi-metallic standard, gold standard, gold exchange standard and silver standard. As to the bi-metallic standard it is not suitable to China. Countries in Europe and America have experimented with it several times, and found it unworkable. This can serve as a warning to us, and therefore the adoption of a bi-metallic standard for China is out of the question. As

to the gold standard, we all know that it is a good standard, but China cannot adopt it, firstly, because the amount of gold in China is not enough to make gold coins for circulation. If we buy gold from abroad, great expenses will be incurred. Should we purchase foreign gold, what are we going to do with the large amount of silver now in the market, which will cause a great panic in the financial world if the amount is not well disposed of. Secondly, because it is the temperament of the Chinese people to hoard precious metals. Those who see gold coins which are attractive will keep them if they are financially able to do so. They will probably hide the gold coins somewhere. The coins are the medium of exchange, and when they are thus stored up, the result will be great inconvenience to the public. For these various reasons, though knowing that the gold standard is a good one, we believe that it is not wise to adopt it abruptly. With regard to the gold exchange standard, it is usually adopted in countries where gold is scarce for the purpose of levelling the rate of foreign exchange. It serves its purpose, and such a standard is mostly adopted in the colonies where it proves useful. The reason is that the colony can always look up to the mother country for relief in time of need. The condition in our country is quite different, and thus no comparison can be formed between a colony and China. Supposing that we contract a big loan and that we put the borrowed money on the foreign market for the purpose of levelling in the rate of exchange, what will happen to us? It is most probable that we will experience the injury of the dealing before there is hope of profit therefrom. We can easily balance, perhaps, the rate of one country, but it is impossible to control the exchange rate in the other countries. Although the gold exchange standard is good in its way, it is most difficult to carry it out. The bi-metallic, gold exchange and gold standards are not suitable to the needs of China, and the only one that is left is the silver standard. If we consider the tendency of the world, we believe that the silver standard cannot be long used without

being injurious to the country, but some standard is better than none. What distresses China most at present is the lack of a standard. Rather than dreaming of a good standard, which the finance of the country does not allow to have, thereby delaying the currency reform with no benefit to the country, it is better to pick up a standard that can easily be carried out, in order to reform the currency. We use the easy standard as a ferry-boat, so to speak. The period for the use of the silver standard should be made as short as possible. Although the Government is going to adopt the silver standard, it is paying constant attention to the plan regarding the conversion into the gold standard. In drawing up the Currency Law, and the regulations for the banks, we have always had this in view."

Hoarding in India.

A writer in the *Statist* has an article on the lack of reliable investments in India and the want of confidence on the part of the people in purely Indian banks, which has been only accentuated by the recent bank failures.

The writer points out that security of person and property under the administration of the British Government in India for over 50 years, the phenomenal rise in prices during recent years, the low cost of living and the frugality and thrift which characterise the majority of the population, the profitable trade in opium, jute and indigo till recent years, have all combined to make many communities richer and more prosperous. There is a large amount of floating capital in the country seeking investment.

An analysis of the figures published by the Post Office savings banks shows that the total number of depositors have increased from 897,171 in 1890 to 1,378,916 in 1910, and the deposits have increased from Rs. 6,89,56,970 to Rs. 15,86,71,786. Further, the great bulk of the deposits in the savings banks is made by Indians. The growth of deposits in the Presidency banks, Joint Stock banks (European), and Exchange banks have been considerable.

Apart from these banks purely under European management, there are about 500 Joint

Stock banks and 6,000 Co-operative Credit Societies which are under Indian management, the depositors being purely Indian. But the capital that has been invested is very small in comparison with the total wealth of the country, which has been hoarded owing to want of facilities for investment. While in every civilised country a broker would be able to advise a prospective investor of at least 50 securities that are safe and sound, an Indian investor has very few securities to deal with. Railway debentures, municipal stock, commercial bills, currency bonds and various commercial and industrial securities which offer splendid opportunities for investment in every country do not exist in India. The railway stock is almost all in the hands of the British capitalist and only very few municipalities have raised capital through debentures. The commercial undertakings are in the hands of the British capitalist, and very few Indians have got shares in these concerns. A large majority of the population have no confidence in purely Indian banks, and, as such, there is no chance of a large scope for investment in bank shares. The government promissory notes have been purchased largely by the people, but they are not popular owing to the following reasons:—(1) They are not available for small investors—most of them being purchased by banks, financial syndicates, and holders of trust funds; (2) they are available only through banks, and many avoid the long and tedious process of going to these banks for their investments; (3) the documents are all printed in English, and very few can understand the conditions under which these are issued. The result of such conditions is that a prudent man mostly hoards his capital in the form of jewellery and other kinds of personal property, which he can convert into money at any time that he likes to do so.

The writer's suggestions are as follows:—(1) That municipalities and district boards to be empowered to issue debentures or bearer bonds for all their public works; (2) the State to issue debentures or bearer bonds in small amounts for collecting the surplus capital of the country for its capital expenditure; a

system of bearer bonds like the French Rentes through Post Offices and treasuries for small investors; (3) formation of agricultural banks through State aid which are empowered to issue debentures; (4) the securities to be printed in English and other vernaculars in the same way as the currency notes are at present printed.

In this connection, it will be interesting to read the following statement made in London by Mr. M. R. Sundara Aiyar:—

"Hoarding in India is to be traced to the peculiar social conditions and the laws that govern the people, and not merely to a barbarous instinct to hoard. First, under Hindu law and under existing conditions it is not possible to make any provision for the female members of one's family either wife, daughters, or sisters. The only way by which the strictness of the law is at present evaded is through the presentation of a very large number of ornaments to the wife and to the daughters. One hundred sovereigns strung on a gold thread become the personal property of the wife, over which the son has no control, while 100 sovereigns presented in pieces or its worth of immovable property will be impeached as a void alienation. So that in every household, poor or rich, the girls of the family are being presented with sovereigns, and they store them up until a sufficient quantity is collected for making them into ornaments. The jewels cannot be sold for the husband's debts. When the husband dies the Hindu widow can neither remarry nor wear any kind of ornament, and the jewels are then sold and invested for her use.

"Personal credit is almost unknown in India. Borrowing is either by mortgage of immovable property or by the pledge of jewels. Every agriculturist, whenever he saves any money, invests it in jewels, as it often results in peace and comfort at home, and satisfies the vanity of the ladies, and also can be relied upon as a means for raising money whenever he wants it."

Agricultural Banks in Japan.

An interesting summary of the work of the Agricultural Credit Banks in Japan appears in a recent number of the *Journal* of the Royal Society of Arts. A great change is taking place in the position and condition of the agriculture of that country. Up to not many years ago the agricultural holdings in Japan were usually very small, and labour, rather than capital, was expended on them. The development of scientific agriculture in that country, however, has necessitated the finding of a considerable amount

of capital, and in the absence of private resources the Japanese Government have been compelled to find means of providing it at a low rate of interest. The most important of the institutions founded for the purpose is the Mortgage Bank of Japan, which carries on business all over the country, and the loans of which are on a large scale. This bank was founded in 1896, with a capital of 10,000,000 yen (about £1,000,000), of which 2,500,000 yen was called up. It is empowered to make loans on the security of real property, or, in the case of municipal bodies and certain classes of society, without security. The maximum rate of interest is fixed by the Minister of Finance, and its operations are controlled by the Government. In 1910 the loans granted by the Mortgage Bank amounted to nearly £10,000,000, and the loans outstanding at the end of the year to over £8,800,000. It may be mentioned that the bank has power to issue debentures, the unredeemed amount of which at the end of 1910 was nearly £7,500,000. Half of the loans were for the purpose of agriculture proper, and the interest charged varied from 7 to 7.5 per cent., the rate for loans repayable at a fixed period being in each case increased by 0.5 per cent. For the first ten years the Government guaranteed a 5 per cent. dividend.

On similar lines, but on a smaller scale, are the local agricultural and industrial banks, which are scattered about the country, and confine their operations to their respective districts. These banks were also constituted by law in 1896. Their individual capital amounted to 300,000 yen (about £30,000) and upwards. Loans are made by them principally on the security of real property, but they also lend money without security to municipal bodies and societies, and on personal credit to groups of twenty or more persons with joint liability. The total amount of the loans issued by them in 1910 was over £6,000,000, and of this amount over £5,000,000 was outstanding at the end of the year. The maximum rate of interest was fixed at 8 per cent. and 8.5 per cent., according to the class of borrowers. To assist the latter banks, the sum of £1,000,000 was appropriated by the Government for distribution among the prefectures, so that these official bodies might become shareholders in the banks. It was further provided that these shares should bear no interest for the first five years, and that for the second five years the dividends on such shares should be set aside as reserve funds.

The agricultural interests of Japan and its dependencies are well looked after by the Japanese Government.

Statement of the Revenue, and Expenditure charged to Revenue, of the Government of India, in India, and in England.

Revenue—	Accounts, 1912-1913.	Budget Estimate, 1913-1914.	Budget Estimate, 1914-1915.	Expenditure—		Accounts, 1912-1913.	Budget Estimate, 1913-1914.	Revised Estimate, 1913-1914.	Budget Estimate, 1914-1915.
				£	£				
Principal Heads of Revenue—									
Land Revenue	21,282,468	21,373,200	21,096,700	£	£	8,053,304	9,469,700	9,354,500	9,341,000
Opium	5,124,592	1,445,000	1,605,600			1,810,535	1,310,000	1,554,000	1,607,300
Salt	3,334,374	3,405,300	3,419,700			2,005,567	2,057,200	2,109,200	2,182,000
Stamps	5,669,115	5,218,200	5,237,500			1,105,946	1,231,000	1,182,700	1,268,000
Excise	8,277,919	8,452,900	8,906,700			142,348	103,700	136,500	104,300
Customs	7,197,243	6,862,800	7,355,100			16,886,755	18,424,100	18,947,890	19,778,400
Other Heads	5,563,119	4,925,800	5,437,400			4,926,232	5,087,000	5,418,800	5,397,700
Total Principal Heads...	55,838,830	51,683,200	53,058,700			1,000,000	1,000,000	1,000,000	1,000,000
Interest	1,473,708	1,287,300	1,377,800			12,568,435	13,071,200	12,869,900	13,409,000
Post Office	2,262,436	2,360,800	2,400,800			3,401,928	3,564,600	3,553,400	3,631,400
Telegraph	1,174,124	1,191,800	1,178,300			6,063,759	6,584,500	7,048,800	7,456,500
Mint	487,359	240,600	404,500			20,953,100	21,007,800	21,399,200	21,886,100
Receipt by Civil Departments	1,334,847	1,293,300	1,394,100			79,440,914	83,910,800	83,074,800	86,962,200
Miscellaneous	765,207	689,200	715,700					63,900	...
Railways; Net Receipts	17,971,789	17,623,500	17,519,400						
Irrigation	4,411,217	4,403,900	4,553,100				2,912,000	805,000	3,209,300
Other Public Works	355,447	286,900	279,900						
Military Receipts	1,387,634	1,361,000	1,379,800			83,864,964	80,998,200	82,933,700	83,752,900
Total Revenue...	86,862,598	82,324,500	84,261,600			3,107,634	1,326,300	1,327,900	1,279,800
						86,862,598	82,324,500	84,261,600	85,032,700
				Expenditure—					
				Direct Demands on the Revenues					
				Interest					
				Post Office					
				Telegraph					
				Mint					
				Salaries and Expenses of Civil Departments					
				Miscellaneous Civil Charges					
				Famine Relief and Insurance					
				Railways: Interest and Miscellaneous Charges					
				Irrigation					
				Other Public Works					
				Military Service					
				Total Expenditure Imperial and Provincial...					
				Add—Provincial Surpluses: that is, portion of allotments to Provincial Governments not spent by them in the year.					
				Deduct—Provincial Deficits: that is, portion of Provincial Expenditure defrayed from Provincial Balances.					
				Total Expenditure charged to Revenue					
				Surplus...					
				Total ...					

The Educational World.

Itinerant Lectureship on Co-operation.

An itinerant lectureship of rural thrift and co-operation has been officially inaugurated and constituted recently at Reggio Calabria, as a section of the National Committee of Agricultural Co-operation for the South of Italy. According to its rules its objects are:—

(a) to conduct propaganda for the establishment of co-operative thrift institutions of various kinds, and to encourage small proprietors, tenants, and especially peasants and agricultural labourers to become members of such institutions;

(b) to popularise the rules for the constitution and working of these institutions (mutual cattle insurance societies, societies for insurance against fire, hail and accidents, for the enrolling of members in the National Thrift-Bank, and for educational purposes) exercising over all these the necessary supervision and establishing federations for re-insurance;

(c) to diffuse, especially among tenants and small proprietors, a knowledge of hygiene in the breeding and rearing of cattle, and of the laws regarding co-operation and insurance.

State Aid for High Schools.

The new school laws, enacted by the legislature of Nebraska, provide that any high school accredited to the State University and fitted to give training in agriculture, manual training, and home economics, may receive State aid not exceeding \$1,250 a year. The school must maintain at least two years of high school work in these subjects, employ at least two teachers, and provide an approved course in normal training for preparing teachers for rural schools.

Any rural school district which gives instruction in agriculture, manual training, and home economics in accordance with the rules and regulations of the State superintendent of public instruction, and becomes associated

with an accredited high school may receive as State aid \$50 a year.

OHIO.

It is stated in the *National Stockman and Farmer*, by one of the agricultural supervisors of Ohio, that after a year and a half of the Cahill Law requiring agriculture to be taught in the common schools of that State, more than 900 high schools are teaching agriculture, and more than half a million boys and girls are studying the subject in the public schools. It is estimated that about 4,000 teachers took work in agriculture at the summer schools last session.

MANITOBA.

The Manitoba Provincial Department of Education is endeavouring to introduce agricultural teaching into the secondary schools of the Province. As a result of its efforts, two townships have agreed to appoint an agricultural instructor. The Government is to pay one-half the salaries and otherwise assist in making the course successful. Experimental or demonstration work will be carried on by students on their own farms under the supervision of the instructor.

Peripatetic Agricultural Instruction in Travancore.

Though the creation of a separate Agricultural Department with a Director of Agriculture is of recent date in the Travancore State, its advice and help are eagerly sought for by the ryots of the State to a large degree. This is due, in a great measure, to the watchful solicitude of the Department itself towards the prosperity of the ryots, and the confidence and trust that the latter have in the head of the Department, himself a native of the State.

A recent issue of the Travancore Gazette announces that it has been considered desirable by the Department to depute a competent officer on tour to the different parts of the

State with instructions to meet *bona fide* ryots, clear their doubts on agricultural matters and collect samples of soils, water, etc., for further investigation. This laudable step has been taken in pursuance of the large number of inquiries that pour into the Department, from the ryots, the solution of many of which would depend upon a scientific study of the particular soil and so on. The suitability of certain soils for the raising of particular crops, the nutritive value and economic importance of feeding stuffs, the method of preparing and applying manures, the nature and influence of the different kinds of water used for agricultural purposes, etc., are eminently questions which need to be taught to the ryots according to the particular circumstances of each case. For this end, a circuiting officer with a great amount of patience, sympathy and knowledge both as regards his duty and the pecuniary position of the ryot whom he is deputed to help, is the right sort of person. Remedies suggested must be varied to the particular bearings of the case and the ability of the ryots to carry them out.

The same issue of the *Gazette* also announces that an Entomological Assistant has been added to the staff of the Office of the Director of Agriculture and he will be engaged in investigating insect-pests, finding out effective methods of dealing with them and bringing them to the notice of the ryots. This is another step in the right direction and we congratulate the Government of Travancore and particularly its energetic Director of Agriculture in seeking to help the ryots of the State, who form the backbone of the country.

Commerce and the Universities.

In the December number of the *International Review of Commerce and Industry*, Mr. W. J. Ashley argues for "commercial education of a University Standard." He asks Englishmen to take "higher commercial education" a little more seriously not as something that has to do primarily with another social class, but as something intimately affecting themselves and their kinsfolk and their immediate circle.

In the writer's estimation, the development of commercial training in Germany and America is genuine. In America it is thought that all the young men who seek the highest type of training for their subsequent careers, whatever their careers may be, should receive it in wide, all embracing universities, where they will meet students of diverse origins and manifold interests, and get rid of their class narrowness. In America, moreover, it does not seem to have occurred to anyone either that the universities would injure commercial students or that commercial students would injure the universities.

As an answer to those who are found to pooh pooh commercial education, Mr. Ashley adduces the following general reasons for "taking commercial education seriously." "Here is this vast field of human activity which we call 'business.' More and more it dominates human thought and action; more and more does the production come to depend on markets, and more and more does the securing of markets depend upon economy of production. Everywhere the same questions of policy are presenting themselves to businessmen—questions of the character and scale of manufacture or supply, questions of capitalization, questions of lay-out of works, questions of marketing and sale, questions of price, questions of divisible profit and reserves, questions of labour organization, and so on and so on. Is it not, then, reasonable to suppose that the training of the men who are going to decide all these questions and guide all these complex activities should have some sort of relation to their future tasks? And if so, is it not the duty of the universities to come to close quarters with so large a part of national life?"

The universities, as they are, are not competent to handle the new problem. A curriculum has to be framed, and the necessary teaching provided for, which shall be designed for the particular purpose—*viz.*, to turn out graduates who, while men of culture and men of public spirit, shall also be efficient business men. New subjects will have to be introduced, especially, accounting; and the old subjects

will have to be developed in new directions. Economics, says the writer, must form the centre of the whole group of studies.

But economics must be greatly widened in the direction of the concrete study of actual business conditions. And by the side of *political* economy, which looks at things from a national or social point of view, a study must be created, which avowedly looks at things from the point of view of the *business concern*.

Again, in the words of the writer, the prime object of all the highest sort of commercial training is not so much to communicate facts or teach dexterity in the keeping of accounts as to elicit and develop business judgment. And the most essential thing to be done is to make the young man who is "going into business" realize that business is an exceedingly interesting thing—interesting, intellectually.

After-School Training.

Some interesting information on German Juvenile Labour Exchanges and the German educational system have recently been given by Frau Josephine Levy Rathenau (President of the Central Women's Organisation in Berlin), who has wide experience of the Juvenile Exchanges in that city and is also a member of the Central Bureau of the Men's Organisation.

Frau Rathenau said, during an interview, to a *Daily Telegraph* representative, that "in certain parts of Germany, every child is systematically trained from the time he leaves school until he is complete master of a trade or occupation. Though this does not apply to Germany as a whole, it is true of the work of an increasing number of local authorities, of which Berlin and Munich are pre-eminent. As soon as the Berlin child leaves school he is carefully placed by the juvenile exchanges of the city in a suitable employment, being apprenticed in every possible case to a skilled trade, carefully chosen according to his leanings, capacity, and health. The work of helping him to decide is facilitated by the co operation of the various trades and industries, which send representatives to spend whole days at the exchange interviewing and advising the more promising children.

"When the child is placed, the next step is to turn him into an efficient workman. He will, of course, learn a large part of his work simply by doing it under the eye of his employer, but he will probably be employed only in a small part of the work, remaining ignorant of the industry as a whole, and, what is worse, he may soon cease to take any intelligent interest in it whatsoever. We feel that it is essential, therefore, to widen his knowledge and bring his full intelligence to bear upon his work, and with this object the continuation or trade school is devised. In Berlin the area is divided into ten districts for this purpose, and each district has its large continuation school in which certain of the city's trades and industries are taught.

"An essential feature of the scheme is that every boy and girl in Berlin who is occupied in paid work must attend the school at which his or her own trade, whether skilled or unskilled, is dealt with. By a central law for the whole of Germany, every local authority is permitted (but not compelled) to force all children up to the age of eighteen to attend these schools, and, what is as important, to require that eight out of the working hours during which the child is employed in the week shall be thus spent. None of the local authorities has so far taken full advantage of this permission, but Berlin avails itself of it most completely by compelling the children to attend during six of their working hours in the week. Domestic servants are the sole exception to this rule.

"The teachers in these schools are trained both in the art of teaching and in the particular trade which each has to impart. This is a most important point, and the child will thus learn both the theory and the practice of his trade, as well as, by a rather ingenious method, receiving in some degree more general education. If, for instance, he is given an essay to write, the subject will always be some aspect of his own trade. In the carpenters' class even an arithmetic lesson will turn upon the measurements of wood, and if it be a dressmaking class, upon the cost of material, etc.

"Berlin continuation schools admitted girls

in April, 1912; previously to that they had been established for boys only. Each school has its own committee, and every trade taught is represented by an official, a man or woman, who watches over the progress of the school from the point of view of the particular industry. It will thus be seen that the interest of the child and the interest of the industry are considered in Berlin in the closest relation to one another, and an attempt is now on foot to extend the Berlin system throughout Prussia." The point in such a scheme of education is that culture is not divorced from what may be called utility, which alone gives to business training a cheerful temper and a larger outlook on life.

The Decline of Apprenticeship in France.

In *La Revue* (Paris) M. Emile Hinzelin publishes several replies from employees in various trades setting forth their views on the apprentice situation. He addressed the workmen, rather than the employers, because he considered they were the better judges. The replies received were very discouraging.

It has been said that the development of machinery has killed apprenticeship. "Nothing," says M. Hinzelin, "could be more inexact. The development of machinery should develop apprenticeship." What is needed is to follow the excellent beginnings made by the Paris Chamber of Commerce in inducing employers to allow the apprentices to follow complementary courses of instruction three or four times a week during working hours. And in every large industrial centre a technical institute should be founded. As in most matters of this kind, the great need is money. M. Hinzelin says that France spends annually only nine millions on her technical instruction. Germany spends nearly forty. This question of apprenticeship has arisen in nearly the same manner throughout the civilized world. But each people has adopted the solution most conformable to its character. To quote this writer further:—

In England, private initiative alone attempts to prepare apprentices in all the industrial fields. Nothing is obligatory. Nothing is

even regulated. In Germany, the country of discipline, all apprentices take professional courses. In Austria-Hungary, the establishment of technical courses is obligatory.

In France, the aim is now to conciliate, in an ensemble of measures, liberty and obligation. M. Paul Deschanel said recently:—

The best master for the apprentice is the workman. The true school of apprenticeship is the workshop. Assuredly it is right to create professional schools. But it is necessary at the same time to favour the formation of apprentices in industrial establishments. The State should intervene in a prudent but firm manner.

M. Hinzelin calls attention to a project, well worth attention, under which all young men following a trade or profession before the age of 18, will be required to attend courses intended to complete their professional instruction. Employers who do not take apprentices will be subject to an apprenticeship tax, while those who have engaged apprentices will be exempted. It is further proposed that in each department there should be established an apprenticeship fund, supplied by the tax on employers, by gifts, legacies, and by subventions from the communes or the State, and administered by employers and by workmen elected by their fellows. The fund would assist small employers, the professors and instructors engaged in manual instruction, and apprentices' parents needing pecuniary aid. Only by some such means can apprenticeship be saved in France.

The School and the Employer.

That the world, as it is to-day, stands in need of a different set of educational ideals from those still honoured by the Universities is voiced in a remarkable utterance made by M. Cloudesley Brereton, M.A., *Les L., Officier de l'Instruction Publique* at the recent Conference of Employers of Labour at the National Gas Congress and Exhibition. Education in England has so much concerned itself with the training of the *citizen*, that it has forgotten that it should also concern itself with the education of the *worker*. A complete system of education must deal not merely with preparation for life, but also with preparation for livelihood.

But, M. Brereton observes, this isolation is now slowly passing away and we find in the younger Universities training in technique provided in all sorts of subjects, not merely in law, medicine, and theology, but also in engineering, applied chemistry, the textile industries, gas and electricity, and certain branches of commerce.

The product of the school master may be good enough in its own way; but will it catch the market? It is here that the interests of the business world have to be consulted. Happily it is as vitally interested in the production of pupils of the right type as the educationist is or ought to be. The reasons for such an interest are mainly the decay of apprenticeship; the increased foreign competition in the home market; the growing necessity of finding fresh markets; the need of officering the numerous enterprises created abroad by British capital; the invasion by science of industry; the corresponding need for more trained intelligence; the growth and expansion of mammoth businesses necessarily needing a regular hierarchy of well educated, thoroughly well-equipped, heads of departments.

The word 'businessman' conveys, probably, to some an uncanny feeling, a man interested, perhaps, in nothing else than buying in the cheapest market and selling in the dearest. But, M. Brereton observes, the business man of to-day is not merely interested in his business, but also, to a certain extent, in the welfare and well-being of his employees, and that alike from a personal and a national point of view. As a citizen of the country, with often a large stake in it, he cannot but see the folly of trying to get the last ounce out of the present generation to the detriment of the physique of the generation to come, both from business and especially from national reasons.

Moreover, the increasing federation which has taken place in the different trades and industries among employers has considerable potentialities for good in it, in the way of creating a sort of Guild spirit within the federation and thereby keeping in check the less satisfactory employer.

Speaking of the rapprochement between the school and the business world, M. Brereton instanced a few examples. In London, Leeds, Edinburgh, Sheffield and also in other large towns, certain employers and business firms pay the fees of those of their work people who attend evening classes.

In some cities much has been done to interest the employer and employees in continuation education by mass meetings being held in companies, such meetings often taking place during working hours.

The lecturer mentioned that the problem concerned different grades of workers such as (1) the unskilled workers, (2) the rank and file of skilled workers, (3) the foreman type, (4) heads of departments; and there is in addition a fifth category—those who by birth or influence are likely to become heads of firms or managing directors.

There is an increasing trend towards vocational education in the schools and appointment boards are created in many schools and some universities in England. M. Cloudesley Brereton says that if the school and the business world are really to come together for the common good, it is essential that not merely employers or Associations of employers should take a lively interest in the schools, but also the representatives of the employees, the trade unions.

In summing up, the lecturer said:—

Education for life alone is one-sided education, and education for livelihood alone is equally lop-sided. The two must be combined, and as far as possible interwoven. In education, the school has been thrust into one pigeon-hole, the parent into another, the employer into another, the employee into another. But all these are part and parcel of the social fabric, and must be once more brought into recognized organic connexion. Or, in other words, the schoolmaster must take more interest in the boy and his future career, and so must the parent, the employer, and the trade union. The State and the locality must have their say, but to leave everything to the State or to the locality is an abnegation of human responsibility in its

worst form. Again, education has to be brought more into accord with the practical genius of the nation.

WAYS THE EMPLOYER CAN HELP.

There are at present in the field several schemes attractive and otherwise for compulsory education from fourteen to seventeen. Some of these are certainly ill digested, though possessing doubtless very excellent points, inasmuch as they ignore local conditions and contain features that make them not only distasteful, but difficult to work. In view of the imminence of such far-reaching changes, it is imperative alike on employers and associations of employers that they should individually and collectively possess as far as possible a first-hand knowledge and practical acquaintance of education in order that, when such schemes are brought into the field of actual politics, they may be thoroughly well equipped to put their view on the future education of the worker and help to render the scheme in question as far as possible useful and practical. They should, therefore, at the present time, make it their business to go out of their way to get into direct contact with the existing schools for both sexes, elementary, secondary, trade, technical, or University, either by joining advisory committees or getting into touch with the principals concerned. They should help not merely in getting their recruits direct from them, but also in seeing that the stamp of recruits the school turns out more nearly corresponds to the type they require. Again, in respect to those already in their services, they can greatly help to uplift the physical, intellectual, and economic conditions of those in their employment by the payment or refunding of fees, by awards of prizes, by checking and rewarding attendance at the evening institutions, and more especially by a liberal allowance of time off, and in the larger works by maintaining the number of their apprentices or by working through their association for what may possibly be the ultimate solution, co-operation between the association itself, the trade union, and town (and may be the Universities) in the establishment of a proper provision of apprentices in

their own particular trade. In a word, in place of isolated *rapprochements*, we need an individual and collective *entente* between the school and the employer.

And, finally, such a state of things may develop in its turn into some sort of system of Municipal apprenticeship.

Agricultural and Co-operative Education.

Under the above title, in the *Wealth of India*, page 864, of December last was published Mr. R. D. Udhyavar's first portion of the article, contributed to the *Poona Agricultural College Magazine* dealing with agricultural education in Germany. The writer has the following about similar work done in Denmark. His remarks on co-operative education in India are telling:—

The greater development of rural co-operative societies in Denmark and the fact that the Danish peasant has understood how to take hold of the co-operative idea and, in comparatively few years, to re-organise agriculture almost entirely on co-operative lines, is explained by the training he has received at the "Popular High Schools." They have been attended by all sections of the rural population so that they have brought about a better understanding between the classes and furthered the cause of associated labour. By a course of training calculated to develop the will and character of their pupils, they have imbued them with zeal for further study and with a desire for educational and economic progress. The connection between the development of High Schools and the general educational, political and economic development of the peasant population is clear. Their political isolation forced the peasants to obtain general education and enlightenment for themselves which again made it economically possible for them to stand on their own feet. The schools have become a prime factor in the development of the middle and lower classes of the Danish rural population. It is not surprising therefore that as Dr. Holman of the German Embassy of Copenhagen says—"The majority of the leaders of agricultural societies and associations have attended a popular high school.

Men at the head of co-operative creameries, the co-operative bacon factories, the cattle breeding associations, the purchasing and other societies are all those who have attended the Popular High Schools. The extent of their usefulness must rather be judged by the economic advantages which they are able to obtain for their members. Agriculture being the foundation upon which national welfare is built, the peasant trained at these schools, in full consciousness of his economic responsibility and confident of his own power, regards himself as competent—to a greater degree than in any other country—to take part in all the public and educational affairs of the nation."

These High Schools are under the guidance of the co-operative union which pays for the instruction. The subjects taught are accounting, knowledge of the goods dealt in, and co-operation generally, more especially distributive co-operation in Denmark and elsewhere. There is a discussion after every lecture. Students are trained in store or depot management.

There are lectures every day on subjects connected with co-operation generally, and its social and economic importance, such as the formation of a co-operative store, its fundamental principles and its rules; the rights and duties of managers, committees, employees and members; the object of the union, and its relations to individual societies, relations of Danish co-operation to the co-operative movement generally; the ideal and educating element in co-operation in Denmark and elsewhere, and its importance for the family and society. Samples of the nature of the goods dealt in are produced and their value and their distinctive qualities explained. The subjects of discussion are of a practical nature, such as, how to form a working capital, how to form a reserve fund, etc. Once every course there is also a full dress debate on some question of present importance, in which the Chairman of the Union and other co-operators of authority take part. The teachers are all very well trained and qualified. In addition

to the ordinary ones there are professional men, such as veterinary surgeons, teachers of agriculture, etc. In other ways, besides, the researches of a number of learned professors have placed the working of the agricultural industry on a more scientific basis, thus facilitating operations, reducing expenses, and allowing of far better and much more profitable results being obtained than had been the case previously. Then, also, the spread of an extremely practical scheme of national education, has prepared the people to take advantage of the coming transformation. The establishment of co-operative creameries and bacon factories has been supplemented by a national movement for improving the quality of the cattle and pigs. To this end experts were sent to Ireland and other countries to inquire into the methods of breeding in vogue there and there are instructors who give advice on these subjects to the Danish farmers, whenever desired. Then the egg industry has received a substantial support from the movement in the improvement of fowls. The operations of the poultry societies are greatly facilitated by experts who devote their time to delivering lectures and to giving personal advice to the farmers. The central federation of bee-keepers' associations of which there are about sixty in Denmark organises shows, arranges for lectures, carries out experiments, publishes a bee-keepers' journal and in other ways promotes the welfare of the bee-keeping industry. Then there are special organisations the function of which is to arrange for the holding of shows, to carry on field experiments, to assist in the work of Government experts, to arrange tours of inquiry whether in Denmark or foreign countries, by sending parties of farmers, to secure the improvement of live stock especially cattle and horses, and to watch over the milking qualities of milch cows. The weekly journal '*Andelsbladet*' which has a circulation of about 10,000 is the organ of the Danish Co-operative Union and deals especially with all the problems of the rural societies. The general net-work is completed by the State which opens its purse pretty freely and contributes much expert labour in the shape of control and supervision for the

benefit of agriculture : it provides for the prevention of adulteration in the trade in seeds and manures, by maintaining an office and a test station, and an analysing station for artificial manures. It maintains experts and teachers for improving methods of milking, and for carrying on regular courses of instruction on milking, all over the country. It undertakes statistical inquiries in connection with the dairy industry; one expert compiles weekly reports relating to the prices paid for butter and statistics respecting the dairy industry. A copy of such statistics is furnished to every dairy which contributes information : about half of the dairies existing are interested in the matter. Four other local dairy experts conduct local exhibitions in every centre with samples of butter. Another dairy expert controls the heating in dairies. It defrays half the salary and travelling expenses of an expert on co-operative slaughter houses. It assists by means of stipends the dairymen and women in extending their experience and knowledge of their professions. It defrays the salaries and travelling expenses of agricultural attaches in London and Hamburg whose work is found extremely useful in extending the export trade.

The Royal Danish Agricultural and Veterinary School at Copenhagen receives towards the maintenance of the 'Agricultural Economic Testing Laboratory' a grant of £5,556 annually. In that laboratory butter from the dairies and bacon from the slaughter houses undergo examination, and the school carries on experiments with regard to the feeding of cattle and swine at various experimental stations in the country, also with regard to the best methods for producing butter and bacon in dairies and slaughter houses. The State further defrays the expenses of a bacteriological and physiological department. Experience has shown that such expenditure is well bestowed and results in material advantages to Danish agriculture. The State also promotes good husbandry in small holdings (cotters' farms) by awarding

prizes for good cultivation of small holding and by paying travelling expenses to small holders ; it also pays for courses of agricultural instruction to small holders. These subventions and expenses have contributed considerably to the marked improvement which has taken place during the last decade in the keeping of domestic animals, which improvement, the Danish farmers hope, will continue in the future. The total amount spent annually merely for technical instruction in agriculture is £71,681.

The above is a brief sketch of the steps taken by the two pioneer nations on the continent towards the development of the agricultural classes.

INDIA.

In India, remarks the writer, as in every country, where such co-operative societies are lacking, the price of some agricultural products has sunk so low as to make it no longer worth while to produce them, and when once their production is given up, it is very difficult to begin again.

The co-operative movement does not merely or even primarily cater for the material benefits of the masses, but reflects in a high degree the "outward manifestation of a living spirit in the people" and as such is to be treated as 'the expression of a peculiar impulse of the mind.' Applying this to India, the writer urges that we "cannot stop at providing for the material need of the masses alone, we must also seek to satisfy their intellectual hunger, help them to take their part in social progress, and guide their impulse towards a new intellectual life into the right channels. Co-operative education must go hand in hand with the organisation of consumption and production. Only by developing our movement in this direction, by making our societies into nurseries of social thought and institutions for building up moral character can we be assured that we are not helping to build another Tower of Babel but are laying the foundation of a new era, a higher civilization."

Departmental Notes.

INSURANCE.

Newspaper Insurance.

In 1885 Sir George Newnes started newspaper insurance. The story of the establishment of this form of insurance is as follows:—He received a letter from a woman, whose husband had been killed in an accident, asking for pecuniary help. The widow mentioned that, at the time of the accident, a copy of Sir George Newnes' paper *Tit-bits* was found on the deceased. It was the germ of an idea and resulted in the "Tit-bits" Insurance scheme, by which it was arranged that the next-of-kin of every person killed in a railway accident would receive £100 if a copy of the newspaper were found on the body at the time of death. Red tape in the shape of the Inland Revenue authorities attempted to interfere, but, after fighting a long battle, Sir George Newnes won his cause, and since then £17,000 has been paid as insurance money in the manner indicated.

Co-operative Insurance.

Cattle Insurance Societies have not yet been understood or properly appreciated in India. However the advantages of such Societies on a co-operative basis are immense. An object lesson of effective combination is afforded by the Bedworth Co-operative Horse Insurance Society. In 1896 a number of owners of horses at Bedworth and Longford, on the outskirts of Coventry, established a co-operative society for the insurance of their horses. The object is to provide by voluntary subscription compensation for the members on the death of a horse belonging to them. The animals are valued by a veterinary surgeon once a year, and the value put upon them is the basis of the premium for the ensuing year. Should a member's horse die or be condemned to be slaughtered, the society pays the owner three-quarters of the value put upon it at the last valuation. When a member enters a horse, he has to pay an entrance fee of 3s. 6d. The insurance contributions are payable fortnightly, and are charged at the rate of one penny per week for every £5 or part of £5 at which the horse is valued. The society has made a contract with its veterinary surgeon, under which he attends the horses and supplies them with medicine without further charge.

ECONOMIC PRODUCTS.

Portland Cement.

Portland Cement is a chemical composition, a trisilicate of lime and alumina. It can be easily manufactured wherever these materials can be found. In America there are extensive deposits of what is known as cement rock, which with the addition of a small percentage of lime, contains the ingredients mentioned above. This raw material is quarried and in various ways, conveyed to the plants where, with a system of crushers and pulverizing machines, it is crushed and reduced to a very fine powder. The process is continually controlled by chemical analysis. The resulting powdered substance of the proper chemical composition is then fed to kilns where it is burnt to what is known as "cement clinker." This substance is then cooled and again pulverized into a very fine powder and becomes the Portland Cement of commerce. The discoverer of this wonderful building material is a brickmaker of Leeds. He noticed that a wonderful product could be obtained by mixing chalk and lime with clays from the bed of the river Thames. It was he who named the product Portland Cement from its resemblance to a well-known and popular building stone in England, which stone was quarried on the Island of Portland and was considered the hardest of the known building stones.

New Uses for Sawdust.

Among the many uses for sawdust now being found is its conversion into wood sugar. If digested with a weak solution of sulphurous acid under six or seven atmospheres pressure, sawdust is converted into sugar with a yield of about twenty-five per cent. This cannot be crystallized for commercial table use, but can be used as stock food, or fermented into alcohol.

In the California lumber camps, where the sawdust of the redwoods was formerly considered a positive detriment, it is now being sold to fruit-growers for the packing of choice grapes. For this purpose, it has been found as efficient as the powdered cork in which Spanish grapes are packed. By this method of packing, says *The Textile American*, the fruit arrives in much better condition, and the loss from decay is greatly minimized.

MACHINERY AND APPLIANCES.

An Interest Calculator.

An interest-computing machine has been invented by a Hungarian, according to a consular report from Budapest. The instrument is said to be comparatively simple and inexpensive. It is about the size of a watch. On setting the hands at the proper positions on the dial, the amount of interest in each case is indicated on the face of the instrument.

Washing Clothes by Electricity.

The National Laundry Machinery Company, Dayton, O., has recently been given patents on a greatly improved washing machine. It consists of an electrode-equipped machine, wherein clothes may be washed, bleached, and disinfected by means of a current of electricity of any standard voltage. A terminal electrode is placed on the inner side of each end of the outer receptacle of the machine, and to these the service wires are attached. To each head and to all partitions of the inner revolving cylinder, known as the "wheel," a circular electrode is attached. This is made circular in order that some portion of it will at all times be immersed in the washing fluid. Each inner electrode consists of two flat rings one on each side of the partition or on each side of the cylinder head, bolted together, the bolts serving as electrical connections and as a means of holding the electrodes in position.

These inner electrodes have no electrical connections other than the washing or electrolyzing fluid. Therefore, one ring of each electrode acts as a cathode and the other ring as an anode. Since on a cylinder of only one compartment there would be two pairs of inner electrodes there would be three electro-chemical reactions taking place instead of only one reaction, were the inner electrodes not used. If only two terminal electrodes were used, and at a voltage of 110, a current of two amperes were passed through, there would simply be the chemical reaction in the washing fluid caused by two amperes. But with the inner electrodes, at a voltage of 110 and two amperes there would be the same reaction in each compartment between each pair of electrodes. Therefore, the total amount of the chemical reaction would be equivalent to six amperes in one compartment, but with an expenditure of 220 watts as in the former case. This not only makes an economical arrangement but a more efficient one regarding the results obtained through the gases liberated:—*Chicago Electrical Review*.

SCIENCE AND INVENTION.

Fibre from Linseed Straw.

A process for obtaining fibre from linseed straw has, it is stated, been invented by a resident in Buenos Ayres, and is claimed to have given practical results. The process was purchased in Germany and a small factory has been started at Rosario with satisfactory results. The fibre obtained is of good quality, and can be used for the manufacture of very fine paper such as parchment. The fibre is rather short, but a German inventor has discovered and patented a process for spinning it.

Horticultural Hybridising.

A remarkable achievement in horticultural hybridising is reported to have been accomplished by an American expert, Mr. W. N. Miller, in his experiment with vegetables and plants. After years of work Mr. Miller is said to have managed to produce an onion which is a combination of the Bermuda and the golden yellow onion, which has the mildness and flavour of the Bermuda, the hardness of the golden yellow and which is a colour between the golden and white. One of the remarkable features of the new vegetable, says the *Philadelphia Record*, is that there is an entire absence of the unpleasant odour. He has also succeeded in growing a seedless tomato.

New Straw-Yarn Process.

An invention that has caused no little excitement in the textile world, says the United States Consul at Reichenberg, Austria, consists of a process of treatment of common straw, whereby it is now possible to secure therefrom a fibre suitable for spinning. While the entire method is not revealed, it appears that the straw is reduced to a jelly like substance by boiling, causing the separation of the fibre from the outer shell, and the fibre is then treated in hot-air machines. To this product is added another fibrous material, but never more than 20 per cent., so that fully 80 per cent. is straw. The resulting "stuff" has many of the characteristics of the "fore" yarn used in jute spinning. The principle advantages claimed by the inventors are that the new fibre has all the merits of the yarns now produced; that the cost is only one-half that of similar products; that the weight is 40 per cent. less; and that the goods are in every way desirable.

HEALTH AND HYGIENE.

Grape Juice.

Unfermented grape juice acts as a mild laxative and diuretic, and diminishes acidity of the urine. It is therefore good for gout, rheumatism, obesity, scorbutic afflictions, kidney troubles, and digestive disorders, including those having their origin in the liver. And according to Robert Hufchinson, M.D., the famous English doctor, grapes are of the utmost value in the case of chronic bronchial catarrh.

A Diabetic Diet.

The latest virtue claimed for the soy bean is that it is a cure for diabetes. According to an English Journal, two medical men, Drs. Friedenwald and Buhrah, have been treating a large number of diabetic cases with soy beans. The patients were first placed upon an unlimited diet, then upon the usual diabetic diet, and, thirdly, upon the same diet plus the soy bean, which latter largely replaced the glutton of wheat bread, and in nearly every instance there was a marked diminution in the glycosuria. Soy beans contain practically no starch, and may be taken as a vegetable by soaking them for about 16 hours until the skins can be removed.

Fruit and Thirst.

It is well to know that one of the greatest advantages of fruit is that it offers us pure water for which we do not need a filter, to the amount of nearly 50 per cent. in berries, and more than 92 per cent. in water-melons. Oranges and lemons are not only valuable by reason of their potash salts, but especially for their citric acid.

As an acid of digestion—a really material aid—the pineapple stands alone among the fruits. Its vegetable pepsin neutralises—or, perhaps, rather digests—albuminous substances in the stomach. In cases of catarrhal ailments of the throat, and in its downward connection, the alimentary canal or tract, pineapple cannot be overestimated, and it acts with equal force in malarial affections.

As for the date and the plantain, says the *New York World*, they contain sufficient nutriment to sustain life. The salts and organic acids in the apple tend to improve the quality of the blood.

HINTS AND RECIPES.

How to Remove Pictures.

When removing pictures fronted by glass, it is a good plan to cut a couple of 2-in. strips of brown paper and paste them crosswise on the front of the glass. The glass will not fracture so easily if it gets a knock, but should it get broken the splinters will in most cases be held together by the paper.

Tanning by Electricity.

According to the *Technical World Magazine*, alternating electric current is being used in France to facilitate the tanning of leather. An electromotive force of one hundred volts can force sixteen pounds of tannic liquor an hour to pass through a square yard of skin. The use of continuous current is impracticable because its chemical action operates to destroy the tanning substance.

Grease Patches on Wallpaper.

These may at times be removed by covering them with a pipe-clay paste, which is easily brushed away when quite dry. A piece of stale bread will remove such marks, but it should be rubbed gently on, so as not to wear the pattern off. The best way, however, is to have all paper varnished, when all grease and other stains can be quickly wiped away with a clean charrois leather and tepid water.

A Good Whitewash.

Whitewash requires some kind of grease in it to make it durable. Any kind of grease, even though it be old and partly spoiled, will be all right, though tallow is best. The grease imparts to the whitewash an oil property the same as in good paint.

To a 40 gallon barrel, say, of whitewash thinned ready to use, have incorporated in it 10 lb. of tallow or any grease; mix in lime in the slaking stage, also 10 lb. of salt. In order to incorporate the grease properly, it is necessary to put it in a vessel on the stove, and boil it into a part of the whitewash so as to emulsify and get it into such condition that it can be properly incorporated with the whitewash mixture. Use your judgment; on smooth wood or hard stone it needs a stronger binder than it would on cement or rough sawed timber, which would do the less.—*Queensland Agricultural Journal*.

LITERATURE.

Eighth Report of the Indian Industrial Conference.

We have been favoured with the Report of the Eighth Session of the Indian Industrial Conference held at Bankipore on the 30th December 1912, from the office of the General Secretary of the Conference. The book is a bulky volume containing the entire proceedings, the resolutions passed, the speeches delivered, the papers contributed, etc., at the Conference of 1912. The student who cares to go through the 800 and odd pages of this book will have learnt enough to find out where India stands industrially. Among the papers printed may be mentioned :—

- (1) The Copper and Brass Industries of India by Prof. P. G. Shah, M.A., B.Sc.
- (2) Co-operative Village Libraries by Prof. J. N. Samaddar, B.A.
- (3) The Importance of Manual Instruction in Indian Schools by H. G. Bhabha, M.A.
- (4) The Place of the Domestic Industry in Indian Economic Life by Prof. R. K. Mukherjea, M.A.
- (5) Unlimited Liability as a National Asset by H. R. Crosthwaite.
- (6) Sugar cane cultivation by Babu Mukhtar Singh.
- (7) The Law of Trade-mark in British India by S. Krishnamachariar, B.A., B.L.

The book may be had at the Secretary's Office, Amraoti, or of Messrs. G. A. Natesan & Co., Madras, for two rupees and eight annas a copy.

Books Received.

A Manual of Practical Farming, by John McLennan, Macmillan & Co., price 2 shillings net.
Progressive British India, by Saint Nihal Singh, Charles H. Kelly, London, price one shilling net.

Japan's Modernisation, by Saint Nihal Singh, Charles H. Kelly, London, price one shilling net.

The Influence of the Gold Supply on Prices and Profits, by Sir David Barbour, Macmillan & Co., price 3 shillings 6 pence net.

Profit Sharing and Co-partnership, Home, University Library, Williams and Norgate, price one shilling net.

MISCELLANEA.

Glass Industry.

The whole of India possesses eleven glass manufacturing factories, according to *Science and Industry*.

Rise in the Cost of Living.

The cold storage process is credited with the virtue of raising the cost of living. The U.S.A. Senate is promised a legislation to restrict the period of keeping eggs in storage.

International Cotton Exhibition.

At the first International Cotton, Fibres and other Tropical Agricultural Products and Allied Industries Exhibition to be held in London from the 24th June to the 9th July, trophies will be presented for exhibits of cotton grown in the British Empire.

List of Patents.

The new list of patents in the Government of India Patent Office on all kinds of things occupies nearly 150 pages. The greatest number are wheels and tyres for vehicles, water-lifts, steam generators, telephones, electric apparatus, etc.

Largest Dairy Farm.

The largest dairy farm in the world is nearing completion at Head Lake, Headingly, a Suburb of Winnipeg. When completely stocked, the farm will contain 2,500 head of cattle within its fences. With 1,500 of these giving milk, the total yearly output of milk and cream is expected to be about 3,000,000 gallons.

State Insurance.

Massachusetts, followed by six other States in America, has established a system of State Savings Bank Insurance against old age, loss of employment, and incapacitation. The worker deposits his savings in one of the State Savings Banks. From these banks month by month premiums are transferred to the State Insurance Department where at low rates insurance is obtained against sickness or old age.

Weighing Precious Stones.

In a circular recently issued by the U.S.A. Bureau of Standards of the Department of Commerce, announcement is made of the recognition by the Bureau of the metric carat of 200 milligrammes as the standard of weight for diamonds and other precious stones. England is the only country of importance in which the change to the new international metric standard has not as yet been made.

THE

WEALTH OF INDIA

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EDITED BY MR. G. A. VAIDYARAMAN, B.A.

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Vol. III.]

The Wealth of India.

Current Topics

BY ECONOMICUS.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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Whatever advantages accrue to the people of this country from the railways that have been constructed in India at an enormous cost—and several of them are undeniable—it cannot be seriously maintained that they have been an unmixed blessing. The feverish anxiety evinced by European railway enthusiasts in urging the Government to add miles upon miles every year at any cost or sacrifice, has never been shared by the people of this country who are surprised to find the Finance Members yielding to the pressure exerted upon them and providing money for ambitious programmes of railway extension with the greatest difficulty. Apart from the facilities of transportation which they afford, railways in every country are and ought to be conducive to a healthy economic development of its people. This consideration does not, however, seem to trouble the minds of those who are ever clamouring for railway construction in India at a rapid pace. They are mainly concerned with carrying as large quantities as possible of raw materials and food grains to the Indian ports and from them transporting the finished products coming from foreign countries into the nooks and corners of this large sub-continent. In other nations railways are designed and expected to promote the development of local industries; in this country, they seem only to foster foreign trade. An eminent student of Indian econo-

mics wrote on this subject thus :—"We are not opposed to the growth of railways *per se*. They are good in their own way as providing cheap transit and promoting national solidarity and facilitating trade movements, but when their extension is made the *ultima Thule* of State action on its economic side, their tendency to prevent, in a country like India, a healthy material advance on *normal lines* must be duly taken into account; for unless they are accompanied by other and more important measures conducive to a better organization of national industries, they do not add to the intensive strength of the country, which alone furnishes a firm foundation to its expansive greatness." These words were not truer thirty years ago when they were written than they are to-day. Thus Babu Brahmananda Sinha had the same complaint to make in his presidential address at the Meerut Industrial Conference the other day. Speaking of the hampering effects of heavy and anomalous freight rates prevalent upon Indian railways, he remarked :—"The railway tariffs are so framed as to unduly favour the export of raw produce even inland and especially so to seaport towns and the import of manufactured articles from there; thus stifling local enterprise and retarding the commercial development of the country, the State guaranteed railways giving in many cases what is in effect a bounty to the foreign manufacturer." Mr. Sinha quoted facts and figures to prove how Indian railways tend to thwart instead of promoting the growth of indigenous industries. This is topsy turvydom of a curious kind and only reflects the peculiar economic conditions in India. The Indian Industrial Conference has repeatedly passed resolutions on the question of the detrimental character of the railway rates, but its voice has little chance of being heard, drowned as it must be by the loud clamour of those who want more railways and want them primarily for pushing forward the foreign trade of the country. Now this trade has its own value but it is limited, and in any case the economic interests of the country, and the growth of its industries must have a prior claim upon

the attention of Government. The whole question of the railway policy in India is a highly important one and ought to be seriously taken in hand by our public bodies.

The anomaly that a country like India which was long famous for its production and exportation of sugar, should have

now come to depend for the supply of that article upon imports from foreign countries of the annual value of some 18 crores of rupees, is too glaring to escape attention, and the question of improving the prospects of the indigenous sugar industry has been under the consideration of Government and people for some years past. Mr. G. F. Keatinge, I.C.S., C.I.E., Director of Agriculture, Bombay Presidency, was deputed by the Government of that Province to tropical countries to study the improved methods of agriculture pursued there under climatic conditions almost similar to those obtaining in this country. He has just returned from a tour through Java, Formosa, Hawaii, Japan, California and America, and in an address delivered sometime ago in Poona, he briefly gave his impressions to the Deccan Agricultural Association, especially in connection with the sugar industry. The results of Mr. Keatinge's investigations will be published in pamphlet form and when they are before the public it will be possible to consider what prospects there are for the rehabilitation of the sugar industry in this country. Mr. Keatinge's address had particular reference to conditions in the Deccan and it seems to be one of his important conclusions that the sugar industry, we mean the production of refined sugar, has no chance of flourishing in that part of the country. The cost of producing cane in the Deccan is calculated to be Rs. 10 per ton while in Java it is only Rs. 7-8-0 a ton. Of course, with the use of improved implements the cost in the Deccan may be reduced, but, Mr. Keatinge remarked, 'they should remember, when people talked about sugar in the Deccan, that Java could flood the country with sugar produced at a lower cost.' If it is admitted that the cost of production in

this country can be brought down to a considerable extent and it is remembered that the Javanese sugar must bear the additional cost of transportation, we feel that the prospects of the indigenous industry should not be so hopeless. In order to beat down the Indian competition the foreign manufacturer may perhaps temporarily lower his prices; but then it will be a clear case for the protection of a Swadeshi industry under conditions of competition which cannot be called natural. It is true that the large central mills erected in Java have large blocks of land available to them for the cultivation of cane at cheap rents and the labour cost is very low, while, in the Deccan, mills will have to purchase cane from a number of cultivators who may demand high prices. This need not, however, be considered as an insuperable difficulty and may be got over. In Hawaii and Formosa the sugar industry has been developed under peculiarly favourable conditions and especially with considerable direct assistance from their Governments and the development of the industry there has certain lessons for us in this country. Mr. Keatinge described the difficulties under which the Japanese produce cane in Formosa and 'drew an amusing picture of the methods employed to induce the Chinese farmers to grow cane, official pressure having sometimes to be employed to bring them to do so.' In his opinion, therefore, it would pay better in the Deccan, to produce, on a factory basis, 'gur' or jaggery which commands a good local market and which enjoys a natural protection on account of the difficulty in transporting it by sea rather than sugar which would have to compete with the product of the highly organized industry of Java and Mauritius.

The picture of the economic and industrial condition of his Province presented to his audience by Mr. Sinha, President of the Eighth United Provinces Industrial Conference, may be regarded as a faithful representation of the situation in most of the other parts of the

country. During the last seven years, we have, in India, earned considerable experience in the matter of 'Swadeshi' which is calculated to make us sadder though perhaps wiser men, and in the matter of industrial development we stand to-day almost where we were seven years ago. 'The main problems,' remarked Mr. Sinha, 'calling loudly for solution still remain essentially the same as when they were first propounded in the masterly inaugural address of our late Lieutenant-Governor Sir John Hewett at the Naini Tal Industrial Conference in 1907 and we have only to restate them.' It is the old story of a superabundant population dependent far too much on a single industry, *viz.*, agriculture; abundant raw agricultural produce capable of being worked up locally into manufactured articles instead of being exported for manufacture elsewhere, a number of industries waiting to be worked up at a profit, given the requisite capital and the requisite training of the workmen and overseers, the need for a suitable system of general and technical education and so forth. During the last seven years the number of joint stock concerns has doubled itself from 78 to 175, the most noticeable expansion being in the direction of miscellaneous trading companies, banking, loan and insurance, cotton and jute screws and presses, but Babu Brahmananda says that it has not all been of a healthy character. There are so many openings for industrial development but little advance has been made. Being specially connected with the paper industry on the commercial side, he described the position of paper manufacturing in India, and the various difficulties it has to encounter. Though India abounds in raw materials, owing to these difficulties the problem of their exploitation still remains unsolved. He referred, with particular pleasure, to the attempts that are being made in the United Provinces at present to start the auxiliary industry of making pulp or half-stuff from baib and wood *in situ* eliminating at the point of origin the waste of 60 per cent. which has been found to occur. This industry has certainly a bright future in India.

The Bombay Mill Owners.

A feature of the cotton mill industry the only indigenous industry carried on on a large scale and on modern lines in which Indian enterprise is considerably in evidence—is its steady progress, though even here foreign competition is by no means absent or ineffective. The market for cotton fabrics in this country is so large that there is unlimited scope for the expansion of the mill industry despite the heavy imports from Lancashire. China has, for many years, been a good customer for the products of our cotton mills but latterly Japan has entered the field and is gradually becoming a powerful rival. In cotton manufacture, the Bombay Presidency takes the lead, the bulk of our mills being located in that province, particularly in Bombay and Ahmedabad. The annual report of the Bombay Mill Owners' Association and the speeches made at the annual general meeting of that body are therefore usually of great interest. We see from the report of the Association for the last year that the production of yarn for the year ending 31st March 1913 was 68·84 crore lbs. which was an increase of 10·14 per cent. over the figures of the previous year. The production of cloth during the same year amounted to 122 crore yards, an increase of 7 per cent. The total number of looms now working in India is 94,136 as

against 88,951 for the previous year and the number of spindles increased from 6,463,929 to 6,596,862. But the exports to China, both of yarn and cloth, are steadily dwindling. The difficulties in the way of the mill industry were stated by Mr. J. B. Petit to be 'the severe competition of Japan with all their manifold advantages such as the Government bounties the awakening of China, the imposition of the silver duty and the continued pernicious effects of the excise duty on the cloth industry and he suggested as a remedy for all these ills the development and monopolisation of the home markets. This remedy has been often talked about but no practical action appears to have been taken in the matter. Mr. D. E. Wacha, who was present at the meeting, was outspoken as usual and though he referred to the injustice of the excise duty and the other disadvantages under which the indigenous industry labours when compared to Lancashire mills, he frankly told the mill owners that 'in this country they were too much absorbed in the profit and loss accounts and he was afraid many of them allowed their mental intellect to be dormant. They never attempted to find out how their exports might be increased and how they could improve the local mill-industry.' He preached the gospel of self-help and observed that 'nations were made by themselves and they must depend on their own efforts.'

Special Articles

AN ECONOMIC DILEMMA.

By PROFESSOR V. G. KALE, M.A., *Professor of Economics, Fergusson College, Poona.*

The people of India are, at the present moment, in a position of peculiar difficulty with reference to the economic condition and prospects of their country. The population of India is steadily increasing decade after decade in spite of certain positive checks, but the productive capacity of the community does not seem to be increasing in proportion. Owing to the facility of international and interprovin-

cial communications and especially owing to the ease with which articles imported from abroad can be distributed by means of railways over the length and breadth of the peninsula, the supply of commodities has been augmented in quantity and variety. Numerous industries which at one time flourished in India and were her pride have disappeared on account of the keen competition of machine-made goods

coming from beyond the seas. Numbers of people have consequently been thrown upon the land and the agricultural industry has been over-crowded. Every progressive nation of our times has, indeed, passed through this economic stage of transition, from the domestic industry phase to the factory system, and the period of change has been anything but happy to the mass of the people. Economists of the older generation would have seen nothing surprising or distressing in the phenomenon we witness at the present time in India, because, according to them, all this is in conformity with the laws of nature. When machinery takes the place of human labour in industry and a minute division of labour is introduced giving rise to large factories and aggregations of working even in industrial centres, people engaged in the old fashioned arts and crafts are bound to be displaced. But this temporary inconvenience, it is stated, is counterbalanced by advantages. Things soon adjust themselves, people who are thrown out of work find employment in other industries which must rise and general cheapness, the result of the regime of machinery, benefits the masses. This is what has happened in England and elsewhere and the phenomenon need cause no anxiety in India.

This optimistic theory cannot, however, carry conviction to the mind, nor can it convey any comfort to the heart in this country and the analogy of English history is misleading owing to a difference in conditions of the two cases. We need not here give an account of the Industrial development of England and explain the factors which promoted it. Nor is it necessary to state how the lead of Britain is being followed by other countries which are becoming powerful rivals to it. It is an admitted fact that the indigenous industries of India are gone and their place has not been taken up. What large industries there are in the country, do not owe their inception or prosperity to Indian enterprise or capital. When the question of the rehabilitation of the old industries or the starting of new ones comes up for consideration, we are told that it is mainly a question of capi-

tal, scientific knowledge and organization. But these are the very things lamentably lacking in India. An industry to be successful must be a large-scale industry, having at its back a large quantity of capital and the other essentials, or it cannot stand foreign competition. Take the manufacture of sugar, or paper, or matches or any other commodity and this difficulty confronts us at the very outset. In Mauritius, Java and Formosa, there are large central factories enjoying a variety of advantages denied to this country, which can turn out quantities of fine and cheap sugar with which this country will be flooded—as it indeed is being at present—and you cannot even think of competing with the foreign manufacturers with all the drawbacks and limitations inherent in your economic position. The same is the case with other industries which come into competition with foreign industries. Small indigenous industries must go, as most of them have already gone, and the establishment of new ones is not possible. If a new concern is started, it fails, making the birth of others difficult. If an old industry is temporarily propped up, general conditions are not congenial to its health or its life. This is then the dilemma on the horns of which we have been thrown and the situation is most disconcerting and disappointing. The old industries are either doomed or already extinct; spinning, weaving, paper-making, oil-pressing, sugar-manufacturing, metallurgy, toy-making, cutlery, pottery and a host of others are all out-of-date and the labour and skill involved in them have not taken other directions as they should have done. New wants have been created but they are mostly satisfied by manufactured articles imported from abroad or turned out in factories in this country in which Indians have no other share than that of simple and usually unskilled labour. Tea, soap, umbrellas, articles of stationery, cycles, watches, matches and numerous other commodities which have now a vogue among us are instances in point. This means that the productive power of the people has not kept pace with consumption and the increase of population. That the advantage of a mere cheapness of commodities of general

consumption may be too dearly purchased has been proved by the present economic situation in India. We speak proudly of the growing imports and exports of India and of the figures which represent the production of Indian tea and jute and minerals; but these statistics are misleading as an index of the economic progress of the people.

But if Indians cannot prosper in their manufacturing activity, it is because they have not those natural facilities and acquired faculties which condition economic and industrial prosperity. India is and must remain an agricultural country. The activity of its people must be turned in the direction of the production of food grains and raw materials and in this way the territorial division of labour may be brought about. India can purchase all the manufactured article she wants by producing and exporting raw materials for which there is immense demand abroad. We have it, however, on the authority of the Famine Commission that one of the chief remedies for minimising the evil effects of droughts, is giving employment to the labouring population in the manufacturing industries which must be started in the country. And yet while we complain of this over-crowding in the agricultural industry and seek other channels for labour, mills and factories are complaining of a scarcity of workmen. The price of food grains has latterly gone up, and though large quantities of wheat and rice and seeds are annually exported to foreign countries it cannot be said that what we send out is the surplus that remains after internal wants are satisfied. Large farming *versus* small farming is a controversy of long standing and we are told that in many parts of the country, especially in the ryotwari tracts there are few economic holdings, the land being minutely divided into small patches which make improved agriculture impossible. As regards the agricultural industry, the lot of the impoverished and deeply-indebted peasant is far from enviable, and improved processes and implements are hardly within his reach. A more liberal policy of land assessment and revenue and a wide diffusion of education are

calculated to render the cultivator considerable assistance in bettering his condition and a diversity of industries will lighten the pressure upon the land. Leaving things to take their own course under a system of free competition and non-interference is not thus a proper policy to be pursued in India and agriculture can never beneficially be the sole reliance of the growing population of this country.

The West has however, an important lesson to teach to India, say some friends. The factory system there has hardly ameliorated the condition of the working population; it has made that condition worse. Desertion of the country, overcrowding in towns, poverty, unemployment, strikes—these are some of the evils of the system and India, on the threshold of a new epoch in her economic development may well pause and take warning. She may avoid industrial strife, socialism and many other 'isms' which are the bane of other countries and try to lead a life of peace and contentment. But this is exactly where the dilemma lies as pointed out above. America, Canada, Australia and South Africa shut their doors against the free Indian labourer because his competition is detrimental to the economic interests of the workman there. Even the British sailor does not want the Asiatic lascar in spite of or rather because of his superior efficiency. In America, Japan, Germany and other countries protection is directly or indirectly granted to national industries and we in India are asked to worship the fetish of cheapness and free competition. We are likewise told that democratic institutions and the political tendencies of modern times generally, have not been found to be, on the whole, satisfactory and the more recent political struggles and movements in other countries are pointed out as examples. Some of these evils are indeed patent to every body, but shall we, on that account, set our faces against all political advance? That is a question for our politicians to consider, but a similar economic question demands our earnest consideration. Shall we follow the well-trodden path pursued by the wealthy nations of modern times or to avoid their mistakes, risks, shall we chalk out a new path for ourselves? Is such a new path possible and practicable and shall we be able to tread it with advantage?

Another direction in which the progress of India is, just at present, full of difficulty, has reference to our education. We have been complaining of the too literary character of our education and clamouring for

greater facilities for technical education. But the fact is that the few technically trained young men we have are finding it difficult to obtain scope for the employment of their energies. There can be no industries because there is no technical education and it is useless to have technically trained men so long as there are no indigenous industries to provide them with work. That is the awkward position in which we stand to-day and how to extricate ourselves from the difficulty is the great problem before the educated people of India. Certain economists give us the assurance—and there is much truth in what they say—that the factory system is by no means the last phase in economic development and there are already signs of a reaction against the same. The day of the small industry is not irretrievably gone and Indians may lay the unction to their souls that their small indigenous industries have a future before them. Co-operation is the enemy of capitalism which holds the field to-day and that is, we are told, the coming system which will dominate the world. Thanks to the efforts of Government and certain public spirited souls among the people, Co-operation is steadily making headway in this country. On its credit side the co-operative movement is doing a great deal of good to the cultivators and as it progresses, their productive capacity is bound materially to increase. This will be a great economic gain to the country and it is a ray of hope which illumines the present gloom. The results of co-operative production have nowhere been encouraging, though efforts in this direction are being made on a small scale; yet co-operation in various forms has proved and promises to be the salvation of cultivators, craftsmen and artisans. We cannot, in this place, deal at length with this question of co-operation and would draw the attention of

the reader to a paper contributed by Mr. Freemantle, I.C.S., to the Industria Conference which was recently held at Meerut in the United Provinces on Co-operation in Industry. What we wish to point out is the complexity and the urgency of the economic problem in India. It cannot be considered and dealt with piecemeal. The whole situation must, in the first instance, be thoroughly grasped before any measures are taken, though unfortunately there is little time to wait. The productive power of the Indian people is clearly at an ebb and the old economic foundations are being sapped. The existing conditions are, by no means, very encouraging and the people who understand these things are at a loss to know how to proceed. An elaborate inquiry is, we feel, badly needed into the present position. We are often misled by the glamour of Indian trade and other statistics, but they do not reflect the true state of things. This subject is more urgent and important than, for instance, the recent investigation into Indian currency and finance by the Chamberlain Commission. The inquiry into the economic situation must be comprehensive and impartial, going to the very root of the matter. It is many years since the Famine Commission reported upon an allied subject and our public bodies will do well to press for an inquiry such as we have suggested. The issues are quite clear. What progress, if any, have the people of India made in wealth production? Has the economic condition of the masses been improving? Is the present attitude of the Government in fiscal, revenue, educational and other matters, the proper one as promoting the growth of nascent industries and strengthening the economic position of the mass of the people? What measures ought to be taken, in the light of past experience and of the examples of other nations, to attain this latter end?

TRADE, ITS PRINCIPLES AND PROSPECTS

By T. M. SATCHIT.

Merchants are men who buy and sell; who buy to sell, and sell to buy the more. They connect producers and consumers. They are distributors. Under this name all are included who live by buying and selling, not merely those conventionally called merchants but the distinguish them from retail dealers. The term comprises traders behind counters, and traders behind desks; traders behind neither counters nor desks. There are various grades of merchants. They might be classed and symbolized according as they use a basket,

a cart, a stall, a shop, a warehouse, a counting-room or a bank. Still all of them live by buying and selling. A ship is only a large basket; a warehouse, a costly stall. The pedlar is a small merchant who walks from house to house with his basket to mediate between two persons; the merchant is only a great pedlar going round from land to land with his ships to mediate between nations. The Israelitish woman who sits behind a bench in her stall on the Rialto at Venice, changing gold into silver and copper, or loaning money to him

who leaves hat, coat, and other collaterals in pledge, is a small trader. Similarly, the banker who changes drafts into specie, and lends millions to men who leave a pledge or a mortgage on property is a pawn-broker and money-changer on a larger scale.

Man is a trading animal. Each producer naturally produces a superabundance of whatever he grows or fabricates, and exchanges it for other wares adapted to his wants. The grain grower has a large surplus of grain, but requires nearly everything else. As man rises in the scale of civilization his wants are increased and diversified. He labours more, produces more, and exchanges far more. And, as man continues to rise in the scale of intelligence, industry, efficiency, and comfort, not merely the amount but the proportion of each individual's products exchanged for those of others, will continue to increase. The aggregate of exchanges is increasing much faster than population, and trade increases in the combined ratio of the increase of both.

But while the aggregate of exchanges is rapidly increasing, the profits of each exchange tend to diminish. It is the interest of the producers of all classes to effect their exchanges with each other as directly, as simply, and as cheaply, as possible. It matters little to the producers, as a whole, whether prices be low or high, if they be justly proportioned. Fixed charges do not fall with falling prices and all the producers, while these charges remain unaltered, have to give an increasing quantity of their produce to redeem them, in proportion as it is obtained at a less cost, and sells for a less price. And as intelligence is diffused, and knowledge is brought to bear upon the most intimate relations of life, the cost of making exchanges, or the charges and profits of non-producing traders, must decrease continually.

But this by no means proves that trade is poorer, nor that traders, as a class, fare worse than formerly. It only proves that the number of traders cannot increase in proportion to the increase of trade, without subjecting them to the necessity of smaller and still smaller profits. Every year the number of producers and of consumers increases, and every year, the aggregate of the products to be exchanged also increases. Every year the construction of canals, rail-roads, harbours, steamships and other facilities of transportation and traffic, impels greater and still greater production, with a still larger extension of commercial exchanges. Trade has greatly increased, is increasing, and will increase even more rapidly than ever.

It is idle, therefore, to say that commerce is prostrate, because overdone. It is only the

possibility of making fortunes by trade, when there is no decided capacity for the vocation, that is vanishing. The time is at hand, is already arrived in fact, when merchants are to take rank with the most intellectual and arduous of the liberal professions. The merchant of the coming age must be a genius—an efficient and beneficent distributor of the bounties of nature, of the products of human labour. If he lacks these essential characteristics, let him aspire to be anything else rather than a merchant, for his own sake and that of others. An incompetent doctor may live, though his patients should not; a poor lawyer may damage his clients, yet pocket their fees; a thick-headed merchant must inevitably ruin himself and his trusting friends. The chances that he may blunder on and dodge bankruptcy for years have grown less and less until they are very nearly extinguished.

It is idle and mischievous to hope for high rates of profit henceforth, save of course, in rare and exceptional cases. The general diffusion of intelligence, and improvement of the facilities for direct exchanges between producer and consumer, render extensive and regular trade on the old basis of small sales and large profits impossible. Any serious attempt to restore the old system of sales on long credits to doubtful customers, but at such rates of profit as will compensate for the risk and delay of payment, will only serve to impel the producing and consuming classes to dispense more and more with traders, and effect more and more of their exchanges by agencies and arrangements of their own. The practical choice of the mercantile class lies not between large and small percentages on their sales, but between small ones and none. It is well known to mercantile men, that a process of this kind is actually going on, and that the number of intermediate agents between the producer and consumer is actually diminishing.

These, then, are the essential bases of a profitable and safe trade in the future: first, ability to supply the public demand on as favourable terms as any one else can offer; secondly, universal knowledge of the fact, and assurance that it may be relied on. The merchant, therefore, who aims to succeed in business must aim at these two points; first, to be sure that he can satisfy a wide demand for the articles he deals in on the lowest practical terms; secondly, that everybody within the proper scope of his business is made aware of his ability, and confident of his disposition to do what he promises. These points attained, he has only to do his business properly as it comes in upon him, and his future is secure.

Books of the Month.

WEALTH AND WELFARE.*

Prof. Pigou needs no introduction to students of economics. For patient research, scientific treatment, severe thinking and lucidity of statement he enjoys a well-deserved reputation. The problem he handles in the volume before us is likely to appear too simple to require any elaborate argument and exposition, but Prof. Pigou himself tells us:—"The study of economic theory is, indeed, difficult; but, the application of the knowledge, which that study wins, to the guidance of practical affairs, is an even heavier task; for it needs, not only a full understanding of the theory, but also the trained judgment that can balance against one another a large number of qualifying considerations." This judgment cannot be a possession of untutored amateurs; yet difficult as the task is, it is the sacred duty of students of economic science to attempt to perform it because the bettering of human life is its goal. The welfare of the members of the various classes in a community depends as much upon the manner of the distribution of wealth among them as upon its production. The lot of the labouring population in all countries and at all times has been anything but happy and it has not much improved even after the introduction of modern industrial organization. Questions about wages, unemployment, strikes and factory life have assumed great prominence in recent times and statesmen and social reformers are confronted with the difficult task of devising remedies to allay and, if possible, to put an end to, what is called the labour unrest. Prof. Pigou has attacked the problem of the national dividend and its distribution and has indicated the ways in which the share of the dividend falling to the lot of the labouring population may be increased so as to promote their welfare. It is not possible here to give an

adequate idea of the conclusions he has reached, much less to show the reasoning by which the conclusions have been arrived at. The copious analytical table of contents in the book, however, renders great assistance to the reader in grasping the drift of the author's argument. Yet the close student must follow the writer, chapter by chapter, patiently and we guarantee him a very fruitful study of an important subject. Prof. Pigou lays down his propositions, points out their limitations, states objections impartially and meets them fairly. He does not slur over difficulties, nor does he pass by in silence interesting questions which arise directly or indirectly out of the discussion of his main theme. The authorities he quotes almost on every page bear testimony to his wide reading and the severe reasoning which characterises the book shows the scientific temper and scholarship of the author. No serious or professional student of economic science ought to fail to read the book, a careful study of which is bound to benefit him in no small measure.

At the outset, the author shows the connection between economic welfare and total welfare of which it is a part and between economic causes and economic welfare and affirms that 'economic welfare is likely to be augmented by anything that, leaving other things unaltered, renders the distribution of the national dividend less unequal' and that 'if a cause is introduced, which makes for an increase in the aggregate size of the dividend, provided that the absolute share of no group of members in terms of the commodities which that group is accustomed chiefly to consume decreases, the economic welfare of the community as a whole is likely to be augmented.' Biological

* By Prof. P. C. Pigou, M.A., MacMillan & Co.

knowledge has rendered great help to the economist, but the influence of biological laws upon economic conditions is often times exaggerated. Prof. Pigou demonstrates with cogent argument how the part played by heredity as compared with environment has been over-rated and the truth of his propositions is not shaken by reasoning drawn from biological science. After an elaborate discussion, he concludes generally that economic welfare will be increased by causes which increase, and diminished by causes which diminish, the magnitude of the national dividend. Another proposition laid down is that the national dividend would be reduced below its natural size by causes making the marginal net products of resources in different uses unequal, and the hindrances to equality of marginal net products due to imperfect mobility, are considered in a number of chapters. This leads to the discussion of the question of monopoly of various kinds, and of the questions of State intervention and public control of monopoly. So far the author has confined himself to the magnitude of the national dividend and to the conditions which affect it. Now he proceeds to deal with the distribution of that dividend, and the third part of the book which is devoted to this branch of the subject 'is concerned with attempts to improve the distribution of the dividend by the deliberate transference of resources from the relatively rich to the relatively poor, first through interference with the natural course of wages, as paid to particular poor persons, and secondly, through taxation and so forth.' It is maintained in general that transferences brought about in either of these ways will only increase the real income of the poor in the long run, provided that they do not diminish the national dividend. Though a transference of resources from the relatively rich to the relatively poor by interference with the natural course of wages at any point, may succeed in a few cases, such interference is unlikely to do otherwise than injure the national dividend, therewith, in the end, the real income of the relatively poor. It is still

possible to defend the establishment of an artificial wage rate for the lowest class of labour as a supplementary form of Poor Relief.

The author next goes on to deal with attempts to transfer resources from the relatively rich to the relatively poor by direct action on the part of philanthropists or the State. That these attempts should produce beneficial results depends upon a variety of conditions. The transference of resources from the relatively rich to the relatively poor will take the form of the establishment of a national minimum which is understood as an objective minimum of conditions in all departments of life, below which the fortunes of no citizen are allowed to fall. This minimum may diminish the national dividend and at the same time increase the aggregate real income of the relatively poor, and therefore the minimum should be at such a level that the direct good resulting from the marginal transference to the poor just balances the indirect evil brought about by the consequent reduction of the dividend. Prof. Pigou incidentally devotes a chapter to working men's insurance which has evoked so much bitter controversy in England and points out how certain circumstances suggest that the State can increase economic welfare by either encouraging or compelling poor persons to insure. Causes that bring about variations in the real income of the working classes are indicated and the relation between the causes of variations and the variability of the real earnings of the working classes is pointed out. The last chapter of the book is directed to the consideration of philanthropic and State actions which are designed to lessen the variability of the demand for labour. Such devices may be adopted by consumers and employers of labour as by Governments. They remind one of the action of the State in India in times of famine when public works are opened for those who find no employment elsewhere. The author is throughout so severely scientific and never superficial, and has covered so very wide a field and attempted 'to bring into an

ordered unity so many different aspects of economic life,' that a reviewer may be pardoned if he has not succeeded in presenting an attractive or even an intelligible view of the whole subject. The book will appeal mainly to expert economists.

Indian Administration.*

Few books, indeed, have been written on the constitutional and administrative problems concerning India, by Indians themselves; almost none, if we may exclude that on the "Indian Constitution" by Mr Rangasami Iyengar. This book, however, is, more or less, a general treatise on the constitutional development of Indian polity under the British regime. As such, it is unsuited to the beginner. And of the other learned works on the subject by Ilbert and Strachey, it may be at once said that they are too advanced to be of any real assistance to the student who approaches the subject for the first time. The book that is now most popular among the school-going population is, certainly, the late Sir William Lee-Warner's "Citizen of India," which has rapidly gone through many editions. But for various reasons, and with the growth of a certain definite trend in recent Indian political thoughts and aspirations, this book has almost gone out of popular acceptance. What is now required is a suitable handbook to be placed in the hands of our boys, not too controversial in tone so as to perplex the beginner, or too prolific in treatment so as to require much laborious patience to master its details. Such a long-felt want, we are sure, is adequately supplied by Mr. V. G. Kale's book on "Indian Administration" just published.

The Indian public do not need any introductory words from the reviewer to make known the author to them. The author's name has preceded the book. Both by his intimate, but not by any means dangerous, acquaintance with Indian administrative questions, and his long experience with the capacities of the student mind, he is eminently fitted for the task. That he was only a detached observer of Indian political or administrative problems, is no detractor from the value of his production; on the other hand, it

* By Prof. V. G. Kale, M.A.

has conferred certain obvious advantages on the writer, especially, where a too partial judgment of the burning topics of Indian administration might have led the author into serious error or vitiated the whole plan of the book.

In the introductory chapter of the book, which is more historical than strictly political, the author narrates the dominant events of Indian history which have ultimately decided the governance of the Indian Empire by the sons of Briton. In the words of the author, this connection, between Great Britain and India has been happily characterised by all thoughtful Indians as Providential.

Chapters II, III and IV explain the powers and prerogatives wielded by the Government of India, the Home Government and the different Provincial Governments. The more important Acts, Regulations and Despatches which have been instrumental in the past in shaping these three forms of Government, and the sequence of administrative events, have been fully developed by frequent references to the Statutes, Acts and Reports. Whenever convenient, their very language has been freely put into service.

Chapters V, VI and VII deal with the District Administration, the Legislative Councils and Local Self Government. The admirable skill with which Mr. Kale has throughout preserved the role of the narrator instead of that of the commentator, when coming near such close questions of the hour, as the Indian Civil Service, the separation of the Judicial from the Executive Functions, etc., is well balanced by a judicious discrimination in picking out the *pros* and *cons* of a heated question, leaving the more advanced reader to form his own conclusions. Every minute detail of the local administrative units has been explained so as to make clear every point of administration to the veriest tyro.

Chapters VIII and IX deal with Finance and Land Revenue. It would have been better, in our opinion, if this order had been reversed, Revenue preceding Finance. Every item that is entered under either the head of income or expenditure is explained with reference to its

particular place in the budget and the distinction that is drawn between Imperial and Provincial budgets is also examined in detail. The Reserves and their functions have been briefly touched upon, as also how the accounts between the Imperial and Provincial Governments are adjusted; and this closes the interesting chapter on Finance.

The Land-tax forms about 33 per cent. of the total net revenue of British India and the volume of literature, controversial and otherwise, that has grown round this much debated question, has justly demanded one full chapter of Mr. Kale's book. The Land-Revenue Administration of the Government of India is anomalous. There is no uniformity in the policy underlying the various methods of procedure adopted in the several Provinces. The various considerations that have led the Government at various times and places to alter their policy to suit the particular circumstances of each Province or Presidency are fully and ably set forth. The question whether Land Revenue is in the nature of a 'tax' or a rent is impartially handled and the reserve with which the author has kept back his own conclusions on the subject speaks a great deal for his impartiality.

Chapters X, XI, XII, XIII and XIV deal with the subjects of Law and Justice, Police and Jails, Education, Medical Relief and Sanitation and Public Works. These have been examined with regard to the successive resolutions of the Government that have given the present shape to the departments mentioned.

These fourteen chapters including the introductory one, together form a handy manual on the administrative problems of India in the hands of a student who has already passed the stage of our matriculation standard. Purely theoretical discussions have been scrupulously avoided except where the author has been

forced to do otherwise, either in explanation of some facts of history or in elucidation of an abstruse problem. The book, in the main, is an ingenuous collation of facts and events and pretends to no originality either in their exposition or their interpretation. Considerable value has been added to the book by the incorporation of a select number of statistical tables, which neither burdens the text nor wearies the reader. The book is singularly free from the fashionable terminology, the 'cracies' and 'isms,' adopted by pedantic political historians.

We have no hesitation in recommending this book to young India and the more educated of our people can read it with equal interest.

The list of reference books that the author has laid under his contribution is printed at the end of the book, and the more intelligent and persevering student of Indian history cannot do better than follow those standard works on the subject after completely mastering Mr. Kale's "Indian Administration." The *Arya Bhushan Press, Poona*, price Rs. 1-4-0, May be had also of *G. A. Natesan & Co., Madras*.

Twentieth Century Inventions by Charles R. Gibson, F.R.S.E., *the Nation's Library*, Collin's Clear Type Press, London, price 1/6 net.

The study of inventions is always a fascinating one in that it describes the working of great minds in the act of achieving new processes in the lines of human activity. The above volume presents to the general reader a clear idea of some of the most interesting inventions of the twentieth century. The author has judiciously selected sixty inventions for treatment, according to the degree of ingenuity embodied in the invention. The descriptions have been made as non-technical as possible. It is a readable book and is bound to awaken much curiosity and interest.

The Agricultural World.

The Cultivation of Ragi.

Experiments conducted at the Coimbatore Agricultural Station show that it is economical to plant ragi on the tops of ridges and irrigate by running the water along the furrows between them: these ridges should be made level from end to end, i.e., they should roughly follow the contour lines. Planting should not be at a lower rate than 150,000 plants to the acre and this rate may be increased. The use of fish manure has not been made the subject of very thorough investigation, but its use is considered excellent, and it has become in that place the general manure for the ragi crop. The manure is spread in the furrows, and the ridges are subsequently split so that the plants strike their roots down to the food supply immediately below the place where they are planted.

Bonemeal for Rice.

The advantage of using bonemeal as a manure for wet rice has been successfully demonstrated for several years in the Khasi and Jaintia Hills, the results showing a substantial profit notwithstanding the high price (Rs. 4-8-0 to Rs. 5 per maund) of bonemeal delivered in the hills. With an application of 3 maunds of raw bonemeal per acre, the increased yield in the first year is usually more than sufficient to pay the cost of the manure, while in the second and third years the increase is nett profit.

The practice of manuring with bonemeal is steadily increasing among the hill people, and during the year ended June 1913, more than 200 maunds imported from Calcutta was sold to cultivators at from Rs. 4-8-0 to Rs. 5 per maund. The high price is, however, tending to check the extension of the practice. In view of this and in the absence of local enterprise, the Agricultural Department of Assam have purchased a small bone-grinding plant, which will be installed shortly at Upper Shillong. Arrangements have been made for the supply of 1,000 maunds of bones, and next season, they hope to

be in a position to supply bonemeal at about Rs. 3 per maund delivered at Upper Shillong, leaving a small margin of profit as interest on capital.

A Cocoanut Pest.

The rhinoceros beetle has always been a serious menace to the growing cocoanut planting industry. A remedy to eradicate this pest is mentioned by the American Consul in Colombo.

The rhino beetle loves to deposit its eggs in soft rotting wood of various sorts, and particularly in rubbish heaps containing a fair though not an excessive amount of moisture. If we dig a shallow pit, say one foot deep, and pile up the soft earth on the bank, and then deposit in this pit several bags full of cacao shells, and some rotten wood, and then fill back the earth, making a cone-shaped pile one or two feet higher than the surrounding level, we can attract to this place hundreds of mother beetles who will come from all quarters to deposit their eggs. No doubt they are attracted by the sweet smell of the fermenting pods decaying within. Now if the plantation is clean weeded, and these traps are made at the rate of one to each acre of cocoanuts, practically all of the beetle eggs that are laid will be deposited in these little mounds 6 ft. by 6 ft., and if they are visited every 10 weeks, and dug over, the full-grown larve, smaller grubs, and eggs, can be quickly removed and burnt. This method is reported to have proved successful in Ceylon.

Enrichment of Farmyard Manure by Cake Feeding.

In the *Journal of the Board of Agriculture*, London, Mr. A. D. Hall considers the two-fold actions (1) of the feeding stuffs as food and as manure, (2) of farmyard manure as fertiliser and as an ameliorator of the soil because of the humus it contributes.

It is now generally accepted that at the most one-half of the nitrogen contained in a feeding stuff reaches the land again in the dung. The

point requiring most investigation is the amount and nature of the fertility added by cake feeding after allowing for the loss of about 50 per cent. of the nitrogen in the food. With this object in view, experiments were instituted at Rothamsted in 1904 on the relative crop-producing powers of equal weights of dung made with and without cake, in the year of their application and in the three subsequent years.

The principal conclusion drawn from these experiments is that the extra value conferred upon dung by cake feeding is not of an enduring nature; the first crop gets most of the benefit, giving twice the increase of that getting common dung; in the second crop the ordinary dung has given an increase of one-quarter, the cake-fed dung of one-third, while in the third and fourth years there is no difference.

Promoting Soil Fertility in the United States.

Perhaps the biggest agricultural development scheme ever undertaken in the history of the world, is to be handled by America in a practical and profitable way. If the farmer would not go to the expert, the expert should go to the farmer.

The thing that tells is demonstration work. The knowledge of the schools should be carried out to the farm themselves.

The italicised sentences epitomise, writes the *Morning Post*, the policy of the National Soil Fertility League founded by Mr. Gross two years ago to promote legislation in support of his plan to help the farmers to help themselves by demonstrating to them by the aid of experts on their own farms that they can largely increase both their agricultural production and their financial returns.

It is proposed to employ about three thousand experts as residents in the three thousand agricultural counties of the United States, one to each county, for the purpose of demonstrating by practical tests the feasibility of increasing both the quantity and quality of of every class of farm product. These experts will be farmers who have taken a full course

at an agricultural college or collegians who have become practical farmers; they will be the employees of the colleges, and will receive salaries ranging from \$2,000 to \$4,000 a year. They will give their services to the farmers for nothing, and will reside in their respective farming districts throughout the greater part of the year, returning to the colleges only in the winter to keep themselves up-to-date in scientific investigation.

A Bill in support of this scheme will shortly be introduced in the Senate to give practical shape to the proposals of the League. When it is understood that the output of American farms is valued at nineteen hundred million pounds sterling, as estimated by Mr. Gross, the founder of the National Soil Fertility League, it may be guessed what the effect of this scheme would be, on America's food supplies and food prices if the production of the United States is stimulated by these agencies to the extent of only 50 per cent.

Machinery on the Indian Farm.

Those who are impatient at the slowness of the Agricultural Departments in introducing power work in Indian Agriculture, may be reminded of the following passage occurring in the Report of the Experimental work carried on at the Coimbatore Agricultural Station during the year 1912-13:—

The engine records show that even with a farm of this sort, there is only a limited scope for the introduction of power machinery for agricultural work. The engine runs a chaff-cutter, threshing machine, cotton-gin, oil-crushing plant, cotton-seed-crusher, cake breaker, and latterly a disintegrator. The cake-breaker and the oil-crushing plant are not used. Of the rest of the work, ginning is undoubtedly the most profitable, and it is this alone which has enabled a profit to be shown on the year's work.

The Report proceeds to say:—Chaff cutting by hand cannot of course be compared to the work turned out by the machine, but it is impossible to estimate the value of chaffing straw from a feeding point of view. Threshing can be done more cheaply by cattle or by hand,

partly because we have not enough work to make it worth while investing in a machine which would perform the whole work. The thresher is however invaluable for experimental work, which it would be impossible to get done without it.

The difficulty of course lies in arranging the work so that as many machines as possible shall be running together, but this is not always possible. The cost of running the engine, with attendance, and depreciation comes to Rs. 500 per annum. The work turned out was valued the year before last at Rs. 379 and this year, owing partly to the increase in ginning Cambodia, at Rs. 620.

Hurrying Nature.

A method of hurrying trees to their period of fruiting has been discovered at the Government hot-houses at Washington. It consists in diverting the vigour of trees that were large and strong, sending their sap coursing through the veins of spindling seedlings and thereby cause the seedlings to do in two years what ordinarily would have taken eight. The process is known as "inarching." The "inarch" is accomplished in this way:—

The seedling is grown to the age of but three or four weeks. It is a weak little plant of but four or six leaves. This stripling is taken up with a ball of earth about its roots sufficient to maintain its life for a few weeks. The whole is transferred to a stalwart vigorous tree of a kindred species. This tree may be two or three years old. Its roots are deep. It is supplying sustenance for a top that is a hundred times as large as the seedling.

This is known as the nurse tree. The outer bark is scraped from the side of the nurse tree one foot above the ground. The outer bark is likewise scraped from the seedling. The two wounds are bound together with soft cloth bands. The ball of dirt on the root of the seedling is bound to the side of the nurse tree. In two or three weeks the plants have grown together. The dirt from the roots of the seedling may be removed. It is now drawing its vigour from the nurse tree. Eventually its

roots are cut off smoothly below the point of union. The nurse tree has taken the little orphan plant unto herself.

But this is not the end. After the union is thoroughly established, cut the top off the great vigorous nurse tree. Then is all the nourishment that was going into its top diverted to the single small stem. Then do its roots which have been establishing themselves deep in the soil for years send their vigour into the small seedling. The twig has such an abundance of nourishment that it vents some of it in fruiting before its time. And this early fruit is strong and vigorous, showing the utmost possibilities of the tree.

It is a mistake to think that this may be accomplished by the old process of budding or grafting.

Before a plant may be budded on to another stalk it must have acquired considerable age in order to produce the right sort of buds. The process of budding is most delicate, and the results are in question. It is vastly slower than the inarch. It is vastly more difficult.

The above is summarised from the *Scientific American* which characterises this transformation of energy as nothing short of witchery.

In Ceylon, we are told in the *Queensland Agricultural Journal*, this method is known as the "Gootee method of Propagation."

"The gootee mode of propagating plants has been practised in India from early times. It is adopted in the case of trees which are difficult to raise by layering, or which seldom set seed, and also as a means of increasing any tree of special merit, or part of a tree (as a sport) exhibiting a variation which it is desirable to perpetuate. When other methods of propagation fail, the gootee is resorted to, and, if carefully carried out, it is usually successful. It is of special value in propagating fruit trees, for not only are the plants thus obtained true to kind, but they also come into bearing much earlier than plants raised from seed. The same is true of flowering trees, shrubs, climbers, &c., and for such as do not, from some cause or another, produce seed, propagation

by gootee is the best means of multiplying them."

Onion Growing.

The best way to sow onions is to drill them in although for small areas the seed may be sown in a seed bed, and the young seedlings be planted out. The drills should be from 8 in. to 15 in. apart, which will require from 2 lb. to 10 lb. of seed per acre. The seeds should be dropped at a distance of 2 to 3 in. apart in the drills, and the plants will afterwards require to be thinned out with the hoe to 6 in. apart in rich land. The drills should be slightly raised, and roots of the plants be firmly embedded therein. The *bulb* is not the root and it should be allowed, so to speak, to squat on the surface, not under it.

As the plant grows, the soil must be kept perfectly clear of weeds; and where the working of the ground has thrown the soil against the bulbs, it must be drawn down so that only the root is in the ground. Where this has not been attended to, the remedy for the resulting want of bulb-formation is to wring the necks of the plants, or, at least, to bend them down with a twist. This will have the effect of inducing the formation of bulbs.

When sowing the seed, it need only be put just under the ground, as it requires but a very slight covering of soil. If sown deep, many seeds fail to germinate, and most of those that do appear will make an abnormal growth of neck, causing much labour in drawing away the soil from the incipient bulbs. There are few seeds so annoyingly deceptive as onion seed, as old seed will lose its germinating power, and imported seeds, unless carefully packed in airtight bottles or soldered tins, will scarcely germinate at all. Therefore, it is well to make sure of getting new seed. After sowing, germination should take place in about a week, and the onions come to maturity in from 120 to 180 days. They may be known to be ripe by the drying up of the tops. As soon as this happens, pulling should be done quickly, because, if wet should come on, the bulbs may start a fresh root action. This, besides making them harder to pull, will seriously impair their

quality. After they are pulled, the onions are left in narrow "windrows" to get well dried and ripened, and may then be removed to a dry barn, subject to a free current of air. Should they show signs of heating, they must be at once turned over, and the bad ones picked out during the process.—*Queensland Agricultural Journal*.

The Value of Fertiliser.

A paper was read at the Royal Society recently by Mr. A. D. Hall, F.R.S., Dr. Winifred Benchley, and Miss L. M. Underwood, B. Sc., on "The Soil Solution and the Mineral Constituents of the Soil."

For the past ten years the United States Department of Agriculture adopted a view that in all ordinary soils the moisture naturally contained in the soil holds in solution approximately the same amount of the compounds of phosphoric acid and potash. This solution is in itself considered to be sufficient for plant growth, so that the addition of plant foods to the soil by means of artificial fertilisers is a work of supererogation. Indeed, it is maintained that any excess of such substances is immediately neutralised by the formation of compounds with the mineral substances already in the soil. But certain fertilisers were experimentally shown to have effect upon plant growth. The plant excretes certain poisonous substances which militate against the continued growth of the plant in the same soil, and the addition of fertilisers has in certain cases a favourable action by combining with or otherwise checking the influence of these toxins.

The experiments by Mr. Hall and his colleagues show that the growth of the plant corresponded with the composition of the solution, being less when the plot from which the extract was made had been imperfectly manured, and being increased by the concentration of the solution. The nutritive value of the soil-solutions was not affected by boiling, and when they were distributed through sand or soil particles as in Nature the growth was superior to that in a water culture of equal concentration.

The writers conclude that the amount of

phosphoric acid and potash in the natural soil-solution varies with the composition of the soil and its past manurial history, that the growth of the plant varies with the concentration of the solution, irrespective of the total amount of plant food available; that, other conditions being equal, the growth of the crop is determined by the proportion of phosphoric acid and potash, and that this in its turn is determined by the amount of those substances in the soil, by their state of combination, and by the fertiliser supplied; that continued growth of the same plant in the same soil does not produce any poisonous substances such as would affect the growth of the same or any other plant in that soil.

The practical result, then, is, says a writer in the *Horticulturist's Review*, that we may continue to spend our money on fertilisers without fearing that it is wasted.

Agriculture Indebted to Science.

The application of scientific knowledge to agriculture is of comparatively recent date. The aims of science have been, and are of course, to make agriculture a more profitable industry, and in so far as it has hitherto contributed to this end agriculture is indebted to it.

What distinguishes agriculture from most other sciences is that for its attainment a huge mass of experimental work is necessary, both in the laboratory and in the field. Much experimental work has already been done in all the branches of agriculture, and what results have they had? To begin with the soil, its requirements for production have been defined. The physical and chemical conditions of the soil have been found to influence the growth of crops, and attention to these factors has resulted in increased mechanical cultivation and more liberal dressings of manures. Farm-yard manure has been found to alter in value enormously according to its treatment after excretion, and methods of minimising the losses of nitrogen have been discovered and practically applied. The comparative richness of the liquid manure has demanded greater care being taken of it. The beneficial

effects of applications of the various artificial manures in increased production have been decisively realised, and the economic production of new fertilisers has undoubtedly been a great stimulus to an increase in their use by agriculturists.

The value of leguminous crops in fixing nitrogen from the air in the soil has come to light, and various attempts to imitate nature by inoculating the soil with certain bacterial cultures, although they have not been very successful, cannot be regarded as fruitless. The very recent discovery of a factor which prevents nitrification in the soil and the means of removing it, has found practical application in market gardening. We have also, remarks a writer in the *Farm and Home*, the practical utilisation of sewage as manure, which has assumed an increased importance owing to the discovery of a method of removing the fatty matter, the presence of which made the soil impervious.

Another branch of experiments has devoted itself to the study of the characteristic of different varieties of plants, with a view to improving the quality and yield of crops and increasing their resistance to disease. Here we may mention the recent work on breeding and the results it has had in producing varieties combining good yielding capacity with resistance to disease. The causes of the various diseases attacking agricultural plants have been investigated, and methods of effectively preventing the occurrence of such diseases are in practice.

Turning to the branch of feeding, experiments in this direction have shown the requirements of different animals in different conditions, and how these requirements may be most economically obtained in home grown and purchased foods, and utilised with the greatest profit. The discovery of methods of valuing foods has afforded a basis for compounding suitable rations for all animals. In particular, the function of albuminoids in nutrition has been a matter of research. Experiments have shown that increase of protein in the ration beyond a certain limit ceases to

have any direct influence on the increase in live weight. This matter is important because, in view of the cost of nitrogenous feeding stuffs and the greater liability to deterioration of the dung produced, their excessive use in fattening can hardly be profitable.

Cattle Breeding.

The following are extracts from the speech of the Hon'ble Mr. P. S. Sivaswamy Iyer at the Annual Cattle Show recently held at Ongole :—

There has been an uneasy feeling in the minds of the public in different parts of the country that apparently all is not right with the cattle in the land, that there is a tendency to deterioration in the quality of the cattle, that there has been a depletion in the stock of cattle, and that as a result good cattle cannot be purchased except at prices which are prohibitive to the ordinary agriculturist. This uneasy feeling to which I have referred has, as you are aware, found expression in the resolutions which have been moved in the Legislative Council.

PROBLEMS OF CATTLE BREEDING.

Certain aspects of the cattle problem have been emphasized in those resolutions. The want of suitable grazing grounds, the want of a good supply of fodder and other causes of this sort have been considered to contribute very largely to the depletion or deterioration of cattle in the Presidency. Those causes, however, do not give an adequate account or explanation of the tendencies observed. It does seem to be a fact that in many places the special types of cattle which have won a reputation for those localities have tended to disappear. I have, for instance, been told that the pure Punganur breed, which was well known in the North Arcot District, has almost completely disappeared. The Government considered it necessary to have a full investigation of the whole subject of the condition of cattle and directed a survey of cattle by Mr. Sampson. He has submitted a very comprehensive and a very interesting report on the condition of cattle in the Presidency. The facts to which sufficient attention does not seem to have been

paid by the public or by agriculturists are the necessity for the exercise of special care in the breeding of animals. While demands have been made for communal grazing, the dangers which attended communal grazing have not been realised. Those who are qualified to express an opinion on the subject are almost unanimous that communal grazing is far from being a blessing, that it generally leads to promiscuous herding and promiscuous breeding with the necessary result that it is impossible to keep up any type or to breed fine specimens of cattle. It is to the necessity for controlling the mating of cattle and the herding of cattle and the advantages of providing private grazing grounds that attention should now be prominently drawn. It is in the diffusion of sound ideas upon these matters that these cattle shows have a most important place to fill. The primary object of these shows is not to encourage the sale or the exportation of cattle but to encourage careful breeding of the different well-known types. One reason why cattle-shows generally throughout the presidency have not all been a success is said to be the fact that they have been held more often than not in places which are not breeding tracts.

THE REMEDIES.

Referring to the remedies suggested for the deterioration of cattle, Mr. Sivaswami Iyer said :—One remedy is that the classification in the show should be revised, that more prizes should be offered to cows which have a full mouth, and to villages which have succeeded in securing the largest number of prizes and that there should be no class for heifers except for those with milk teeth. Another suggestion for the improvement of the breed is the supply of breeding bulls. It must be recognised that breeding farms on a large scale cannot possibly be undertaken by the Government. Breeding is a matter which must necessarily be left very largely to private enterprise, and having regard to the success which you think has attended these shows, the confidence which has been placed in the adaptability of private enterprise will be fairly justifiable. This ques-

tion however of opening one or two breeding farms where stud bulls may be bred is now under the consideration of Government, and a decision in favour of the opening of a few breeding farms is not unlikely. Sometimes it has been found that the bulls which have been supplied by the Government for breeding purposes have not been sufficiently used or taken care of and have been returned. Care will therefore have to be taken to see that the stud bulls which are supplied are properly cared for by the villagers and properly used for the purpose for which they are intended.

SPECIAL STOCK EXPERT.

Another question which has been made and which seems to be an excellent one is the employment of a special stock expert for the purpose of taking charge of stock-breeding operations, and this matter is now engaging the attention of the Government. It is probable that in the near future we may have a stock expert to take charge of the breeding farm and to pay special attention to the breeding of pure types. The breeding of stock is not a matter which can be attended to by any one who does not possess a good scientific and practical knowledge of breeding operations and I am confident that the employment of a stock expert will improve the supply of bulls and cause an improvement in the various breeds.

INSTRUCTIONAL LECTURES.

Another suggestion which occurs to me as a layman is this. Can you not take advantage of these shows and the object lessons which they afford to arrange a few popular lectures in the vernacular, dwelling upon the evils of promiscuous breeding, of inbreeding, of the use of immature bulls, of the dangers of free or mixed grazing, on the importance of retaining the best specimens in the district and on the necessity for maintaining purity of type? These are matters upon which it would be quite possible if not easy for a person well versed in the subject of cattle breeding to deliver an interesting set of lectures to the breeders and to the people and to the numerous visitors. The necessity for getting good stud bulls for service is not altogether lost sight of by the breeder, but he

does not realise the evils of the promiscuous herding of cattle. It may be that the poverty of many of the ryots may oblige them to resort to communal grazing grounds. But if it is possible for you to bring home to the people the advantages of the use of private grounds under conditions which preclude indiscriminate mating, you will, I am sure, confer a great boon upon the cattle breeding community.

AN OBJECT LESSON.

Another direction also in which an effort may be made towards the improvement of live-stock is by inducing the wealthier ryots to take a special interest in the subject of breeding their live stock. Recently we heard of His Excellency Lord Willingdon, the Governor of Bombay, proposing to have a model farm on his own grounds in Poona with a view to providing an object lesson in agriculture and in the breeding and rearing of live stock. If it is not a subject beneath the personal attention of the Governor of a Presidency, it may well receive the attention of the wealthier ryots or landholders of the District, and if you can only induce some of them to take to cattle breeding as a hobby, it will be found to be a most useful means of improving the breed of cattle.

White Ants on Cocoanuts.

The following mixture is recommended by a correspondent of the *Tropical Agriculturist* :—

Crude Perchloride of Mercury, 1 lb.

Water 10 gallons.

The soil surrounding the young palms to be saturated with the solution.

Cocoanuts thrive best on a well-drained, rich soil. They require a good deal of moisture throughout the year, but the soil should be open and the gradient of the land not too steep, in fact, a very gentle fall would be best.

It has been found, as a general rule, that the best situation for a Coconut plantation is near the sea or along the banks of a river. It is widely believed that a situation not far from the sea is the best.

Iron as a Plant Food.

Iron though an indispensable element of plant food (and considered necessary for

chlorophyll formation) is absorbed in very minute quantities. Some plants, however, appear to be unable to take in iron from the soil and hence suffer from what is known as chlorosis, which is characterised by a yellow colour of the foliage. It has been suggested that the form in which iron is taken up by the plant is as a compound with ammonium nitrate. In view of the fact that iron has been found efficacious in the treatment of such diseases as silver leaf disease, the *Gardeners' Chronicle* recommends the trial of this compound of iron and ammonium nitrate in maintaining a healthy condition in plants.

World's Raw Cotton.

At the Ghent Congress of the Textile Institutes, Mr. Taylor of Manchester, read a paper showing that in 27 years the production of world's raw cotton had increased by 130 per cent.; yet in spite of the higher price, it had been absorbed and more could have been used. He estimated that by 1940, the annual consumption would be from thirty million to thirty five million bales. Great impetus would be given to the production by an invention of a mechanical apparatus for cotton picking. He suggested that the Government or other interested body should offer a reward for such an invention.

Substitute for Farmyard Manures.

According to the *Farm and Home*, the following may be used instead of farmyard manure—

- (1) Shoddy with phosphates and potash.
- (2) Rape dust with phosphates and potash.
- (3) Spent hops with complete artificials.
- (4) Green manuring with artificials.
- (5) Leaf mould or vegetable refuse with artificials.

Other substances that supply organic matter and may be used where dung is not available, are seaweed (excellent where obtainable), meat meal, fish refuse, fish guano, tannery waste, and nightsoil.

The Working Value of Rainfall.

From the point of view of irrigation, "rainfall is worth considerably more than its face value . . . because in the dry months when the rain

is short of the average, the intensity of evaporation will be relatively greater than it is at other times. . . . On the whole, a gradual decrease of rain means a gradual increase of evaporation, especially from a porous surface such as the ground, and hence the necessity for an irrigation exceeding in quantity the shortage of rain."—*U. S. A. Experiment Station Record*.

Egg Deterioration.

The deterioration which takes place in an egg is not easily visible to the naked eye, as it is in fruits and vegetables. People do not realize that eggs are one of the most perishable of all food products. This is true of the fertile egg, which if kept in a warm room will become unfit for eating purposes almost as quickly as milk. An unfertilized egg will remain fit for food several days during excessive heat and under normal conditions will continue good indefinitely, says the *Technical World Magazine*.

Manure for Wheat.

Wheat is a nitrogen-loving crop, and it is easy to produce robust growth by the use of nitrogenous manures. But the increase in length of straw will not be accompanied by a corresponding increase in grain unless phosphates be present. Potash is needed only on very light land, where the crop is liable to lodge, since potash helps to produce stiff, bright straw.—*Farm and Home*.

Preventive Against White Ants.

According to Mr. W. W. Froggatt, Entomologist, a few pounds of kainit dug in about the roots of fruit trees will drive away white ants.—*New South Wales Journal*.

Fish Guano.

Throughout the world fish guano is coming into commercial prominence as a cheap crop fertilizer. Norway exported during the first half of 1913 no less than 4,500 tons of this material.

Sugar-cane and Rice.

Experiments conducted in Java show that no deleterious influence is exerted by the cultivation of sugar-cane on the productivity of land when put under maize and rice.

The Co-operative World.

Loans to Societies.

A characteristic feature of the development of Co-operative Societies in India is their increasing independence in the matter of receiving loans from the Government. Thus, we read in the Report on the working of Co-operative Societies in Assam for the year ending 31st March 1913, that the practice of issuing Government loans to Agricultural Societies in Assam was entirely discontinued before the beginning of the year. The Registrar remarks that such loans are apt to be regarded as doles from Government, to serve as a temptation to fraud and to discourage independence and personal interest of members in the recovery of money lent by the Societies. Government loans enable a reserve fund to be built up, but as already observed, the same result may be obtained by raising, for the first few years, the rate of interest to be paid by members.

Cause of Co-operative Success in India.

The *Agricultural News* remarks that the success of Co-operative credit in India—in a country, be it remembered, offering far greater social difficulties, and a far wider range of general conditions than the West Indies—has been due not to Government money, but to Government organization. That is the bond which holds the units together.

Regarding the proposal of a land bank for the West Indies, the same journal observes that, although in the initial stages of mutual credit banks, and indeed of the larger limited banks, Government capital is desirable, perhaps, absolutely necessary, it is not in this direction mainly that the money ought to be regularly expended. To be independent of Government capital should be the bank's principle aim, because the favourable terms of Government loans obscures the real commercial position of the society. But in the direction of providing a staff of Registrars and Inspectors—a special Credit Department—financial assistance may

very well be given by the State. Benevolent control and energetic stimulation are, indeed, the first essentials. Added to this it is necessary to have uniform legislation.

The Co-operative Movement.

Mr. Rai Purnendu Narayan Singh Bahadur, in the course of his presidential address at the Behar Industrial Conference, referred to the co-operative movements, which, he said, had changed the face of many countries in Europe, in less than half a century. He remarked that it is difficult to initiate a new movement in India. But the co-operative movement has been inaugurated and it has taken root. It has not yet, however, spread in Bihar nor has it yet taken a deep root. It requires a hundred enthusiasts for the work. It requires the greatest power of organisation. The conditions of the town are different from the condition of a rural centre. The conditions of one trade are different from the conditions of another. Trade guilds may be revived in some quarters on co-operative lines, not in others. All professions and all occupations can co-operate, but in different ways under different conditions. Workers are needed he said, in every village, every town, every class, every community, in every trade, in every caste, if co-operation is to succeed for the industrial upheaval of Behar.

Co-operation and Agricultural Indebtedness.

The following paragraph from the report on the working of Co-operative societies in Bengal will be read with interest:—

More important than these numerical increases are the indications that the movement is beginning to have some effect on the problem of agricultural indebtedness. It is reported that in some areas the societies, by providing a substitute for the village *mahajan*, have compelled the latter to improve his methods of business and to reduce exorbitant rates of

interest, thus benefiting a much larger circle than that covered by the actual operations of the societies. Further interesting examples are given in the report of the effect of the village societies in strengthening the characters of their members and increasing their general well-being in other ways than by the mere supply of improved credit facilities. It has been shown that co-operative societies decrease litigation by inducing their members to submit petty disputes to arbitration. They raise the general tone of public opinion in other directions, and a most interesting development is the starting of village schools by societies, and the practice of giving regular contributions to other village institutions. The Registrar's report fully justifies his claim that, of all the movements hitherto set on foot for the moral and material improvement of the agricultural class, the co-operative movement is incomparably the most successful and promising, and as such deserves the full support of every member of the community.

The Scavengers' Co-operative Credit Society.

We read in one of our contemporaries that the Co-operative Credit Society started for scavengers as the result of the efforts of the Bombay Social Service League and the Depressed Classes Mission, is now working satisfactorily. According to a correspondent, loans are advanced at from 12 to 15 per cent. This is a very high rate of interest, but it is much below that charged by the usurer, which is from 50 to 75 per cent. As the Society will be firmly established in means and credit and as the borrowers generally will be found to be scrupulously honest in the discharge of their debts, the correspondent thinks that the interest on loans, as well as deposits, will be very much reduced. Depositors cannot claim much credit for disinterestedness if they are paid more than 3 or 4 per cent. The loans will necessarily be advanced on personal security, and as the rate of interest will be regulated, at least to some extent, by the credit of the borrower, he will find it to his advantage to maintain a good character and

reputation. The Society will thus exercise a wholesome moral influence on the general body of scavengers. It will be held as a badge of respectability to join it as members. The thriftless, dissipated, worthless man will have no place in the system of co-operation. He must go, as before, to the Marwari, and the two may settle their account, as best they can, between themselves.

Other Forms of Co-operation Than Credit.

It is felt that the time has arrived when other forms of co-operative work than that of credit should be tried in India. Act II of 1912 was expressly designed to facilitate the registration of societies for purposes other than credit and the Registrar of Co-operative Societies in Madras seems to have paid a good deal of attention last year to the formation of such societies. No very large number of them resulted, however; but the Registrar remarks that there is every sign that there will be before long a gradual awakening of the public to the advantages of the co-operative system, as applied to industry and production. On the other hand, there need be no fear that industrial and productive co-operation will absorb all the co-operative activities of the Presidency. It has repeatedly been found by experience that it is impossible, or nearly impossible, to get co-operative societies for purchase, sale and production, work successfully unless and until the workers have been carefully grounded in general co-operative methods and that the best school for such grounding is a Co-operative Credit Society.

The Registrar proceeds to say that the question of the hour is, therefore, not how to give a new direction to co-operative energy in the Presidency, supposing that such energy has been sufficiently exercised on credit, but how the credit movement itself can be expanded so as gradually to evolve out of it the higher forms of co-operation. The people's cry also is for more credit societies, because such societies are an evident boon to an agricultural people who have always borrowed and who must continue to borrow, and who

have found, for the first time in the history of the country, that they can borrow at 8 or 9 per cent. instead of at 18 to 24 per cent. per annum. It is idle, however, for people to imagine that they can reap the benefits of co-operation unless they learn self-help, and the first lesson of self-help is that they should provide co-operative societies for themselves. Mr. Wolff, whose authority no one would be inclined to question, said recently with reference to Madras co-operation: "You do well to dwell so much upon the necessity of inspection and the duty of societies to provide for it, where they can, out of their own means, as securing them a direct benefit. Only when they pay for it, they ought to carry it out themselves. That is what wants working up to. Government inspection of some sort there will always have to be, to make sure that the law is obeyed. *But the inspection upon which you rely for safety ought in the end to be carried out by unions and that will be of greater value—also to creditors—than Government inspection.*"

The Need for Consolidation.

The Hon. Mr. P. C. Lyon, in his opening address at the Sixth Provincial Conference Co-operative Societies of Bengal referring to Lord Carmichael's speech, said:—There was one special matter dealt with by His Excellency, and in the annual report of the Registrar, to which I wish to refer, and that is the question of the consolidation of our Co-operative Societies. I regret that there should still be some misunderstanding connected with the word. We mean by consolidation that we are determined to insist upon the acceptance of sound principles of co-operation by all our societies, and upon their conforming to the general scheme which has been set out for the development of this movement, before we recognise them. This does not mean hampering them by any red tape uniformity, but it is merely the exercise of reasonable foresight. We have long since set before ourselves the necessity of beginning from the bottom. We start at the lowest rung of the ladder, we begin with village societies, composed of men who want the loans for which

we exist at present to give out, and with the union of the credit of those men, to take the place of individual credit which cannot bear the burden which would be imposed upon it.

"When we have founded a sufficient number of these sound and steady societies we bring them together under a Central Bank, which helps in the work of inspecting them, ensuring they are kept on sound lines and financing them with capital drawn from wider resources than village societies can themselves command. And when, as now, our central banks have multiplied so greatly that they themselves require further inspection and further capital, we bring them all together in one great Provincial Bank, which will help to control the whole of our work throughout this great and wealthy Province; and to a scheme thus conceived and carried through, Government is lending, and will continue to lend, all the aid in its power by independent and careful audit of the accounts and so much of general supervision and inspection as will add to the credit and stability of the movement as a whole. But it is obvious that such an edifice as this must be built upon sound foundations. Our desire for wide expansion and extended influence of the movement must inevitably be curbed by the necessity for thoroughness in organisation and for stability in each new village Co-operative Society. On the other hand, granted this thoroughness in organisation and this stability, there need be no check or limit on the expansion of our system of village banks.

"Our plea for consolidation, therefore, amounts to nothing more than a warning that the work that is to be done must be carried through on sound lines or left altogether alone, and we have recently had timely support for this policy. We have seen a great crisis caused by the failure of unsound finance in other parts of India, and one of the most dangerous results of this crisis has been the spread of a general sense of insecurity and a disposition to look askance at all banking transactions. It is a tribute to the greatness of the principles of co-operation, that the Co-

operative Credit Societies have stood firm when so many other banks have tottered. It has been realised that the Co-operative Credit Societies differ essentially from those banks which have brought ruin to so many poor investors; but had we not insisted upon the adoption of sound principles before we would consent to the formation of any new society, we should undoubtedly have suffered from the serious reaction against all banking, caused by the crisis to which I refer. As matters stand, however, we have weathered the storm. We have shown that this panic in the banking world has nothing to do with us, and we are free to look ahead and work for the ultimate objects of our scheme without fear of any serious check."

REPRESENTATIVE INSTITUTIONS.

Proceeding, Mr. Lyon said:—"I should be the last to say any word of disparagement of far-reaching reforms, such as those which have been recently introduced into our Council with the object of bringing the higher officers of Government into touch with your leading men, but experience is fast demonstrating that if we wish to erect a political edifice that will endure we must begin as we are beginning in the case of social and economic edifices, at the foundations rather than with the roof. A representative depends for his importance on the influence and power of his constituency. A leader can be nothing more than a leader in name unless there is strength and vitality in the party which he leads, and it is from the bottom, from the towns and villages of the interior, that the strength of all expressions of public opinion must be derived. And how can we best bring together the people in the constituencies that are ultimately to send representatives to your local councils to work for the common weal? Surely it is by uniting them first in the manner indicated by your Co-operative Credit Societies, which are destined to form the best and soundest basis for the constituencies of the future. I look forward to a time when the Co-operative Credit Society of each village, bringing the people together for all matters connected with the

weal of the village, will be linked up with a system of village and circle government and will be utilised as the only efficient electoral unit. Each such unit will vote for a representative who will look after the interest of the village in the larger council composed of an aggregate of unions, and he will in his turn help to elect the members of a still higher Council. In every stage of such development you will thus render valuable assistance towards the good government of Bengal.

"It is one of the common places of political philosophy that there can be no Government so effective as that which is based upon the enlightened co-operation of the governed, and all who join in the great work upon which you are engaged are making a valuable contribution to the solution of many of the difficult and even dangerous political problems which confront the Government and peoples of India to-day."

Failure of German Credit.

The world has been as, indeed, well it might be, startled by the colossal failure of German co-operative credit. The collapse involved in ruin a series of loan and savings banks and the loss of millions of marks. With the 27,378 agricultural co-operative societies now existing in Germany, amongst which there are 17,274 rural loan and savings banks, there are so many and such important interests associated, that it is easy to understand the interest taken by the public in these unfortunate events. The fact is borne upon us that no human movement is possessed of self-perpetuating virtue and mankind must ever be on the alert to guard the beneficence it has created.

CAUSE OF THE FAILURES.

In 1874 the peasants and tradesmen founded in Nieder Modau a loan and savings bank, under the form of an unlimited liability co-operative society. From the start, they went wrong in regard to the management of the business, for they did not observe the first fundamental rule, to which rural loan and savings banks must conform, of contenting themselves with a restricted field of action. By the promise

of high interest, they succeeded in attracting deposits from every part of the province and from others more remote. During this period of great prosperity about 3,000,000 marks were deposited with the co-operative bank of that little village. It would be superfluous to say that such a rain of gold was far in excess of the members' ordinary credit requirements. It only led the bank to do business with outsiders, granting its debtors too large credits, but more than all risking its money in financial schemes even outside the limits of the village. The society entered into relations with thoroughgoing speculators, in connection with building lots in the city of Darmstadt. The savings of the rural population were unwisely invested in urban real estate and building lots of doubtful value, in second and third mortgages or even less safe investments, and were also utilised in granting loans for purchase of real estate. The society's funds became the easy prey of speculators and in the space of a few years the bank had to be declared insolvent.

If the ruin of the Nieder-Modau bank was due to inadvisable extension of its sphere of action, the excessive amount of deposits attracted to it, risky undertakings, careless management and insufficient supervision, unfortunately other banks followed on the same lines. The same conditions may be found in a total number of more than 17,000 rural loan and savings banks.

These unhappy events created soon a storm centre in the grand Duchy of Hesse where some of these banks had conducted their business.

At the end of March, 1913, the co-operative societies of the Grand Duchy of Hesse received the startling news that the Central Co-operative Bank of Darmstadt formed in 1882, as a society limited by shares, found itself under the sad necessity of choosing between two courses, either suspending payment or asking for a delay in which to arrange for the gradual winding up of its business.

There were two principal causes that led to this:—first of all, the locking up of 8,500,000 marks in the National Co-operative

Bank and then the grant of 5,000,000 marks as a credit to the Administration and Sale Co-operative Society. The unfavourable conditions of the market for houses and buildings rendering impossible any profitable sale of the real estate of the Administration and Sale Co-operative Society, the Co-operative Agricultural Bank of Darmstadt found it had 5,000,000 marks of immobilised capital under this head. The news with regard to the state of the accounts of the Darmstadt Co-operative Bank spread panic among the other Co-operative societies and the depositors of the Grand Duchy of Hesse.

It must be remarked that the banks and the people affected made every effort to save out of this sad shipwreck whatever they could. In some cases they changed the form of banks; mixed mortgage banks into pure mortgage banks; in some, temporary accommodation was provided by affiliation with other banks; in others, depositors showed good sense in refraining from making a run; many expedients were tried—but the details were too complicated, confidence was so shaky, and the conduct of some of the banks so palpably dishonest that it was found extremely difficult to stem the tide of disaster from spreading far and wide.

The errors which culminated in this sad catastrophe are not those inherent in the economic principle of co-operation, but such as are germane to unwise and inefficient procedure in the carrying out of the principle. As such they are a blessing in disguise and serve to recall forcibly the specific duties of Co-operative Credit Societies of all classes. With this view we present to our readers the lessons to be learned from these failures, in the words of Dr. Grabien of Berlin in a recent number of the *Monthly Bulletin of Economic and Social Intelligence*.

RESTRICTED SPHERE OF ACTION.

In the first place the field of action of the rural loan and savings banks must always be clearly defined. This is absolutely necessary on legal and social grounds.

The area chosen must not be too large, it should be a village or a few villages near one

another. The field must be limited, not only as regards the grant of credits, but also as regards the credits received. It is a mistake to attract deposits from every quarter by means of high interest and active advertisement and so to accumulate a working capital far in excess of the ordinary credit requirements of the district. This too easily leads to the investment of surplus amounts in hazardous credit business, even outside the district.

SHORT TERM CREDITS ONLY.

The Agricultural loan and Savings banks are intended to satisfy the needs of the country districts for short term credits.

At the same time as the other agricultural institutes, the banks should encourage technical progress in agriculture in all directions, and, while always free to make provision for the security of the loan, place at the disposal of those in need, the necessary means for the realisation of these improvements. *Much prudence must be exercised in dealing with large manufacture and dealers*. It is often said that the loan and savings bank must become the village bank, ready to provide for all banking business for all the inhabitants of the locality. In this there is a dangerous exaggeration. Their economic constitution and the condition of the members show that the rural savings banks are intended quite simply for small credit business. Megalomania incites boards of management, composed of vain or avaricious members, to convert co-operative banks into banks on a large scale. Generally, loan and savings banks are not intended for such work.

INVESTMENT OF SURPLUS FUNDS.

This is a much debated point. According to the writer referred to in this article, the investment of surplus funds in real credit business is allowable under certain conditions. It is economically and socially a benefit to debtors, above all to small rural land-owners or house holders. First of all, however, the banks must always have available large amounts of capital that cannot be used for personal credit. It cannot be considered right for a bank, which has to have recourse to

the central banks for credit, to engage in real credit business. If all the affiliated banks acted so, the central banks could no longer exist, for they are founded precisely to serve as clearing houses for banks, some of which have surplus funds, while others are in need of credit.

Thus there can be no question of long term credits being granted except by banks which have always available a number of large deposits and at the same time have no need of credit from the Central Bank. But, even in this case, there is still need for prudence. In the first place, it must be seen that the investments offer the best possible security and, consequently, too considerable loans, especially to large undertakings, must be avoided; because the grant of a large number of small credits corresponds better with the economic nature and social aim of the banks, which must serve for the elevation of the poorer classes. It must therefore be arranged that the amounts lent be repaid within a rather short period, either five or ten years, which, as a rule, is economically possible for the small farmers and the workmen engaged in agriculture or industry.

A PRUSSIAN EXAMPLE.

The General Committee of the Prussian Central Co-operative Bank has issued regulations for the purpose in which definite figures are given, which represents, in the opinion of the German writer, only a minimum.

After 20 per cent. or 30 per cent. has been invested in the Federal Bank, long term credit may be allowed when:—

(1) At least 30 per cent. of the investments consists of loans repayable before the next harvest;

(2) When their own capital is in suitable proportion to that provided by outsiders;

(3) When the deposits constituting the largest amounts are only accepted on condition that notice for repayment shall be long and the term be kept to even at ordinary times;

(4) When the co-operative societies have relations exclusively with their federal bank,

that is to say when they apply to it alone for credit and deposit only with it.

THE RESERVE FUND.

There is another essential condition for the regular development of the banks and for long term credits, namely, that the societies must possess *sufficient capital* of their own in shares and reserve fund. The capital in the reserve fund cannot leave the safes and the share capital can only be withdrawn when the members leave the society. It will serve to counterbalance the fluctuations in the capital supplied by outsiders (deposits and bank credits). It is therefore specially necessary for banks which have used their working capital for long term investments, so that, consequently, it is less easy to realise it.

OTHER PRECAUTIONARY MEASURES.

The precautionary measures spoken of may reduce the fears with regard to large grants of long term loans on mortgage and advances for purchase of real estate. Yet, it seems desirable to limit these loans and rather to encourage the deposit of the surplus funds in the federal banks. If this principle is advanced to-day, it is also necessary at the same time to require the Central Banks to use the most scrupulous diligence in the management of the amounts entrusted to them. All the commercial and co-operative rules applicable to the local banks must also be observed and even far more carefully, by the central banks. The severest blow is given to the principle of clearing by means of co-operation, when the savings made in the rural country, which should return to the rural population in need of credit, are invested in building lots or mortgages or in industrial undertakings in large towns. Even if investments of this kind were safe it would still be an error to use agricultural savings for other than co-operative purposes.

The theory that, by means of the increase of the deposits in their central banks, an excess of available money may be obtained, which there is no means of profitably utilising, is untenable, at least under existing conditions. What is also true is that, in view of the small

amount of money on the market, the central co-operative banks find their situation difficult and have had to ask for large credit from the Central Co-operative Banks or other institutes, and when the conditions of the money market improve, there are still serious co-operative problems attending solution for which the co-operation of the central Banks is indispensable. A few months ago, Dr. Heiligenstadt spoke of one of the greatest tasks before co-operation in the future, namely, the increased technical and agricultural improvement of the country districts. And it will be a very serious duty for the central banks to give financial support to the efforts made for this end, with all requisite precautions, of course. They will then have need of considerable funds, which may be obtained from the local loan and savings banks. They will reach this end if, even leaving aside the question of a wise policy of remunerative interest, they keep the confidence of their affiliated co-operative societies, by means of a scrupulously conscientious and competent management.

INSPECTION AND SUPERVISION.

The work of the inspection federations has been adversely criticised in the circles connected with the co-operative societies that suffered recently. It is said that inspections should have revealed the serious errors committed, in time for the board of management to take energetic measures to check them. Here the writer enunciates the principle underlying supervision. The supervision to be exercised in a business, is, in accordance with the law and the regulations, the first duty of the board of supervision, which is also the most competent for the purpose, as it has a precise acquaintance with the personal and economic conditions of the debtors and sureties. To relieve the board of this duty would be to shake the very foundations of co-operative institutions, the principles of autonomous administration and liability. It is only in consideration of the serious losses that may be caused through insufficient control on the part of the board of supervision, in the case of particular societies and the entire co-operative system generally, that the system

of inspection is instituted. So then, it would seem, that inspection as a preventive measure is of subordinate importance; it is the board of supervision or whatever agency that actually rules the conduct of a society, that should be primarily responsible for the well being and success of agricultural co-operation.

Combination in Agriculture and Industry.

Waste in distribution is prevented by employing satisfactory methods, and by regulating the output. The solution to the problem rests on the word co-operation, says a contemporary. Why is it that co-operation is hailed as a great advance step for the agriculturist at the same moment that combination in industrial trade and manufacture is assailed? The fact is that there is not the same possibility in agriculture for combination to extend into monopoly, as there is in the manufactures; and consequently the consumer does not suffer, but rather, more often than not, benefits. It must be remembered, too, that one food product is in competition with another; and thus, if the producer attempts to push the price of one article too high, the consumer will turn to others.

Co-operation, No New Idea.

At the first anniversary of the Co-operative Society, Vembanore, Brahma Shri Vidwan Narasimhachari Swami, spoke on Co-operative Ideals, and illustrated his subject by many quotations from the Smritis of Manu and Yajnavalkya. He proved that "Co-operation was not a new idea invented by any European genius, but was part and parcel of the ancient laws of our country." That 29 poor men of Rochdale, who started co-operation in England with their little shop, would have been surprised to hear of their ancient forerunners in the East; but it is only another proof of the old adage, that "there is nothing new under the sun."

Co-operation in Canada.

A department has been organised in connection with the Canadian Department of Agriculture, for the direction of co-operative

organisations. It is the intention of the Government to establish a string of co-operative societies in Saskatchewan within the next few years, which shall be local in their operation, but federated under one provincial head. It is anticipated that these organisations will be associated with every branch of the farmer's activity, including the marketing of live stock and live stock products, the importation of stock for the purpose of improving present herds, and the handling of seed grain.

Co-operation, a Form of Education.

The last and the best sentence in the latest report submitted by the Registrar of the working of co-operative Societies in Madras deserves careful attention:—

It cannot be repeated too often that co-operative progress is a form, and one of the most necessary forms, of national education, that it requires teachers as well as pupils; preachers as well as workers, discipline as well training; and that to fit the people for the higher stages of activity, they should be drilled for a long time and with much patience and prudence in the ranks of Co-operative Credit.

A Co-operative Bank.

It is proposed to found a Bank to finance the co-operative movement in Bihar and Orissa, the objects of this movement being to teach the raiyat, the petty trader and the artisan the benefits of combined effort and thrift, to secure for the small workers the same position in the money market as the large capitalist, and thus to bring about the moral and material improvement of India.

Social Co-operation.

Mr. Richard T. Ely in his new book on the *Evolution of Industrial Society*, hails Co-operation as, perhaps, the one fact in the evolution of society, which forms the great law of social life. Men learn to act together in increasingly large numbers for increasingly numerous purposes. Individualism in production, exchange, distribution and even consumption gradually yields to co-operation.

The Industrial World.

Manufacturers and Depreciation.

At the Leeds University, Mr. M. Webster Jenkinson, F.C.A., recently delivered an instructive lecture when he discussed "Some principles of accounting affecting cost accounts." In referring to the importance of keeping correct records of all that goes to make up the cost of production he made some very interesting remarks on the question of depreciation, which, he pointed out, is as much an element in the cost of production as are the materials used or the labour employed. "It is feared," said Mr. Jenkinson, "that English manufacturers do not provide sufficiently for depreciation, and as a result are not able financially to replace their plant in order to keep up to date with their foreign rivals. There is not the slightest doubt that the Americans are far ahead of the home manufacturers in this respect, and it is because they are in a position to scrap their plant without financial embarrassment when improved methods are introduced that they are able to reduce their costs of production and get orders in open markets, although their labour is costing more."

Nitro-Cellulose.

An article in the *Dupont Magazine* enumerates the remarkable features of nitro-cellulose thus:—

More than a third of all the vegetable and animal matter of the world, when dried, is cellulose. It is the structural basis of all plants, the chief substance of thin microscopic cell walls.

The principal commercial sources of cellulose are wood pulp and cotton. The wood pulp is used chiefly in paper manufacture, and while cotton cellulose, not nitrated, is used in various industries, it is also the principal basis of nitro-cellulose. Cotton treated with nitric acid becomes nitro-cellulose or guncotton, one of the most important high explosives known.

Nitro cellulose seems destined to be one of our greatest constructive materials. Celluloid, familiar to all, is a solution of nitro-cellulose in camphor and alcohol. It is used in a thousand and one ways for products having an annual value of more than \$4,000,000 in the United States alone, and its use is increasing steadily.

Nitro cellulose is the basis of photographic film, motion-picture film and the coating of photographic plates.

Collodion is nitro-cellulose dissolved in ether and alcohol. Liquid court plaster is nearly pure collodion.

Artificial leather is cloth coated with a sort of collodion. The "dope," used successfully, imitates the appearance and "feel" of leather, but has the added advantage of being water-proof and washable. The better grades of artificial leather are really better than all but the best grades of hide leather, except that no artificial leather will stand abrasion, such as shoe-wear, as well as hide leather.

Large quantities of artificial silk are made from nitro cellulose. This vegetable silk is used not only with cocoon silk but all alone in the manufacture of "silk" fabrics.

Nitro cellulose forms the coating of gas mantles. It is the chief solid in metal and wood lacquers, and in the dope used for putting the patent leather finish on hide or manufactured leathers. It is used for water-proofing straw hats, and for finishing piano cases. It is impossible to predict the multitudinous future uses of this versatile substance.

And in commercial adaptations it is not explosive, nor, except as celluloid, very inflammable.

A Recent By-product Utilization in American Soap Manufacture.

In all soap manufactories there accumulates in due course a soap-kettle refuse known in the trade terminology as the "nigre." What to do with this "nigre" has long been a problem to

the student of the soap industry. True, he could work some of it up with low-grade colored soaps, make it into the so-styled black tar soaps or use it for a brown-black dog soap as a flea killer. But tar soaps are of exceedingly limited use, while any soap white or colored is a good destroyer of fleas, as the alkali lather attacks them instantly.

In Europe, for over a century the "nigre" has been used for the turning out of the coarse brown bar-soap known as carboic soap (10 to 20 per cent. of the acid being worked into the "crutch" or kettle-boil), and this is extensively used there as a disinfecting hospital-floor or prison-floor scrubbing soap; while it also makes a capital cleansing soap for carpets and garments.

The veriest dregs of the soap-kettle, consisting of refuse membranous-tissue particles and even the tiny sand-like bony, gritty minute portions which settle to the bottom of every kettle came to be utilized, writes Mr. L. Lodian in the *Scientific American*, in this nigre-soap. An advantage too lies in the fact that in washing practice, these fragments cause a slight friction sufficient to form a foaming lather.

Nigre-soap must necessarily be a cheap compound, a resin-and-salt product; consequently it sweats in humid weather like the low-priced toilet-soaps to an almost unpleasant stickiness, and "blooms" or effloresces some of its elements in dry spells. In the wash though it acts and wears well and can be used on the most delicate bleached silks, which properly rinsed show a snow white appearance, as the foam from the soap has little colour—a feeble dinginess only. The cake wears down without breakage to an almost paper-thin tablet.

The refuse membranous-tissue dregs or filaments, in an extremely comminuted form, naturally segregate in the molten grease; and after working into soap, they are often still found in the cake in an agglomerated condition—dissolving, however, in the wash uniformly with the rest of the soap. The congregated refuse tissue seen here and there in parts of the contrasting smooth-grain black-brown soap, often presents an almost picturesque

appearance, especially when wet, as of rare-marked mahogany specimens, or beautiful dark-hued fossils.

According to Lamborn, the ensuing analysis of the average nigre soap-kettle refuse explains its make-up—

Water	...	64.32 per cent.
Soap, anhydrous	...	29.04 "
Alkali, free, NaOH	...	0.52 "
Alkali, combined, Na ₂ CO ₃	...	2.17 "
Non-determined	...	3.95 "

The Punjab Cement Contract.

The question of the Punjab Cement Contract was recently raised in the Imperial Legislative Council, when the Hon. Sir F. Currimbhoy enquired whether there is any truth in the newspaper report that the Punjab Government have entered into a ten year contract with a London Syndicate granting to them the monopoly of cement manufacture within the Punjab?

The Hon. Mr. W. H. Clark, Member in charge of the Commerce and Industry Department, replied that the report was not correct in all particulars, the facts of the case being briefly as follows:—The Government of the Punjab has entered into a ten year agreement with the Kashmir Iron Mines and Power Syndicate, Ltd., for the manufacture and sale by it to the local Government of Portland and other cements, limes and plasters. The Syndicate is bound to erect a factory at or near Dandot for the manufacture of cement. The Government of the Punjab has undertaken to buy from the Syndicate during the currency of the agreement all the cements, limes, except unslaked white lime, which it may require for all Government works and works carried out by Government on behalf of municipalities and local bodies. The contract fixes the maximum prices which are to be paid for articles purchased from the Syndicate. The rates prescribed are considerably below the prices at present paid by the local Government, but the precaution has been taken to provide that if at any time the prices exceed the fair market rates they are to be reduced accordingly. The local Government has also agreed to grant the

Syndicate the exclusive right during the period of the agreement to extract marl, slates, clays, loams, lime and sandstone and other rocks from all land belonging to the local Government in the Dandot plateau. It has further stipulated that it will refrain during the currency of the agreement from selling, leasing, or allotting any Government land, and from granting any concession throughout the Punjab to any other person for the purpose of manufacturing Portland cement. The Government of India have approved the agreement, which is not inconsistent with the general policy observed by them in the case of a nascent industry. They are not opposed to the grant of special concessions or to other special arrangements in order to enable a pioneer venture to tide over the difficulties which may beset it in its initial stage. The manufacture of cement has not hitherto been undertaken in the Punjab, and no other company has made proposals for the local manufacture of this article. The high rates charged for cement imported into the province have been a very serious obstacle to important local engineering works, and in particular to the lining of canals. The local Government consider that the arrangement made with the Kashmir Iron Mines and Power Syndicate will greatly benefit the province in many ways by providing an ample supply of cement at reasonable rates. The Government of India do not propose to lay the papers on the table.

The Place of Indian Art in Indian Industries.

"Industry without art is brutality"—this epigram quoted by Mr. Samarendra Nath Gupta in his article under the above title, appearing in the April number of the *Modern Review*, sums up its text and leads the author to some interesting remarks:—

It has to be admitted that art as applied to industry has chiefly a decorative significance. But this function of decoration is not entirely sumptuary or superfluous; on the other hand, it is essential. Art has many possibilities but its chief end is use. Mere substance has no utility. It is the form of a substance that

makes of it an object of utility, and it is with the form of things, which are necessary for life, that art is concerned. A bundle of wool has no utility, till it is converted into some kind of cloth or fabric by means of industrial art.

The author follows up by explaining how art is intimately connected with industry. Art gives colour and form to objects and thus renders them of utility. "A good deal of the success of industrial products is ensured by the proper choice and selection of their forms." It is this aspect of industry that secures handicraft from extinction by the side of mechanical industry. Mr. Gupta says:—

Until recently almost all the mill-made dhoties and sarees used in Bengal and other places came from Manchester and other places. The local handloom industry was carried on on a very small scale. But the prosperity and extension of the foreign mill-trade greatly depended upon the productions of the domestic handlooms, for the mechanical industry merely copied and reproduced spurious and inferior imitations of the finer and more beautiful things manufactured by sensitive handlooms. This is one of the accomplishments of the handicraft which will never be either compensated for or substituted by mechanical industry.

Having established the artistic basis of industry, the writer says that the selection of this artistic element and its application should be based on proper lines. Otherwise, mistakes in this direction would be fatal, from the moral, material and industrial standpoints. The writer, then, urges that in Indian industries the elements of Indian art should be largely, if not exclusively, adopted. It is in the industrial arts the utilitarian aspect of art is directly cultivated. If Indian art finds no expression in Indian industries, the former loses its ground of practical and direct utility, and the latter its fulness of development. Industries without artistic elements have no being. In every industry there must be some artistic elements, and if in industries, Indian art is not given full play, the elements of foreign art are sure to creep in in the manufacture of Indian commodities. This would result, as has already

been the case in some Indian indigenous industries, in the production of hybrids of art and industry, which are not at all actuated by a common impulse. The metal industry of Benares and Murshidabad; the carpet industry of Kashmir, Mirzapur and Amritsar; the gold thread industry of Delhi, Agra and Lucknow; the wood work of Kashmir and the Punjab; the pottery of Multan; the cotton printing industry of Lahore, Amritsar and Delhi, and various other industries of different places have miserably deteriorated simply for the lack of correct artistic understanding and application. This is not a question of mere physical deterioration; the moral deterioration is still greater, still more deplorable. It means a deliberate insult to art and the denial of the regard and respect due to art.

The Indian Workman.

The management of Indian mill hands by Europeans in Indian factories naturally mingles two incongruous and necessarily hostile facts. This is shrewdly remarked upon by a writer in *Burn's Magazine*, who has not, however, come in too late with his observations. The writer says that an assistant arriving fresh from Home and commencing his duties in a large Indian establishment is often bewildered by the seeming indifference of the workmen over whom he finds himself suddenly placed in charge. They appear to have no regard for time, no sense of responsibility, and only a light respect for truth.

The English assistant, foreman, or manager had the handling of men trained in their own environments, and with all the tastes and aspirations engendered by a common heredity. How immeasurably more difficult therefore must the new position be to a young man who has not even the advantage of having previously handled men of his own nationality, training and instincts.

It is the latter that becomes hopelessly non-plussed in the changed scene of an Indian workshop. He finds that the average Indian workman does not possess the faculty of continuous industry, and soon slackens in his task

unless he is constantly watched and urged forward. He will no doubt dub the whole of his workmen a lazy lot of inefficients, and will try to force them on with an outburst of the expressive language of a British workshop.

The writer in the journal already acknowledged, says that our friend is wrong and will be 'hopelessly unsuccessful' in the result. He proceeds:—

The Indian workman, to begin with, is not lazy. Further, he is a peculiarly sensitive being, and the language which would barely impress the feelings of his European prototype will sear into his very flesh and leave him a hopeless mass of jangled nerves.

It seems a pity that each such fresh arrival in India should have to rediscover these things for himself. With Indian workmen, more important even than a grip of the language of the people is a knowledge of their history and personal characteristics.

With all the talk about the industrial transition in India, it should not be lost sight of that the only real home to the worker is still the village. Accustomed for generations to work in their own houses or shops, or on their own plot of ground, the mill or factory is to them a place of banishment. Stories of wealth to be earned may attract them thereto, but they remain birds of passage, bent on saving sufficient money to return as early as possible to the village again to mingle with their own people. So strong are his longings in this direction that the Indian workman will live in the city under conditions of unutterable squalor. Little attempt has been made to provide good dwellings for the artisans working in the mills and factories, it is doubtful if they would appreciate such attempts if they were made, because they have always before them the day of migration. Again, they have up against them the great trammel of caste. It is difficult to strictly conform to the rules of caste in a factory. The bonds of caste may be loosening, but they are still strong. They still constitute the most complete boycott in the world. If a man should be even unwittingly untrue to it, he loses friends, family—all that is dear to him.

This being the case, can we wonder at their indifference to the work of the factory. In their village homes these men are noted for their patient, steady industry. They work contentedly for long hours and for the most meagre remuneration. But there they are in their natural environment.

The factory is a new factor in their economy and they have not yet acclimatised themselves to its atmosphere. The English assistant then is not to run away with his feelings; but, on the other hand, he can really help in the industrial evolution of India if he can help to remove this obstacle by intelligently studying their work in the light of history, and by exercising a generous control over their weaknesses, gradually leading them to understand that the skill of brain and fingers will lead to respect and honour in the city workshop as it does in the village shed.

Dyeing Industry in Madras.

In the course of his Report for last year Dr. F. Marsden, Ph. D., M.Sc., Tinctorial Expert to the Government of Madras, writes:—

It has been suggested to me that I could profitably devote some time to the investigation of the question of preparing standard extracts of the vegetable dyes, that they may be enabled to compete with the synthetic products, but I thought I had made the position clear in my original report upon the "Dyeing Industry in the Madras Presidency" when, in the section dealing with dye-stuffs, I wrote: "The number of natural dye-wares the composition of which has not been elucidated is rapidly diminishing and the dyeing principles of many of them have been prepared synthetically in a state of purity. Alizarine and indigo are two of the best known, but most of the others, not possessing the same valuable properties as regards fastness, would appear to possess no prospect of commercial success against the competition of other artificial dye-wares and are not manufactured industrially."

The Indian dye-wares were largely used in the past, and it is not because they were placed on the market in a crude form that the demand

for them has practically disappeared, but because other substances more suitable for the dyer's purpose have been introduced. Take safflower, for example, giving as it did a delicate rose pink obtainable with no other natural dye-stuff. It could not hold its place against the synthetic rhodamine colours, even though these (at the time of their introduction) were more than twenty times more costly than they are to-day. What prospect is there of a safflower extract displacing these synthetic colours, with a range of shade from salmon to bluish pink, and a fastness superior to that of the safflower dye? Turmeric also has absolutely no chance of recovering its position in the dyeing industry, for the number of yellow dye-stuffs equalling it in brilliancy, and far excelling it in fastness, runs into dozens. Cutch has been largely displaced by khaki and the sulphide dyes, and its importation into Europe is now almost solely on account of the tanning matter it contains. Lac was never of much moment, on account of the shades it gave being rather duller than those of cochineal, though it was used to some extent in combination with the latter. The demand for cochineal, however, has diminished to an appreciable extent with the decline in the demand for scarlet tunics for the Army, and lac-dye is now little more than a bye-product in the preparation of shellac and would find but little, if any market outside India. Combined with the manufacture of shellac, the dye solution might be concentrated and find a market among silk dyers in India, but I am under the impression that the matter is being dealt with to some extent in Bengal, in which Province the bulk of the lac is produced.

The only natural products which are used to any extent in dyeing at the present day are the West Indian woods, logwood and fustic, and they hold their position because they possess certain advantages for specific purposes not possessed by their synthetic competitors; but for many purposes they have been already displaced.

It is because the modern dyeing industry makes demands which cannot be met by the

natural dye-stuffs that I am convinced it would be of no advantage to prepare extracts of these and try and place them on the market.

AN IMPORTANT QUESTION.

A question of some moment has arisen during the period, but it is rather soon to see what the outcome may be. I assisted an England-returned student to give a lecture on alizarine dyeing before the Dyers' Association here, for there has been a suggestion made that, to supply to some extent the demand for the bright shades of imported turkey-red, the dyers should combine and take shares in erecting a modern dye-house with machinery and a steam boiler. The suggestion did not meet with general approval and is still under discussion. One difficulty I foresee is the reluctance to invest money in any scheme which cannot promise an almost immediate return and with the European process of turkey-red dyeing as carried out at present in the mills, it is well known that it requires most careful supervision and, in one respect, does not give a dyeing which meets with the approval of some weavers so well as the country dye. Prejudice plays a great part in this country, and it takes a long time to overcome it.

In Europe, the criterion of a real turkey-red is that the yarn is not so deeply dyed in the interior as near the surface, but here it is demanded that it shall be well dyed throughout. This is attained in the country process, and I am under the impression that it is due to the use of kasa leaf as the source of the alumina required, instead of aluminium sulphate. It would be interesting to find out the condition in which the alumina is contained in kasa leaf, and I intend to take up this question when the laboratory in the new Technical Institute is ready. The whole question of "penetration" in alizarine dyeing is of importance and is receiving attention in the West, and this is another subject, to commence work upon which I am only waiting until the conditions are favourable. I have already drawn the attention of a Government of India technical scholar in Manchester to

the problem, as one upon which he could usefully employ himself.

The employment of soda-ash in place of umari and dhobis' earth is a matter which makes but little progress, and although it possesses advantages in every respect over the earth, the question is not clear with regard to the umari; so, since the dyers will not be persuaded to make trials on a large scale, even though the preliminary trials gave promising results, I see nothing for it but to make such trials myself and see whether we cannot obtain results equal in every respect to those with umari and at a less cost. Messrs. Parry & Co. have had experience in this matter, for they have had a representative here for some months who devoted himself entirely and assiduously to the question. Finally, when results had been obtained in which the dyer himself could see no fault, he could not commit himself until the weaver, the merchant and the customer were satisfied for he could not risk losing his trade by making any change. This is not peculiar to dyers here, but, where a firm in the West sees a distinct advantage in cost, they experiment until they have satisfied themselves that they are on safe ground and then introduce the new idea with confidence.

THE NEED OF EDUCATION.

I am still of opinion that conditions will remain practically unchanged until there is a wider spread of education among the dyers, for but few have any knowledge but that gained by experience, and it is on this account that I am pushing as well as I can the question of giving the youths of the community a good grounding in general subjects in the school, hoping that I shall afterwards be able to give them the special subjects dealing more directly with their work.

The Manufacture of Vermillion.

Though Vermillion is used largely by Hindus, it is not manufactured in India. It is imported from China, according to Charles Fergus in the *Indian Industries and Power*. Vermillion is mercury sulphide (HgS) and Mr. Fergus says that it can be manufactured with more facility

in India than in China. Mercury and sulphur moistened with a solution of Potassium Hydroxide—the caustic potash of commerce—are well ground together and heated together at a temperature of 45° to 50° centigrade. The mixture first becomes blackish, being at this stage the amorphous form of the HgS. known as Ethiops mineral. It then gradually turns dull red and finally a bright scarlet. The caustic potash is supposed to remove any excess of sulphur, and also appears to assist in effecting the molecular change in the mass under treatment from black Ethiops mineral to bright scarlet vermillion. The product is ground, well washed to remove the alkali and finally levigated. A common proportion of materials in the above process is 85 parts of mercury to 15 of sulphur.

In Holland the Dutch use 1 part by weight mercury, 2 sulphur and add to the mixture about 2½ per cent. of its weight of finely divided lead. About 100 kilogrammes at a time are sublimed in iron retorts and the sublimate allowed to cool slowly during 20 hours. It is then ground and levigated.

It may be here mentioned that mercury is imported in iron "bottles," each containing 76 lbs. The proportions of the two minerals in vermillion are, mercury 86.2 + Sulphur 13.8 = 100. Ratio S1 : Hg. 6 : 2.

Another process is to mix together in a shallow iron pan 300 parts of mercury and 68 parts of sulphur moistened with a little solution in water of caustic potash and ground. 160 parts caustic potash moistened with (not dissolved in), a very little water is then added and the whole boiled for 30 minutes. Water is added from time to time to keep up the volume of the pasty mass, which is kept constantly stirred with a large iron spatula. The mass becomes first brown and gelatinous, dull red, red, and finally scarlet. It is kept constantly stirred till quite cold, washed until free of alkali, testing the washings with litmus, ground and levigated.

THE BRUNNIN PROCESS.

300 grms. are mixed with 114 grms. sulphur

and ground together adding from time to time small portions of a solution of 75 grms. caustic potash dissolved in 450 C.C. water. Stir continually and well until thoroughly incorporated, then heat from 7 to 8 hours at 45° to 50° C. adding water to keep up the volume. The mixture is at first black, then turns brown, red, and finally scarlet. It is washed, ground and levigated.

The Lacquelin process is similar, but the proportions are 90 mercury, 30 sulphur, 20 caustic potash and 30 water. The mass is ground together and the whole process is the same as the last described except that the mass is heated to 80° C. for one hour.

Where a penta-sulphate of potassium is obtainable then the proportions of mercury and sulphur are 5 to 1 + 2½ sulphite solution on a base of 2 parts K² S to 7 parts water are placed in iron bottles and heated to about 30° C. to start the chemical combination. The temperature of the bottles—which are laid in a row over a charcoal or coke furnace and constantly turned round to mix the contents—is raised to about 45° C. and kept at that temperature for 4 hours. The bottles are then placed in a stove and kept at a temperature of 45° to 50° C for three days. The stove and contents are then allowed to cool slowly and then treated with a solution of sodium hydroxide (caustic soda) to remove any uncombined sulphur; then washed, ground and levigated.

The reader will note that the proportion of sulphur in the above process is in excess of that of the combining ratio Hg. 6.2 : S1, this excess being added probably to favour combination and removed by the soda solution: forming with the latter sodium sulphide. The above is a very simple process and appears well adapted for India; especially as it will be noted that there can be no escape of sulphur or mercury fumes: but readers will be able to judge for themselves.

The above are some of the processes in use in Europe. The Chinese apparatus is of the simplest description. A clay jar about 3 feet high by 2 feet at the widest part, which is about 4 inches below the mouth, and tapering down

to 18 inches at 6 inches from the lowest part of its rounded bottom is suspended by the widest part in a furnace built of rough stones, or clay like a common Indian clay "choola" on a large scale, or of cutcha bricks laid in clay. The mouth of the jar is about 16 inches wide and covered with a hemispherical lid luted on with a mixture of clay and rice cumjee. The jar whilst empty is treated by a fire of brushwood of small sticks to a dull red. Then half a "bottle" (38 lbs.) of mercury which has been previously well ground with about 20 lbs. of sulphur and moistened with a solution of caustic potash is dumped in and rapidly stirred with a piece of wood shaped liked a short oar. As the sulphur is much in excess of the combining ratio copious fumes are given off, but meanwhile the remaining 38 lbs. of the bottle of mercury is gradually added. The mass is kept stirred till it begins to turn black; then the lid is luted in its place and the whole kept at about 140° to 150° Fahr. for about 12 hours. The furnace is then stoked until the jar—as seen from the always open mouth of the furnace—begins to show the faintest signs of turning red. It is kept at this temperature for about 3 hours and then the whole allowed to cool down for 24 hours; the mouth of the furnace being meanwhile filled up with stones and mud to keep the heat in; as slow cooling is required. The process is then complete. The jar, with its contents, is then lifted out and broken and the vermillion scraped off the broken pieces and lid.

Tanning Skins.

The Sydney Town and Country gives the following as a "lightning tanning process":—

The lightning or sulphuric acid process is the quickest method of tanning wallaby, rabbit, and other skins, and is a very simple one. Pour five or six quarts of boiling water over two quarts of bran, and then strain the infusion. Make an equal quantity of salt water, by adding to bloodwarm water as much salt as will dissolve. Mix the bran and salt water, and to each gallon of the mixture (when no more than lukewarm) add an ounce of sulphuric acid (H^2SO^4). Immerse the skins

in the liquor, stirring them occasionally till tanned, which will be in about twenty minutes. When tanned, rinse in clean water, and hang out in shady place to dry. Pull and stretch them well while drying. By sufficient pulling they can be made quite white. Dry skins should be soaked in warm water, before tanning till they are quite soft, and all flesh and grease should be well cleansed from them.

The Tata Silk Farm.

Under the management of Mr. E. Jackson over 50,000 silk worms are now being reared at the Tata Silk Farm, and it is expected that these will build their cocoons in from 8 to 10 days. They can be seen at the Farm. They were brought from the best French houses during October last, kept in cold storage and brought out to hatch at the end of last month. About the 25th instant each worm was expected to make about 500 yards of silk. This is the second year this has been done. The eggs are offered every spring for sale at from Rs. 3 to Rs. 4 per ounce.

New Unbreakable Glass.

The strengthened glass of recent French experiments consists of a thin sheet of celluloid between two layers of gelatine, each covered by a sheet of glass. Perfect adhesion is given by submitting the whole to heavy pressure. The compound glass is perfectly transparent, and when struck a heavy blow with a hammer, stone, or other object, is simply cracked locally, with no flying about of sharp fragments. Such glass should lessen injuries in accidents to automobiles, railway carriages, etc.

Quaint Camphor Preparation.

The Chinese adopt a very primitive method of extracting camphor from the camphor tree. The leaves are placed in a wicker basket fixed over an iron cauldron containing water. On the top of the basket a basin of cold water is placed. The steam from the Cauldron passes through the leaves of the basket and carries over the camphor vapour which is deposited in the form of camphor on the cool under surface of the basin.

The Commercial World.

Business Enterprise in India.

The business enterprise in India during the month of January 1914 may be seen from the following abstract of Companies registered in that month:—

	Rs.
3 Banking and Loan Companies...	8,50,000
5 Insurance Companies	13,00,000
2 Printing, Publishing and Stationery Companies	40,000
6 Trading Companies (other than specified above)	50,07,96,400
1 Cotton Mills Company	5,00,000
1 Jute Mills Company	2,50,000
1 Rice Mills Company	1,50,000
1 Oil Mill Company	1,50,000
2 Tea Planting Companies	3,50,000
1 Sugar Manufacturing Company	6,00,000
28 Grand Total	50,48,96,400

The Power of Co-operation in Export Trade.

At a meeting of the Illinois Manufacturers' Association, Mr. Jas. A. Farrell, President of the United States Steel Corporation, said that it is largely to co-operation that European countries owe the expansion of their export trade. In Germany over six hundred national commercial organizations, with five thousand auxiliary branches, have proved what success can be attained by concentrated effort. In the export field three of the parent organizations, with a membership of over 30,000 firms, exert their combined influence in fostering the export trade of Germany. What is true of Germany in this respect is also true of England, France, Belgium, and Austria-Hungary. There is a widespread belief that Germany owes her position in exports to Government aid. This is only partially the case. It is the co-operation between the Government and her commercial organizations which counts in furthering the interests of the German Empire in the world's

markets, and in moulding the economic position of the country. In the United States the Department of Commerce is to study the question of the economical efficiency of the large business organizations of the country, for the purpose of ascertaining, *inter alia*, to what extent their facilities have enabled them to adopt refined and scientific methods such as are not possible in the case of small businesses. This study will, no doubt, make clear that the large companies are taking advantage of every opportunity to reduce costs of manufacture without reducing wages. By this, and by improving their plants and processes, they are enabled to maintain their position as exporters on a large scale. It will demonstrate the utility of export trade in maintaining activity in times not only of depression but prosperity, since it has been shown that export trade, to be of value, must be continuous and not intermittent or occasional.

Foreign Trade of the United Kingdom.

The foreign business of the United Kingdom in 1913, as recorded by the Board of Trade, is much the largest that that country has ever had. Not very long ago 1907 was looked upon as a year which it would be hard to surpass. But mills and workshops have greatly increased since then. The imports and exports in that year and since have been as under:—

	Imports.	Exports.
1907	645,807,942	426,035,083
1908	592,953,487	377,103,824
1909	624,704,957	378,180,347
1910	678,257,024	430,384,772
1911	680,157,527	454,119,298
1912	744,640,631	487,223,439
1913	769,032,959	525,471,416

A Few "Don'ts."

In writing advertisements and printed matter, it is necessary to keep in view the following points:—

The main point is to say plainly and concisely

what you have to say, and to avoid exaggeration and insincerity. Avoid also the use of many different faces of type—do not make your advertisement all head lines, do not seek to be smart or familiar; on the other hand, do not grovel. If you have any self-respect or respect for your business there is no reason that you should forget it when you write an advertisement. Use an easily-read type—aim to provide a strong heading, and if you have a large amount to say, split up your copy with cross headings. Put your name at the bottom rather than at the head of the advertisement—do not be content with saying how good the articles are, but suggest some action on the part of the reader, such as writing for a catalogue or sending for samples. Never use illustrations merely for the sake of attractiveness, unless they have some direct bearing on the article to be sold or the text of the advertisement.

Business.

The world's chief business is business, and consequently business by sovereign right takes first pick of ability.

On the battle ground of commerce men succeed or fail, rise or fall, solely on merit; efficiency alone determines their chevrons and shoulder-straps.

We've outgrown the notion that the only path to glory is the military road. We no longer post the journal of civilization with the blood-stained sword-point.

The battle for betterment still wages, but on new fields and with new weapons.

Mars has discarded greaves, coifs, and cuirass for a sack suit; the old guard carries a fountain pen and a sample case but the same fervour and intrepidity that signalized Waterloo persist unabated, simply translated into more worthy avenues.

It takes as wholesome, and resourceful, and fearless a man to survive in the big struggle of business as ever endured upon the plains of Africa or before the walls of Salamaned. Weaklings, cowards, quitters, doubters, sneaks, snides, and cheats suffer the same obloquy and defeat in trade as in war.

In the Dark Ages, six feet of strength and

valour would have sneered at trade—a mightier work demanded attention.

There were eras when every courageous, intelligent, dogged man was needed under the banners of war, for war was once the only efficient instrument of the young civilization.

But the hour of the bruiser and the swash buckler has closed.

We have climbed into a higher estate. Better armies than they led command the earth—the battalions of business, whose generals have demonstrated in their careers the possession of wit enough and grit enough to ride at the head of the best body of troops.

Knock about the aisles of a modern store and consider the genius essential to the proper management of a commercial regiment.

Comb the past for the betters of the torrent-tamers and mountain conquerors whose audacity and tenacity have turned the waterfall into light and power and made possible transcontinental railroads.

Think of the business men with grit enough to pile a fifty-five storey Campanile into the pathway of the planets. 'But,' you say, 'they do it because it pays.' True it is profitable to serve; for in the twentieth century, only those who serve can survive.—Herbert Kaufman in *Reynold's Newspaper*.

The Responsibility of Auditors.

A legal decision of some importance was given recently in the Chief Court of Burma by Mr. Justice Young, in the case of the official liquidator of the Bank of Burma *versus* Messrs. Stuart, Smith and Allan, the auditors. The liquidator claimed from the auditors the sum of Rs. 61,687, which had been paid out in dividends, on the ground that the dividend was paid out of the capital and not out of the profits. The respondents Messrs. Stuart, Smith and Allan made a preliminary objection and stated that the proper course for the liquidator to follow was to file a suit, and that the section and procedure authorised is not applicable to them, which, with the application for particulars, formed the sole question for determination before the Court. His Honour, in the course of a long order, held that Messrs. Stuart, Smith

and Allan were "*de facto*" officers of the bank. The liquidator, in addition to withdrawing all charges of actual fraud, undertook to supply the auditors with a list of the debts of the bank on which he based the statement that the profits of the bank for the half year ending June 30, 1911, were nil, and that this should have been known by the auditors if they had exercised ordinary skill and diligence. Instead they certified the profits to be Rs. 1,62,227. His Honour therefore declined to stay the proceeding under the section as against the auditors and dismissed the preliminary objection with costs. The importance of this decision lies, of course, in the ruling that the auditors in this case were "*de facto*" officers of the bank, and as such were liable, with the directors, to make good losses arising through negligence or fraud. The position of Messrs. Stuart, Smith and Allan, in regard to the defunct Bank of Burma, does not appear to have been in any way different from that of the auditors of other banks, now in liquidation, and for this reason, writes the *Commerce*, Mr. Justice Young's ruling must be regarded as an important precedent.

There have been of course, innumerable English legal decisions, in Courts at Home, to the same effect. In the case of the Irish woollen Company, Limited, *versus* the auditors (1900) it was held that an auditor is liable for any damage sustained by means of falsifications which might have been discovered by the exercise of reasonable care and skill in the performance of the audit. In the case of the Leeds Estate Company *versus* the auditors, again, responsibility was fixed on the auditors for dividends paid out of capital, and many other rulings to the same effect could be cited. Indian Case Law has now come into line with that of the English Courts, and Mr. Justice Young's decision in Burma, coupled with the prosecution of the auditors of certain Bombay banks, leaves little doubt as to the attitude of the Indian Courts in regard to auditors and their responsibilities.

On Cost.

Perhaps, in the modern industrial organisa-

tion, there is no problem which presents so many difficulties to the manufacturer as the costing problem. Good costing is one of the first essentials to good factory legislation. It is mainly a problem of internal organisation which cannot be solved by any general method. A recent issue of the *Organiser* contains an article on the subject, written with a view to bringing a practical costing system within the reach of the small manufacturer.

Manufacturing cost, says the article, consists of three distinct sections—labour, material, and expense. This is supplemented in many businesses by another item, that of selling expense. The first vital principles to follow in creating a cost system are—first, to ensure that every item of expenditure is charged to the job, if it is directly entailed by any particular job; second, to effect a distribution of the "general" expenditure over the jobs in as equitable a proportion as possible.

In order to simplify these operations every job should be given a distinct job number. The job numbers should be given consecutively as jobs are issued, and a cost card or cost sheet prepared for the complete product under a distinct order number. The arrangement of cost cards, or cost sheets, will depend upon the class of business handled. Conditions must also determine whether time cards, or sheets, are to be issued for each operation performed, or for a day's or a week's work. All labour must be directly charged to the job, and each workman must enter his time on each operation against the job number so that the time can be posted to the cost card.

ISSUE OF MATERIALS.

Material should only be issued through the stores, against a signed slip giving the order number of the job it is required for. Any material not used should be entered on a credit slip of a different colour to the "material issued" slip, and, particulars of these slips should be posted to the cost sheet. In the case of machinery or articles made up of several distinct parts, the cost sheet should be divided into sections so as to enable a separate cost to be obtained of each part. Where the machine

is standard, the sheets can be printed or duplicated ready for use.

This job cost of labour and material gives the "prime" or "basic" cost. The next item is that of expense. In figuring expense the same principle of charging direct to the job must be followed as closely as possible. Thus a tool used only once on a special job is a part of the cost of that job, and is not a general charge.

Averaging expense must be avoided wherever possible, as it is through averaging that the manufacturer is led astray by false cost figures. In some cases it is unavoidable, of course; but even if absolute accuracy cannot be attained, every effort should be made to get as near to it as possible.

ANALYSIS OF EXPENSE.

Expense resolves itself into three sections— "direct" expense, which means expense actually incurred in the course of production other than direct labour and materials; "indirect" expense, which is expense nominally chargeable to production, but not directly incurred by it; and "selling" expense, which is the cost of disposing of the product. In the case of a factory operated for production only, and not having its own selling expense to meet, the selling expense would be almost negligible, and might be treated as a part of the indirect expenses of production.

The simplest method of distributing expense is to first departmentalise it. The expense of each individual section of the factory should be obtained, arranging the sections as equitably as possible. Thus a department used for two classes of work, one using power and the other not, could not be treated as a single section, as the section not using power would in that case have to bear its share of the other section's power expense.

Anything directly chargeable to a section should be so charged. Anything occurring in office expense which is not actually a charge on production should be treated separately as a selling expense.

The Transition in the Internal Trade of India.

In this article appearing in the April number

of the *Modern Review* from the pen of Prof. Radha Kamal Mukerjee, the reader is brought to face some interesting and curious facts concerning the methods of trade organization in India. The writer points out:—

(1) Not only the middleman who carries on his trade individually with his own small capital but also the method of his buying and selling are gradually becoming things of the past. The middleman now carries on his trade on an individual proprietary basis. Again, he purchases and sells at retail rates, and he deals only in those commodities which are purchasable and saleable in a particular locality. He commands a local area, selling all the characteristic economic products of that area.

And as the volume of trade increases, the retail trade will be superseded by wholesale trade. The trade on an individual proprietary basis will give place to trade on joint-stock basis. Specialisation will be more fully carried out; and as means of communications are developed, trade will come to be localised. In Mookerjee's opinion, these changes have already begun in India.

(2) The writer points out with figured statistics that unfortunately our internal trade guided by foreign merchants is gradually tending to exploit our agriculture in the interests of foreign countries. Thus, the increasing demand for raw materials for manufacture of jute and cotton, oil-seeds and dyeing stuffs has led in the same tracts to the actual contraction of the areas under rice and wheat. The reason of the Indian peasant's preference for the production of non-food products for the foreign market is his growing dependence on the foreign trader for his cultivation. We are gradually becoming familiarised with the system under which the foreign exporting firms and their local agencies supply the cultivator with cash advances. In tracts where the peasant is hopelessly poor and indebted and cannot even procure the money-lender's aid, he is forced to seek and accept advances from the agents of the European firms and grows raw materials for the European markets in preference to food-crops consumed in the coun-

try. The case of jute cultivation is exceptional, the cropping of jute being on the whole more profitable to the peasant than that of food stuff.

(3) Mr. Mookerjee is of opinion that the network of railways in the country helps this process of exploitation. He says that the railways guided and controlled by the European mercantile community have become agencies of a trade system which has been exploiting our agriculture in their own interests. So far as our industries are concerned, the railways have not given them any encouragement. The freight charges are often too high and these high rates prevent the development of our cottage as well as factory industries. In America and Europe, cheap freight charges have played a very important part in developing infant industries. In India the railways fail to utilise the industrial resources, while they are exploiting our agriculture in the interests of the European merchants.

What is wanted in our country is a clear knowledge of the comparative economic importance of railways and waterways. In all countries and especially in an agricultural country like ours waterways ought to be looked upon as an essential and necessary supplement to railways. Bulky goods, raw materials which are cheap and cannot bear heavy costs of carriage, commodities which need not require rapid transit should be transported by waterways.

"But the railways are not solely responsible for this exploitation. The entire organisation of trade in which the peasant is helplessly subservient to the foreign exporter is responsible for this process. Our trade is now guided by foreign merchants, financed and directed according to their interests. Our system of transport is made to suit their needs, and our agriculture, which is our national industry, is now coming to be exploited for the markets of foreign countries. A more alarming situation in economic life can hardly be conceived! In order to prevent the system of foreign exploitation of our agriculture, which makes us more and more dependent on the markets of the world and threatens to jeopardise the food-

supply in our home market, the present system of agricultural credit has to be reorganised. The reorganisation of trade must be preceded by the reorganisation of credit. If the peasant becomes no longer dependent on the European merchants for the cultivation of his crops, he will not cultivate such crops as are not more profitable and which do not satisfy the hunger of his family, ever on the verge of starvation. How agricultural credit can be reorganised and the sale of agricultural crops made to serve the economic needs of the village are therefore two of the most important problems of our economic life. There is, no doubt, that co-operative credit and co-operative sale of agricultural crops among villages will be important steps in this direction."

The Relation of Government to Commerce.

This is the title of an interesting article appearing in the March number of the *International Review of Commerce and Industry*. "Trade and Commerce provide the means whereby the material body of the nation derives its nourishment, the source from which all revenue is produced, the base which supports all civilized Governments." Taking this extract from an article in the first number of the *International Review* as a theme, the writer shows the grave need there is for a greater public interest in England in the commercial welfare of the country. The writer has some strong words to use against one and all in England, who have anything to do with the commerce and trade of that country. Each succeeding Chancellor of the Exchequer frames his budget according to the state of the country's trade, but very little is done to expand revenue by the encouragement of trade. All expert opinions as to the future prosperity of the country, whether in the Press or elsewhere, are based on enquiry into the existing condition of trades and industries, yet both the Press and the economists do surprisingly little to advocate the encouragement of trade or to educate the general public to a due realization of its importance. The older Universities do not interest themselves in commercial education,

and the public schools are indisposed to give modern training.

Even those who are more directly dependent on trade for their livelihood are not infrequently ashamed of their connection with it.

The writer proceeds to say that in a free trade country like England the three main factors of industrial prosperity are economic soundness, security of trade channels, and constant watchfulness for new opportunities.

The writer confines his attention largely to the third of the essentials, examines the Government estimates of expenditure for the year 1913-14 and shows how small is the amount expended directly for this purpose.

According to the writer, the total public revenue of the country was estimated at £194,825,000. The estimates for expenditure on the Board of Trade (excluding Labour Exchanges, Trade Boards, Patent Office and Companies Dept.) amounted to £213,579. Those for the Diplomatic and Consular Services amounted to £735,356. Even if these two items are taken to be entirely applicable to trade development, which they are not by any means, they must be admitted to be absurdly small in comparison with total revenue. The relation of their total to gross income is something like one-half per cent., a relation which no successful business company would regard as by any means a sufficient appropriation for pioneer work.

Next, the writer addresses himself to the question how best an extension of the existing system can be brought about, admitting that it is desirable. The following is a summary of the writer's recommendations:—

(1) The first essential is that the Government should realize its duty towards commerce by providing a sum adequate to pressing needs. While the official organization does not directly place a cash balance at the disposal of the Exchequer, it is, in fact, and could be still more, in the broad sense rather than the narrow one of direct contribution to income, a revenue producing organization; it should, therefore, be regarded in that light when expenditure is apportioned.

(2) As for the organization itself, the Department should be housed in adequate premises in a central position where it could not fail to be noticed and where every facility for expansion would be available. It should be divided into sections geographically.

(3) In addition to the central organization in London, active steps should be taken to extend the system to industrial centres in the provinces. For this purpose a travelling commissioner should be appointed, who would make it his duty to get into touch with producers and traders all over the country, to explain to them the exact functions of the Department, and to illustrate the way in which the organization could best be utilized by them.

(4) Always bearing in mind our contention that it is in the interests of the Government to encourage commercial development, it follows that it is also in the Government's interest to see that firms utilize the organization established for the purpose. Some effective system of advertising the organization should be established, but it should be remembered that it is only by constant personal contact with firms that it can hope to be really efficient, or that requirements of business firms can best be gauged.

(5) The collection and exhibition of British goods abroad, and of foreign goods which successfully compete with British goods, for the information of firms at home, should be accounted amongst the most important duties of the organization. To this end the Exhibitions Branch of the Board of Trade and the Commercial Intelligence Branch should be brought into direct co-operation. The exhibition of British goods abroad is one of the surest ways of making them known and ultimately effecting sales; the extension of such Exhibitions organized by the Board of Trade on its own initiative would be most desirable.

(6) There is an urgent need for the expansion of the system of Trade Commissioners to foreign countries.

The writer spiritedly concludes in these words:—

"As long as the idea of Government assist-

ance to commerce is entertained, it is reasonable to argue that it should be on an adequate scale. It is both undignified and dangerous for the Government to intervene in the matter unless it can guarantee the greatest possible efficiency. We repeat here our main contention that if trade is the original source of revenue its encouragement should be a first charge on the nation's income, so that by further expansion further revenue may be gained, and the general community may be proportionately benefited."

The Indian Government's Work.

In a lecture delivered at Karachi, the Hon'ble Mr. M. V. Nicholas, Chairman of the Karachi Chamber of Commerce, said that sixty years ago less than 200 miles of railway existed in India. In 1912 over 33,494 miles of line were open, costing 308 millions sterling, which in that year carried nearly 14 million passengers, 84 million tons of goods, and returned a net profit to the State of nearly 4 million sterling after meeting all charges for interest on capital.

Irrigation in 1912 showed that about 47,000 miles of canals and distributaries were working, irrigating an area of about 17 million acres at a capital cost of about 40 millions sterling and showing a net return of 6·6 per cent.

Value Payable Articles.

The total number of value payable articles of all kinds sent through the post last year was over 8 millions as compared with 7 millions in the previous year and nearly 11 crores of rupees were recovered by the Post Office in payment for these articles. Most of this trade is done in Calcutta, the number of articles posted there being 2½ millions and the amount realised for the tradesmen of the premier city being over Rs. 295 lakhs, thus indicating that the removal of the capital has had no effect on the trade of the city. The number of articles posted in Bombay was only 1½ million and the value realised a little over a million sterling.

World's Output of Iron Ore.

According to a Return recently issued by

the Board of Trade, London, the world's output of iron ore in 1912 was about 152 million tons; although the 1911 output was about 5 per cent. less than in 1910 the figures so far available indicate that the 1912 production was more than 5 per cent. above the 1910 figures. The principal producers of iron ore are the United States, Germany, France, the United Kingdom, and Spain, in the order given, these five countries producing about six-sevenths of the total output of the world.

Rice Import into Ceylon.

It is estimated that the imports of rice from India into Ceylon have during a century increased 24 times while the population of Ceylon has increased five times. In 1911, Ceylon imported 12 million bushels of rice for a population of 4 millions; in 1811, the imports amounted to 500,000 bushels for 80,000 people.

Another Exhibition.

The Tokyo-Taisho Exhibition will be held this year in Ueno Park, Tokyo, under the auspices of the Tokyo Prefecture. It is understood the Exhibition will open on the 20th March and continue till 31st July. A "Foreign Pavilion" is to be erected for the exhibition of foreign products.

Indian Companies Act.

The *Gazette of India* of 28th March contains the Rules framed by the Governor-General in Council, in exercise of the powers conferred by Section 151 of the Indian Companies Act, 1913. The rules take effect from 1st April 1914.

Earnings of Indian Railways.

The total approximate gross earnings of State and Guaranteed railways from 1st April 1913 to 14th March 1914 show a gain of Rs. 96,62,850, as compared with the figures for the corresponding period of 1912-13.

Registration of Companies.

It is notified that from 1st April 1914 there will be an office in Bombay for registration of Companies under the Indian Companies Act and Mr. J. C. D. Almeida is appointed as Registrar.

Openings for Business.

[For particulars, address the Director-General of Commercial Intelligence, New Imperial Secretariat I, Council Street, Calcutta, mentioning the *Wealth of India*. Firms that may like to follow up any enquiry should give proper references and restrict themselves to those enquiries only which they are fully and seriously qualified to handle.]

ELECTRICAL SUPPLIES.

A London firm is desirous of communicating with importers of electrical supplies who require the service of an English purchasing agent. (C. 279).

GLASS CHIMNEYS.

A Calcutta firm is desirous of communicating with manufacturers in or near Calcutta of glass chimneys for lamps. (C. 291.)

CHILLIES.

A firm in Brussels is desirous of communicating with exporters of chillies. (C. 292).

DATES.

A merchant in Bahrein, Persian Gulf, is desirous of communicating with buyers of dates at Singapore, Beirut and Zanzibar. (C. 293).

CUTCH.

A firm in Johannesburg, South Africa, is desirous of communicating with exporters of cutch. (C. 314)

PEARLS.

A merchant in Moscow, Russia, is desirous of communicating with sellers of pearls. (C. 315.)

RUTILE.

A firm in Philadelphia, U. S. A., is desirous of communicating with sellers of pure rutile for pottery work. It must carry at least 94 per cent. titanium oxide and less than 2 per cent. iron oxide. (C. 316.)

CORUNDUM ORE.

A merchant in Bimlipatam, South India, is desirous of communicating with buyers of red transparent corundum ore. (C. 317.)

BEEBLE NUTS.

A firm in Bandjermasin, S. E. Borneo, is desirous of communicating with importers of beetle nuts. (C. 318.)

WILD MACE.

A firm in Baltimore, U. S. A., is desirous of communicating with exporters of "wild mace" or the Bombay mace (*Myristica vialabarica*, (C. 319.)

STEEL FENCE POSTS AND WOVEN WIRE FENCING.

A firm of New York, U. S. A., is desirous of appointing agents in Bombay, Madras and Calcutta for the sale of steel fence posts and woven wire fencing. (C. 320.)

TAPIOCA.

A merchant in Delhi is desirous of communicating with sellers of tapioca. (C. 323.)

CORN SILK.

A firm in New York, U. S. A., is desirous of communicating with shippers of "corn silk" (i.e., the fluff on the top of the Indian maize stalk). (C. 324.)

FRUITS.

A merchant in Smyrna, Asiatic Turkey, is desirous of appointing agents in Calcutta, Bombay and Madras for the sale of dried fruits (sultanas, red raisins, figs, almonds, etc.) (C. 326.)

RAMIE RIBBONS.

A London firm is desirous of communicating with shippers of ramie ribbons; the firm is prepared to pay £10 per ton delivered at an Indian port for shipment to London. (C. 330.)

SOAP NUTS.

A firm in Lahore is desirous of communicating with buyers of soap nuts with or without kernels. (C. 331.)

WORMSEED AND ASAFETIDA.

A merchant in Bordeaux, France, is desirous of communicating with sellers of wormseed (*Artemisia Maritima*) and asafetida. (C. 332.)

AGRICULTURAL TOOLS.

A firm in Iowa, U.S.A., is desirous of appointing agents for the sale of hoists and agricultural tools including such articles as wire stretchers, galvanized baskets, garden ploughs, stake irons, post hole augers, post hole diggers, litter carriers, spades and trowels and lawn weeders. (C. 333.)

The Economic World.

Infant Mortality in England.

Some idea of the success of the attempts made by local authorities in England to combat infant mortality may be gained from the fact that in the past seven years there has been a saving of the lives of 185,722 infants in England and Wales. The problem has not been studied in any systematic manner in India, remarks the *Hindu*, and local bodies in India would do well to take note of a remarkable report on infant mortality recently issued by the Local Government Board in England. The Report treats of 241 urban areas, whose population vary between 20,000 and 750,000, and whose aggregate population comprises nearly three-fifths of the total population. It is mentioned as an important fact that the experience of 1911, when the summer was very hot, shows that the saving of life cannot be attributed merely to favourable climatic conditions. The result must be due to improved sanitary and housing conditions, more efficient municipal and domestic cleanliness, education in hygiene, increased sobriety, and the widespread awakening to the national importance of child mortality in concentration on efforts of child welfare work such as had never previously occurred. Summarising the mass of statistics presented, it is declared that infant mortality is higher in towns than in rural areas. The chief apparent exceptions to this rule are large, compact villages having urban characteristics, such as the mining villages in Durham. The marked decline in infant mortality during the years 1901-1912 has been most pronounced in the last nine months of infancy, but it has also been considerable in the first three months. Even during the first month of life there has been improvement. Further, a higher infant death-rate in a given community implies in general high death-rate in the next four years of life, while low death-rate at both age periods are similarly associated. It is concluded, therefore, that results are due to certain local conditions. Among the factors influencing the result

are industrial employment of women which must necessarily involve some neglect of home and young children, sanitary methods, unpaved yards and streets, and inefficient scavenging. Tenement and other small dwellings, where water is distant to fetch and remove, where cleanliness is consequently difficult, and where food cannot be satisfactorily stored, are also factors that count. Naturally infant mortality is highest among the poor, poverty being a direct cause, where it leads to mal-nutrition and lack of adequate care of the infant. Poverty is not infrequently associated with ignorance, carelessness, overcrowding, uncleanness, alcoholic indulgence, and diseases. The abandonment of breast-feeding without proper cause is mentioned as a most important factor. Great stress is laid on the value of child welfare work, which includes the care of the mother before the birth of the child.

Rating in Rural Areas.

At a recent meeting of the Viceroy's Legislative Council, the Hon. Rai Sri Ram Bahadur moved the following resolution:—"That this Council recommends to the Governor-General in Council that the Government of the United Provinces of Agra and Oudh and of such other provinces as the Government of India may consider proper, be invited to express their opinion on the advisability of extending the principle of levying a portion of the local rates and cesses on persons residing in rural areas who are not agriculturists but carry on other professions or trades."

The Hon. Rai Sri Ram said that the inhabitants of rural areas might generally be classified into (1) landholders; (2) agriculturalists; (3) money-lenders, dealers in grain, shopkeepers and tradesmen; and (4) artisans and labourers. In the United Provinces, the whole burden of paying rates and cesses had always fallen on the first two classes, i.e., on people connected with the land. Those rates and cesses, combined with some local incomes and supple-

* mented by a contribution from Provincial Funds, constituted for each district what was called the "District Fund," which was spent by the District Board on various purposes. All classes of the rural population, without any distinction, got the benefits accruing from the objects upon which the proceeds of rates and cesses were spent. With the exception of those who were assessed to pay income tax the rest of the individuals fell in the category of trades. They did not pay any tax and did not contribute anything towards the expenses incurred by District Boards. The speaker said it was not the object of his resolution to touch those classes of the rural population who were artisans and labourers, and whose earnings were very small, and who, in the majority of cases, had very precarious means of living and were thrown out of employment when famine and scarcity made their first appearance. But it would be an act of justice if Government would take steps that money lenders, shopkeepers, etc., who paid no tax at all and had the means of paying it, be made to contribute a portion of the money spent on objects from which they derived benefits equally with the landholders and agriculturists. The laws at present in force imposed upon landholders and agriculturists alone the liability of paying rates and cesses. If Government decided to impose the taxation suggested in the resolution, they would have to consider whether an opportunity should not be taken of giving partial relief to the landed classes by reducing the rate of their cesses *pro tanto* to an amount which might be realised by the introduction of the proposed change into the system of taxation. It was the classes connected with the land, who had borne in the past the principal share in the increase of taxation, and who suffered most grievously from famine, which was now of frequent occurrence. The Hon. Rai Sri Ram next gave a detailed history of taxation in Northern India, and, continuing, said that since 1905, when the famine cess was repealed and 1906, when the Patwari rate was abolished, no further relief had been given to the landholding classes. They had

appealed from time to time for relief from the cess to meet the expenses of the rural police, and they had been hoping to be placed on an equal footing with municipalities by being relieved of village police charges.

In conclusion the speaker said that Local Governments, when submitting opinions on the subject should be in a position to estimate the amount which the tax might bring in their respective provinces, the number of persons from whom the tax was likely to be collected and the method to be adopted and the machinery to be employed for collecting the tax.

The Hon. Sir William Meyer replying to the discussion on the resolution, said he regarded the resolution as a request for a readjustment of taxation which raised a very complicated issue. The question had attracted a good deal of attention in England, where under the Unionist Government a Committee was appointed to deal with the question under the chairmanship of Lord Balfour of Burleigh. The Committee had written an able report, but since then, nothing had been done. The incidence of taxation was an important problem, and he would like to remind the Hon. mover that all economists held that taxation was popular or otherwise with the ease with which it was collected, and the amount of discontent it created. Another objection to the resolution was that so far as the Provinces had power he would not infringe on them. He could not entertain such specific proposals but he would assure the mover that if Local Governments made any recommendations to the Government of India which might involve legislation, they would receive the sympathetic consideration of the Government of India. Sir William hoped that the mover would not press the motion. The Hon. Rai Sri Ram then withdrew his resolution.

Indian Economic History.

Mr. S. Ranganath has contributed his second and concluding instalment on Indian Economic History to the February number of the *Hindustan Review*. In this he points out

how our manufactures were swept away by the repressive measures adopted by the East India Company; and later by the imposition of hostile tariffs on Indian exports. Matters did not grow better even after the cessation of the East India Company. Though capitalist production carried on in steam factories rose in Bombay, it was not left to progress unchequered, owing to the greed of Manchester. The writer says that to-day though the number of mills and spindles are greater, the per capita output has not kept an equal pace. And when under peculiar financial pressure in 1894, the import duty was restored, an excise duty of $3\frac{1}{2}$ per cent. was also imposed on the home manufactures. This excise duty was responsible for the decay of the infant industries of Bombay. Year after year, our financial leaders agitate for its removal. When will it be done?

Mr. S. Ranganath concludes his paper with a consideration of two of the most pressing problems of to-day—protective tariffs and the drain. He advances the argument of infant industries in favour of Protection for India. He singles out cotton and iron as the two industries most in need of protection.

The chief items that make up the 'drain' or as it is styled by its defendants, 'Home charges' are:—

1. Interest on debt and management of debt.
2. Cost of mail service etc.
3. Railways, State and Guaranteed (+ interest and annuities.)
4. Public Works (+ absentee allowances.)
5. Marine.
6. Civil charges (Secretary of State's establishment, pensions, etc.)
7. Military.
8. Stores.

The writer cites Mr. Lecky who is reported to have said that item No. 7 is indefensible. The latter in his 'Map of Life' wrote:—

"The entire cost of the Colonial Office or in other words the Home Government of all British colonies and dependencies except India as well as their military and naval expenses, is defrayed from the revenues of the United

Kingdom and it seems to be a natural inference that similar charges should be borne by this country in the case of India. But what is the fact? Not a shilling from the revenues of Britain has ever been expended on the military defence of our Indian Empire."

We want retrenchment and reform—the land tax to be moderate and certain in amount; and more to be spent on irrigation works than on railways. We want a reduction of civil and military expenditure, and the removal of the excise on cotton mill-industry, and as the first step to future protection the Government's support to our national industries.

The Guild System and Strikes.

Two articles of uncommon interest on the subject are published in the February number of the *International Review of Commerce and Industry*. The writers have approached the question with sympathy and suggest a revival, in some form, suited to modern requirements of the old Guilds which did so much to foster the growth of trade and commerce in former days. The Editor of the journal who writes one of the articles, notes already some signs of a return to the Guild System. These are:—(1) the trend in modern business life in the direction of co-operative effort; (2) the recent recognition of the grievous hardship of "blind alley" employment for boys, and (3) the Insurance Act. According to him, the last mentioned piece of legislation is accepted in principle by every body and is a frank acknowledgment on the part of the State that the community has a duty to perform to its humblest members. That is merely an extension of the conception that every trade owes a duty to its members.

Another writer signing himself 'J. W. S. S.' describes the Guilds of the Middle Ages, bringing out the salient features of that now vanished type of economic society. He is in no doubt of the fact that a modern expression of the old crafts Guild might advantageously be revived at this crisis of industrial history in the West.

"The trades unions, which some writers affect to regard as the offspring of the Guilds, are

totally opposed in spirit to the former bodies. They are unions of employees, from which the employer is rigorously excluded, and whose object would seem rather to be to sow dissension between the two classes than to bring them into harmonious relationship."

The writer urges the practicability of introducing, a modified form of a Modern Guild where 'master' and 'man' could meet on, if not equal, at least on harmonious ground.

A modified form of apprenticeship should certainly be a feature of the Guild, the cost in the case of the poorer lads to be borne by the Guild funds. The Guild would provide a common ground where master and man could meet to discuss any subject of interest to both, without the annoying interference of the official go between. Such a Guild would have its own schools, and classes, its own insurance, sick, and provident societies, and possibly its festive occasions, to which all would have equal right of entry. Could such a body be established it would go far to solve many of the present-day economic problems, in particular that of the casual labourer, that terrible product of modern industrial conditions for whom at present there seems to be no escape from a life of chronic semi-starvation but emigration or State aid, which is but another name for pauperization.

Wholesale and Retail Prices of Food.

The relation between the changes in wholesale and retail prices of food is an extremely ticklish question eluding analysis. We are familiar with the formation of index numbers measuring the fluctuation of wholesale prices; but the sudden jumps that prices take in retail trade for what may seem to be an insignificant rise in wholesale transactions, are not so easy of definition or arrangement. We are indebted to Dr. Arthur Bowley for striking some sort of relation between these two prices, in the light of available statistics, in a contribution made to the December number of the *Economic Journal*.

The retail price of a commodity is influenced by, and is nearly the sum of, the wholesale price, the cost of transporting the goods from

the market, warehouse, or ship, merchants' and brokers' commissions, manufacturing and more transport commissions, costs and profits of retailing and delivery, interest on the capital employed in carrying the goods from the time of wholesale purchase to the time of payment by the consumer, and, in some cases, Government tax.

The principal differences, then, between wholesale and retail prices are determined by the factors mentioned apart from the actual change of retail price per unit goods which would correspond to the actual change of wholesale price of the same unit.

In considering, now, the effects of a rise and fall in wholesale prices we have to take note of the following facts :—

(1) We must distinguish fluctuations or short-period movements in price from long period and steady movements. Ordinarily, the former do not affect the purchaser at all; since the conscious effort of the retailer is to keep prices unchanged, which he can do by the various shifts of his trade.

(2) Wholesale prices can move by very small percentages, even 1 per cent., while retail prices move by jumps of 6 to 10 per cent. Even here the retailer saves himself by balancing his temporary loss by raising the price of some other commodity; or, by the public ultimately knowing the change in the wholesale price and consequently acquiescing in the change of the retail price.

But the case of a permanent and considerable rise in the price of one commodity, while prices in general are steady, is a little difficult. Much will depend on the elasticity of demand and the brokers, merchants, retailers, and customers will naturally try their strength in throwing the burden one on the other. All commissions will be decided in the long run, not by what merchants and dealers wish to do but the prices they must pay and can get in competition.

When, however, prices and interest are rising *en masse*, much more difficult questions arise as to the effect on brokers', merchants', retailers', and manufacturers' charges. But

if the rise occurred first in wholesale commodities and was reflected only in part in retail commodities and not at all in wages and salaries, we should have a still more troublesome problem, with innumerable actions and reactions.

As regards the period 1890--1912, the author hazards some conjectures as follows :— changes in the rate of pure interest on cash involved in handing, can hardly have made 1 per cent. difference in price up or down; cost of transport has varied little and efficiency of distribution has increased. Merchants, brokers and retailers were probably able to hold back for their own benefit some part of the fall in wholesale prices during 1889—1896; during the period of rising wages till 1900, they could hand on more than the whole addition per unit; but during the stationary period of wages, 1901—1911, so far from handing on an equivalent percentage on the values handled, it must have been difficult to hand on the additional cost per unit.

The conclusion that Dr. Bowley reaches from the above is that retail and wholesale prices should be connected by an equation of the form :—

"Actual change of retail price per unit goods = actual change of wholesale price per corresponding unit $\times K$, where K is nearly equal to unity.

If K is equal to or not much greater than 1, this equation will result in :—

Percentage change of retail price per unit goods is less than percentage change of wholesale price per corresponding unit. The movement of retail price is presumably a little later than that of wholesale."

Agricultural Economy.

The Tenth Congress of Agriculture, held a few months ago in Ghent, discussed such interesting questions affecting rural prosperity as, Rural Economy; Agricultural Science; Special crops, Agricultural Education; Livestock Improvement; Rural Engineering; Forest Economy; Comparative Importance of Agriculture, Commerce and Industry in various countries and the measures adopted by the

authorities for their advance; Rural Exodus; Organization of small rural holdings; Agricultural credit; Co-operation among farmers; Mutual Agricultural Associations; Organisation of the trade in agricultural produce.

In fact, under these heads which marked the discussions of the congress, may be summed up the whole intellectual movement and the progress now being realised in rural economy, and the policy that guides the legislation of the more advanced nations. We are indebted to the *Bulletin of Economic and Social Intelligence* for a summary of the discussion :—

RURAL EXODUS.

Rural exodus is a phenomenon which has been more or less observable in recent years in almost every country of Europe, and everywhere the Governments are studying, investigating and making provision in the matter.

It has many causes, the principal of which, as far as the class of agricultural labourers is concerned, according to Dr. Laur, who reported to the congress on the subject, are :

1. *Wages.*—These are generally lower in agriculture than in the other professions. In several cases, indeed the peasants themselves depreciate them, despatching on the high wages paid by the factories, without taking into account the maintenance they sometimes receive in the country or rating it far below its real value.

2. *The hours of work.*—In most counties the hours of work in factories are fixed and Sunday is entirely free. It cannot be denied that, especially for the young, this freedom is of great importance and is often an irresistible attraction.

3. *The nature of the work.*—Irregularity of employment is a serious defect of agriculture; besides this, the introduction of machinery has, in many places, added new uncertainty to the problem of labour already so complex.

4. *The social conditions.*—In districts in which large landed estates prevail, observes Dr. Laur, and where there is a large agricultural working class, the origin of which dates from feudal times, we find a great separation not only between the labourers and large landed pro-

prietors, but also between them and the small land owners. Now, under the influence of modern democratic ideas, the labourers have acquired a new conception of their condition and endeavour to escape from their former social relations by means of emigration. Things are different in the districts in which small and medium sized holdings prevail:—there, many sons of small farmers go to work under others for a longer or shorter period; the small landholders or tenant farmers also take work by the day under their neighbours and it is no rare thing to see a farm servant dedicating himself to agriculture on his own account. Under such conditions, there being no war of classes, there is no reason for deserting the country.

We must also keep in mind the influence of migratory labourers on the labour supply of a district:—many farmers, in fact, when the local labourers have decreased in number and wages risen, have had recourse to migratory labour. In this way, for some time they have made up for the want of hands, but, at the same time, they have caused the remaining local labourers to desert the country, either to escape a reduction of wages, owing to the coming of immigrant labourers, or to avoid having to work with the new comers whose skill is often inferior to theirs.

5. *Supervision.*—The relations between the agricultural employers and their labourers have for the most part, preserved their patriarchal character, whereby the former exercise a certain supervision over the private life of their subordinates. The narrow circle of the village also permits of everyone observing the conduct of the others, which is specially disagreeable to the younger members of the community, who seize the first opportunity of abandoning their native village and betaking themselves to the city. On arriving there, they find amusements and interests that are certainly not to be found in the simple and tranquil life of the country.

6. *Possibility of maintaining a family.*—Farm servants can seldom have families of their own, and this is often a cause of exodus from districts where small or medium sized holdings

prevail. The condition of the day labourers is different:—they generally succeed in having families. However, on isolated farms, it often happens that the day labourer is obliged by contract to associate his wife and children in his work at the season of greatest importance. This is a system which, in view of the growing scarcity of labour, is tending to become general, at the expense of the labourers' own small farm and his family life. The wife then, regards emigration as the only escape from the situation and endeavours to persuade her husband to change his profession, which otherwise he would not do.

7. *Social insurance.*—The modern social laws for the most part provide for the insurance of industrial and city labourers. Indeed, in few countries compulsory insurance has been provided also for the peasants, while on the other hand voluntary insurance is still very rare in the agricultural world. This reason for deserting the country naturally weighs less with the young, who, as such, are not always thinking of their old age, than with labourers with families, who, on the contrary, have the possibility of enjoying the benefits of social insurance greatly at heart.

8. *Labour bureaux.*—The organization of the labour bureaux has also contributed to encourage the rural exodus. In fact, the peasant, arriving in town, has no longer the trouble of seeking an employment; while, indeed, often the labour bureaux are directly instrumental in changing the profession of the agricultural labourers, keeping them advised of the situations that become vacant in the town workshops. And it is especially the women that are withdrawn in this way from agriculture.

The influence of the school and of the so-called tutelary authorities, who often seem to have deserved well of society by inducing a peasant to change his profession, as well as military service, and above all the hope of one day enjoying the favour of fortune and beginning a new life in the town, also serve to explain the fact of rural exodus.

Having thus examined the causes of the phenomenon, the conclusions, approved by the

Congress to be adopted for the improvement of the rural working class, attaching it more firmly to the soil, are as follows:—

(a) Adoption of an agricultural policy favouring the formation of small holdings (home colonisation, facilitation of credit).

(b) Improvement of agricultural technique by the State, associations and private individuals (agricultural education, experimental stations, information offices, grant of subsidies for the execution of farm improvement works, for plantations, livestock improvement, etc.).

(c) Encouragements of small and medium sized farms and the utilisation of raw produce, by means of agricultural organization, information services, the institution of bookkeeping offices, advances of money, etc.

(d) War against the enemies of agricultural production and extension of the system of insurance (sanitary police, hail, fire and livestock insurance and insurance against accidents in work).

(e) State encouragements to agricultural production.

To render the country life more attractive and comfortable, the State might further with advantage intervene by improving the sanitary conditions, the roads, postal, telephonic, telegraphic and railway communication, and pursuing an enlightened fiscal policy. This action must, however, be completed by that of private individuals and societies for the promotion of rural welfare.

Another means for checking emigration would be to give the young women an education fitting them to become competent housewives, capable of intelligently and affectionately assisting their husbands. And here it will be well to give the very words of the resolution approved by the meeting in connection with this subject. "The farmwoman must be conscious of the mission entrusted to her, in the education of robust children, healthy in mind and body, provided with a solid education, animated with sentiments giving a serious idea of life—children, who understand the beauty of country life and con-

sider the cultivation of his native soil the noblest profession for a free man."

The Congress finally expressed the following:—(a) that the large landholders should pass a large part of the year in the country, interesting themselves in agricultural work and exerting a direct influence in checking the exodus; (b) that the question of inheritances should be regulated so that small holdings may remain in the hands of at least one member of the family; (c) that the excessive scattering of the parcels of land belonging to a single proprietor should be avoided and small rural industries encouraged.

THE ORGANIZATION OF SMALL RURAL HOLDINGS.

Intimately connected with the preceding subject is that of the organization of small rural holdings. Indeed, one of the acknowledged means for stemming the tide of rural exodus is precisely the extension of the system of small holdings. In almost every State an important movement in this direction may be observed. The conclusions approved by the Congress in connection with the matter are, therefore, specially interesting. They are as follows:—

1. The foundation of small holdings is the means for keeping men attached to the soil.

2. The area of the land placed at the disposal of the agricultural labourer must be sufficient to attach him firmly to the soil.

3. The loans granted by the mutual agricultural credit societies for the formation of small rural holdings offer a guarantee of the first order. The States, therefore, should encourage them in every way.

4. The object to be aimed at is the encouragement of the formation of undistainable homesteads, rather than small leases.

The Congress finally expressed its desire that the legislation of the various countries might facilitate the transfer of holdings, endeavouring, as far as possible, to imitate the conditions of transfer in force in the case of personal estate, especially as regards sales, succession duties and the division of inheritances.

The New American Tariff.

The objects of the U. S. A. Senate in passing the new tariff are—

(1) The mitigation of the world-wide increase of prices in their effect upon the United States ;

(2) Elimination of monopolistic tariff effects in United States industry arising from excessive protection ;

(3) The retention of such a scale of duties as will ensure for United States industries a fair competition in the home market ;

(4) The promotion of export trade by means of negotiation with foreign countries, and in special cases by enacting free entry in return for free entry, and threatening duties in return for duties ; and

(5) The restriction of foreign competition from the overseas possessions of the United States through the operations of preferential duties.

Co-partnership Farming.

A reader of the *Farm and Home* has written to that journal the following offer of conditions in a co-partnership scheme which he intends entering into with his men :—

(1) Master to receive 5 per cent. interest on capital.

(2) Men serving twelve months divide the remaining profits (if any).

(3) Master to rank as one man and receive the same as wages and take the same of profits.

(4) Boys serving twelve months to receive a portion out of the men's profits, the amount to be decided by the men themselves.

(5) All damage caused wilfully to be paid for by the individual.

(6) All damage caused by neglect, thoughtlessness or bad workmanship to be deducted from profits before division.

(7) Management not to be interfered with.

Taxes on Food Stuffs.

It is a commonplace of Free Trade controversy that any duty on imported food stuffs would result in an increase in the price of the whole supply consumed in the importing coun-

try, whether produced abroad or at home. This Mr. Bernard Dale in his new book, *the Effect of Taxes on Food Stuffs*, maintains is quite an error, and he explains, in the light of the doctrine of marginal utility, the principles which regulate the formation of price in market transactions, and the application of these principles to the incidence of duties on food stuffs.

Land Revenue.

The ordinary land revenue of the whole of India amounts to nearly 29 crores, of which about 6½ crores are contributed by Madras and the United Provinces each, 4 crores by Bombay, 3 crores by Bengal, 2½ crores by the Punjab and Burma each, and nearly two crores by Eastern Bengal and Assam, and 1¾ crores by the Central Provinces and Berar.

Economic Efficiency of Co-operation.

It is said that the ratio between the cost of organization of a Co-operative Society and the economic result therefrom is that every £ 1 spent on organization has added at least £ 10 permanently to the national income, and that the £10 income once established automatically multiplies itself as years go on.

The Co-partnership Bill.

A Bill was recently discussed at a meeting of the Labour Co-partnership Association in England which seeks to make it compulsory for all limited companies to divide a portion of their profits amongst employees, after a dividend of five per cent. has been paid on the capital of the company.

Size of Families in France.

The latest statistics for France on this perennial topic are as follows. Of the 11,817,424 families in France, 45 have 18 or more children, and 37 have 17 children each. On the other hand, 2,661,978 families (23.5 per cent.) have only 2 children, while 1,805,744 (15.9 per cent.) have no children.

Old Age Pensioners.

The number of old age pensioners in England, Scotland, Wales and Ireland is, according to the latest available statistics, 982,292.

The Financial World.

The Difference between Speculation and Investment.

The *Rollins Magazine* (Boston, U.S.A.) expresses very clearly the essential difference between investment and speculation. A clear understanding of this distinction is of vital importance to every investor. "Conservative investment," says our American contemporary, "demands a reasonable and continuous income return and, not being concerned with profit, insists upon the minimum of risk. Speculative investment calls for higher income return and some fair chance of profit, and is therefore prepared to assume what may be called a business man's risk. Speculation is frankly for profit rather than income. Stockholders are recruited primarily from the last two classes ; bondholders primarily from the first. There is no reasonable question but that speculative investment and speculation have a necessary place in business affairs. The point is, however, that conservative investment is the only safe course of procedure for those who are or expect to be dependent upon the income from their funds. The president of a very large public service corporation recently remarked to a prominent banker who was inclined to disapprove of the president's programme of selling stock instead of bonds, 'I would rather have partners than creditors.' Following precisely the same line of reasoning, the conservative investor in considering his own welfare should reverse this epigram and say to himself, 'I would rather be a secured creditor than a partner.' "

Mr. Webb on the Currency Report.

Addressing the Karachi Chamber of Commerce on the subject of the Currency Commission's Report, Mr. Webb, C.I.E., said :—"I must invite your special attention to a new and amazing theory of Indian Currency manage-

ment propounded in the majority report, namely, that the Government's cash balances in India and in London as well as the reserves held against the paper currency and the gold standard are in reality all one great treasury balance to be intermingled and used indiscriminately as the Secretary of State for India (or the Government of India) considers that the exigencies of the money may demand. The titles attached to the constituent portions of this fund indicate to some extent, we are told in paragraph 9, the nature of the needs and the liabilities for which the fund as a whole is required to provide. This truly delightful theory, whereby all India's currency and financial arrangements are thrown into one pot to be cooked up and dispensed at the discretion of the official temporarily in charge of the financial kitchen is one to which the Press and the public of India may well devote a little attention. I will now merely point out that as the majority of the Commissioners consider that the Gold Standard Reserve ought to be transferred to and managed in London and as under this new hotchpotch theory of Indian finance it would be quite impossible to distinguish between the Gold Standard Reserve, the Paper Currency Reserve, and the treasury balances, it follows that unless we watch matters with the most vigilant attention, not only the Gold Standard Reserve but the whole of India's spare cash and reserves may disappear from India for treatment in London by the culinary experts of the India Office".

Banking Legislation.

In the course of an article on bank failures and banking legislation in the *Accountant and Modern Business*, we notice the following suggestions with regard to the proposed banking legislation :—

(1) A bank should not be allowed to start work until a specified proportion of the authorised capital has been paid up.

(2) A bank should not be allowed to declare a dividend unless this is actually earned.

(3) The dividend should not be allowed to exceed a fixed percentage until a reserve is built up which should bear a specified minimum proportion to the total of the paid-up capital and the deposits.

(4) Preliminary expenses should not be allowed to exceed a specified proportion of the paid-up capital.

(5) No commission should be allowed to a managing director or manager or any other of a bank on its working capital.

(6) No shareholder should be eligible to be a director, who does not hold a specified minimum number of shares fully paid up.

(7) No director should be allowed any loan from the bank.

(8) No loan should be allowed in any circumstances except on proper and adequate security offered.

(9) A bank's moneys should not be allowed to be invested in concerns in which more than two of its directors are interested.

(10) The reserve fund should be allowed to be invested only in such a manner as will make it available for use, in whole or in larger part in time of need.

(11) The publication of half-yearly balance sheets should be insisted on.

(12) A bank should be allowed to be only a bank and prohibited from engaging in any other business.

Comments on the Finance Commission.

According to the London correspondent of the *Hindu*, the Report of the Royal Commission on Indian Finance and Currency has been variously commented upon, but in no case in very hostile terms. The general impression is that the Commissioners have done their work exceedingly well, that they were very fortunate in their chairman, and that they have made a distinct contribution to the elucidation of the complicated problems referred to them for examination.

The article in the *Times* was in the main, a favourable criticism; so was that of the *Daily News and Leader*. Little is heard now in any quarter of the accusations of corruption and improper financing of which we had such a flood before the Commission was appointed.

The comment of the *Standard* is that the entire report is of a thoroughly common sense character, its recommendations being designed to give the Indian money markets a slightly larger command over Government balances than has hitherto been enjoyed. The journal points out that if the Commission's recommendations are followed, a good many of the securities at present held on account of the Indian Gold Reserve will give place to actual gold. It would be unwise, however, to assume hastily that this necessarily means an actual sale of stocks, for many of the securities are of a short-dated character, and all that would be required is that they should be allowed to run off at maturity without being replaced.

The *Financial News* thinks that the Commission was agreeably free from theorists, and so was predisposed to accept what had proved effective in practice. Altogether, the report, which is constructed and worded so as to be a credit to its author, is sane and safe, and tends to confirm the general confidence felt not only in the probity, but the essential courage and ability with which the financial and currency affairs of India have been managed.

The *Financial Times'* reading of the report is that we have it now re-stated by Commissioners whose technical ability and impartiality no one will care to dispute, that India has derived enormous advantages from the substitution of gold for silver as the standard of value. There was a practical consensus of opinion that India's future prosperity is bound up with the maintenance of the gold standard. The same journal supports the suggestion that the use of gold should be discouraged, with a view to its being replaced by an extended employment of paper currency. Some of the arguments employed, however,

may perhaps prove more convincing to English banking interests than to educated opinion in India.

The comments of other financial organs follow much the same lines as those quoted.

Railway Development.

In the course of his reply to the Bombay Chamber of Commerce address recently, His Excellency the Viceroy said :—

"As regards railway development, I can assure you that I fully realise how important it is that it should keep pace with the demands of trade. Appreciating this, the Government of India have had a continuous railway policy for many years past and have increased the funds available for carrying it through, from time to time, as opportunity offered. During the last two years in particular this increase has been very large. In 1913 we provided £12 million at the outset and increased that amount by an extra grant later in the year, and we have again provided £12 million for 1914-15 also, and this is a matter of at least as much importance as the nominal amount of the programme figure. We have made arrangements of a special kind to secure, if possible, that the allotments given shall be wholly spent and that the large lapses which used to occur in the past shall be avoided. These arrangements give promise of working efficiently, and thus, in effect, we have arranged for a much higher standard of railway expenditure than has ever yet been customary. I have no doubt that you have all studied the full examination of this question which was contained in the able and interesting speech with which Sir William Meyer presented the budget for the coming year to my Legislative Council, and I feel sure that no one who has read the explanations there given and considered the difficulties which had to be faced, and the measures taken to cope with them, will fail to appreciate how entirely my Government are in sympathy with commercial opinion in this matter. I can, of course, give no promise as to the amount of the railway programme in future years, but what we have done in these two years will con-

vince you that nothing retrograde will be allowed if it can possibly be avoided. It seems to me that your remarks as to excessive reliance upon revenue surpluses indicate some possible misunderstanding of our real policy on this question. The financial arrangements for 1914-15, which have been recently announced, show that we are perfectly ready to borrow as freely as we can, having regard to the circumstances of the money market and other necessary considerations, and I hope that our enterprise in borrowing on a higher scale in the coming year will be rewarded by corresponding financial support in Bombay and Calcutta as well as in London. The assistance derived from revenue surpluses forms a supplement only, but at present a necessary supplement to the funds we get by borrowing. To have dispensed with this assistance would have rendered a programme of £12 millions impossible in the coming year. You would like, I know, to have a large railway programme of a fixed amount at the least, and, better still, of a steadily increasing amount, and you feel perhaps that revenue surpluses are too precarious an asset on which to be dependent, but we have to face the facts, and I am not sure that there is, after all, so much to choose between revenue surpluses and loan funds in this respect. The conditions of the money market, and the necessity for not doing anything which may permanently depress our credit, tend to render the amount which can be wisely borrowed in any single year limited and fluctuating. This seems to me to be one of those matters in which, as the Finance Member said, we shall do best to avoid doctrinaire considerations. We are all agreed that the more funds we can supply for railway development the better, and our present policy is a practical policy, namely, of borrowing as freely as we can and getting what help we legitimately can from other sources.

LOANS FOR RAILWAY PURPOSES.

The particular proposal which you make is the flotation of special railway loans in India. I presume you have in mind loans at a higher rate of interest than Government paper but

carrying a Government guarantee, or some undertaking practically tantamount to a guarantee. We have only recently considered this sort of alternative very carefully, and the best advice we can get is that such loans, for general railway purposes, would not attract a new class of investor and would therefore compete with our regular issues, and would do so, of course, on terms unfavourable to ourselves owing to the higher rate of interest which they would carry. Moreover, as it is hardly necessary to add when speaking in Bombay, the Government of India cannot ignore other borrowing interests, such as those of the Port and Improvement Trusts and of the Presidency Municipalities. I do not think any of you would like to see their markets spoilt. Therefore, while I agree with you that we ought to get more direct assistance towards our railway programme from Indian capital, I consider that the best way of obtaining it is to ask for it in the ordinary way, as we are doing by our proposal to issue a rupee loan of Rs. 5 crores in the coming year."

The Proposed State Bank.

Mr. G. Findlay Shirras gave a lecture at the Calcutta Senate House on "The Proposed State Bank for India."

He remarked at the outset that in discussing the problem of an Imperial or Central Bank for India one must not be led away by the attractiveness of the proposal, which should be subjected to a rigorous examination and examined from the practical rather than from the academic standpoint. He must not be understood to express any opinion on the desirability or otherwise of a State Bank, but would only address himself to the question of how to bring it into being if it were decided upon.

SCHEME FOR INDIA.

There is a tendency among some to think that a Central State Bank is a plunge into the unknown, and involves a complex problem of a great banking monopoly. They believe that it would be better without this agency to encourage joint stock banks with healthy competition, to develop co-operative credit on sound lines,

and to "fructify," as Sir James Meston said, "the savings of the people by a multiplicity of private agencies under proper legal safeguards rather than through the tentacles of one gigantic institution." It should, however, be noted that the assumption is wrong that a Central Bank would be a great monopoly which would injure smaller local institutions. On the contrary, one of the most important functions of an Imperial Bank of India would be to foster and to encourage, in every way possible, all smaller institutions run on safe lines. With the experience and machinery of the three Presidency Banks at hand, the scheme would ostensibly be entirely and completely successful. Moreover, in periods of financial panics, which run their course in a few weeks or months, the Central Bank can prevent most easily, silently, and quickly, widespread disaster. It remains for us, then, he said, to consider the constitution of an Imperial Bank of India. In the first place, it would be necessary for the Government of India to withdraw the charters of the Presidency Banks, and to amalgamate all the three banks into one State Bank. It may or may not be necessary for Government to increase the capital. Previous discussions regarding the establishment of a State Bank in India perhaps wrongly emphasised the necessity of such an institution by putting forward as a principal reason that the capital of the Presidency Banks was insufficient to meet the increased growth of trade throughout the year. If, however, an increase of capital be decided on, this would probably be supplied by Government in view of the fact that Government would play an important part in the management of the bank.

The following figures show the capital and reserves of the Presidency Banks on the 31st March 1913 :—

	Capital.	Reserves.	Total.
Bank of Bengal ...	£ 1,333,000	£ 1,233,000	£ 2,566,000
Bank of Bombay ...	667,000	707,000	1,374,000
Bank of Madras ...	400,000	473,000	873,000
	2,400,000	2,413,000	4,813,000

Government might find it expedient to increase the total capital to at least £5,000,000, but at the same time it cannot be too strongly emphasised that this increase of capital is not the primary reason for the establishment of a State Bank. It should be remembered, however, that business in India has very largely increased during the last eight or ten years, and an increase in capital might be necessary especially if the Government of India are to follow the example of other State banks by taking the leading part in the control of the bank. The plan of Mr. Dickson in 1867 would give the shareholders of each of the Banks a proportionate share of the total capital according to the proportion which the capital of each of the three banks bears to the total capital. In the present case a similar share of the total capital might be allotted to each of the three banks, or as an alternative, the proportion which each bank's capital bears to the total capital after the increase has been made by the addition to the present capital by Government might be taken as the share to which each of the three banks is entitled. By either of these schemes the shareholders of the Bank of Bengal would have a much larger share of the capital than would the shareholders of the banks of Bombay or Madras. The shareholders of the banks might conceivably receive on the amalgamation the average value of the shares during the last three years previous to the passing of the Act necessary for the creation of a State Bank. The increase of capital would increase the amount on which the profits or dividends would have to be paid and therefore unless the additional capital could be employed throughout the year as a whole, the average dividend might be curtailed because of this larger capital. If Government owned part of the additional capital it would receive two sources of profit, (1) in the form of dividends and (2) a share of the profits of the bank after a certain sum had been paid on the capital as in the case of the Reichsbank, the Bank of Switzerland, the Bank of Japan, and other State Banks. While an increase of capital might be waived without serious disadvantage,

there are certain facts which suggest that an increase of capital, if practicable, would be desirable. The statements published by the Presidency Banks during the last week of March 1913 show that Government balances were extremely high. These Government balances however, were abnormal, and it is better to take the figures of the last weekly statements published in March 1912 which show the total Government balance to be £3,128,000 or a sum greater than the total capital of the Presidency Banks on that date. It will be seen therefore that in normal times Government's capital would form a large proportion of the capital of the State Bank,—at least in the early days of its existence. In this connection Mr. Abrahams, in a memorandum on a State Bank, has pointed out that "the money held by Government in Reserve Treasuries on the 31st March 1912, amounted £3,506,000. If this had been reduced to an emergency reserve of £1,000,000 by the transfer of £2,506,000 to the Presidency Banks the total Government deposits in the bank would have been approximately £5,634,000 or 121 per cent. of the aggregate capital and reserves. If the banks had held half of the additional £2,586,000 in coin or currency notes the total amount so held which was actually £8,831,000, would have been raised to approximately £10,084,000 of which the Government deposit of £5,634,000 would have represented 55·8 per cent. These percentages may be taken as representing very roughly the highest proportion that Government deposit would bear in normal times to the capital and reserves and to the coin and currency notes of a State Bank (in its early days), formed by the amalgamation of the three Presidency Banks without an increase of their capital." Mr. Abrahams accordingly suggests that an increase of capital would be desirable, if possible. It is important, however, to recognise, as does Mr. Abrahams, that the difficulty of finding profitable employment for additional capital, taking the year as a whole, would be greater under a scheme which included the deposit with a State Bank of larger Government balances, because employment

would have to be found for the additional Government deposits besides the additional stockholders' capital. The increase of capital would in any case, increase the amount on which profits or dividends would have to be paid and therefore unless the additional capital could be employed throughout the year as a whole, the average dividends might be curtailed because of this larger capital. The capital of the State Bank should be in rupee currency rather than in sterling. With a rupee at 1s. 4d. a bank on a sterling basis is no longer likely to attract capital and to command confidence in a greater degree than a bank on a rupee basis.

The bank would probably have a Board of Control similar to the curatorium of the Reichsbank and the supreme control would be vested in the Secretary of State in Council and the Governor-General. Appointments to this board would be made by the Secretary of State on the recommendation of the Governor-General himself. The Finance Member of the Council would be President of the Board, which would consist of six members, viz., the Finance Member of the Viceroy's Council, two members appointed by the Secretary of State in Council (probably members of the Finance Committee at the India Office), one member selected by the Governor-General and two other members. The Governor-General would possess the power of veto, but this would be used only in the most exceptional circumstances. The actual management of the bank would be entrusted to a directorate composed of the following members: a Governor, a Deputy Governor in Calcutta who would both be appointed on the recommendation of the Government of India to the Secretary of State. The Governor would be appointed in a manner similar to that followed in the appointment of members of the Governor-General's Executive Council, and the tenure of office would be for not less than five years and would be renewed if necessary. A lengthy term of office is of great advantage to a State Bank as has been proved by the Bank of France which has had only 18 Governors including *ad interim* Governors since 1806. On the direc-

torate there would be three representatives of shareholders, and three representatives of Government. A third body would be a central committee of shareholders appointed by the shareholders who possess a certain minimum number of shares of the bank. This body would meet from time to time and would be composed of some ten to fifteen members. It would be familiar with the transactions carried on by the bank and their advice in all cases would be most carefully considered. They would examine and criticise the weekly reports and have power to inspect the deposit account. They would always be able to bring before the directorate matters of importance.

The Imperial Bank of India would have branches and agencies throughout India and these would be controlled from the Central Office. Under the proposed scheme the Central Bank would take over the treasuries. At present there are 271 District Treasuries where cash balances are held, in addition to 35 branches of Presidency banks and three head offices of Presidency Banks. The State Bank would group together those treasuries which were not large enough to become branch banks and would make them sub-agencies working under a neighbouring branch. There would be local boards at Bombay, Madras and all important branches.

Continuing, Mr. Shirras said that the Indian banking system at present possesses plenty of muscle and blood but lacks brains to control the muscles, and a heart and arteries to send the blood through the body. A strong Central Bank might remedy this. The Imperial Bank would undertake remittances and transfer specie to those centres at which it is required free of charge. Profits from the Paper Currency Reserve and other sources would more than compensate for the bank's undertaking this work. Traders would be able to obtain notes or rupees, in whatever form of currency they preferred at all times, and currency notes would be completely convertible. Banking in a crisis would not be made doubly difficult as it is at present, for the bank would follow the European system of increasing the note or

deposit account in such a crisis, and it would pay out freely from its cash reserves. It would have a powerful effect on discount rates, and not only lower the average rate, other things being equal, but it would prevent the violent oscillations in discount rates.

The bank, in fine, would hold as bankers the Government balances, and this is the primary object for which a State Bank should be established. The Bank would also control the Paper Currency and expand it or contract it according to the needs of commerce. It would possess a note issue backed by gold and commercial paper (that is, the natural products of the country) and also by rupees. Proceeding, the lecturer remarked that it was certain that if the State Bank was entrusted with the treasury balances it would also be entrusted with the management of the Paper Currency. Intimately connected with the cash balances and the Paper Currency Reserves was the work of selling bills of exchange on India. The State Bank would have a branch in London with a Local Board. In the normal course of events it would undertake to sell Council bills and telegraphic transfers on India on behalf of the Secretary of State. It would also cash mercantile bills drawn on it by the Imperial Bank of India. It would possess means of finding out from time to time the status of the firms on which these bills were drawn, so that the Bank in India might buy any first class trade bills.

It was important that the Imperial Bank should be entrusted with the selling of drafts on India for meeting the Secretary of State's requirements, in order that it might regulate the importation into India of sovereigns to be exchanged for rupees when tendered to Government, and, conversely, to assist the importation of sovereigns when necessary. The London Branch might be allowed to undertake ordinary banking business including deposit banking. The State Bank would keep as large a reserve as possible in gold to meet emergencies in a way similar to that followed by the Bank of Russia and the Bank of France. The Imperial Bank could

also borrow money in London on the security of its investments, though at present there would be some difficulty. Mr. Abrahams had well said that "if the loans were effected the only method of placing the proceeds at the disposal of the Bank in India would be to pay the money in gold to the Paper Currency Reserve, which always has capital in India or in England to transfer rupees thence to the banking reserves of the State Bank. It is perhaps true that the Exchange Banks have shown no very sound reason for protection, and the Indian business is only a part of the total business of the Exchange Banks taken as a whole. Mr. Keynes and Sir Edward Cable would confine the business of the London office to:—(1) The sale to other banks (including certain large firms) of drafts and telegraphic transfers payable at its Indian offices; (2) the rediscount of sterling bills at the Bank of England; (3) borrowing for short periods from the Bank of England; (4) the loan of funds to the London Money Market; (5) the replenishment of the Secretary of State's fund at the Bank of England; and (6) the flotation of sterling loans on behalf of the Secretary of State.

The Imperial Bank might also take over the Savings Banks on behalf of Government and develop the system now in vogue. It would also be given the task of attracting deposits from agriculturists at post offices throughout the country and from Co-operative Credit Societies, whose importance could not be overestimated. A strong Central Bank might have an additional advantage in that it would attract as a magnet, foreign investors to invest their surplus funds in India. The question of coinage might be entrusted to the Governor of the Bank and the Directorate. It would be necessary to have an internal system of audit—a regular accounting department with a competent staff of inspectors to inspect all the branches, and to make weekly reports relating to everything that had gone on during the course of the week, the general condition of the branches concerned, accounts opened and closed, etc. The reports would be discussed by the Directors, at their weekly meetings.

With regard to the sharing of profits one method would be to pay a minimum dividend of five or six per cent. in the first place to shareholders, and then to set aside a percentage of the remainder to the reserve and the State to take two-thirds of the balance and the shareholders the remaining third.

In conclusion, Mr. Shirras remarked that an impregnable Central Bank might have a most beneficial effect on the banking system throughout India and it might prevent the growth of mushroom banks, and tend to develop throughout the length and breadth of India only the soundest banking principles.

People's Trust Company.

The London Financial Press is much exercised over the aims of the above Company. According to the prospectus, the principal object for which the People's Trust has been formed is to extend to the working and industrial classes a form of investment, which will enable even the smallest capitalists to acquire an interest in English and Foreign railways, Colonial and Foreign loans, and great commercial undertakings, and to share in large financial operations. The Company will adopt the principle that has been found to work so well with existing Trust and investment companies of distributing its capital over a wide area and in a large number of undertakings, and it has been proved that by so doing a satisfactory return can be obtained without taking undue risks.

Light Weight Sovereigns.

In Mr. J. M. Keynes's review of the forty-third annual report of the Deputy Master of the English Mint, 1912, in the March number of the *Economic Journal*, the following passage occurs:—"In the year under review £1,300,000 light-weight sovereigns were sent home by the Government of India, involving an expense to the Mint of £10,000. The Indian authorities allege that the very high percentage of light-weight sovereigns tendered at Bombay is due to the large imports from Egypt, "where a gold currency has been in existence longer than in any other Eastern country, and where, it is believed, sovereigns are sweated." If

India comes to mint sovereigns for herself, the problem of where the burden of withdrawing light-weight coin should fall may raise delicate questions".

INDIAN BANKS WITH OFFICES IN LONDON.

Year.	Banks.	No. of Branches.	Capital and Reserves.	o/o of Liabilities.	Deposits.	o/o of Liabilities.	Total Assets or Liabilities.	Cash in Hand, Money at Call and Short Notice.	o/o of Liabilities.	Investments.	o/o of Liabilities.	Discounts and Advances.	o/o of Liabilities.
1890...	5	50	4,347,200	12.1	17,984,400	50.0	36,003,400	4,321,200	12.0	2,930,500	8.1	27,541,300	76.5
1895...	5	54	3,235,100	13.2	14,397,300	58.9	24,447,300	5,484,800	22.4	1,466,500	6.0	16,999,400	69.4
1900...	5	54	3,186,300	10.5	18,084,800	58.5	30,207,600	4,704,900	15.5	2,794,600	9.2	22,147,300	72.5
1905...	4	63	3,735,100	10.6	23,473,900	66.5	36,268,600	6,507,100	18.4	3,119,500	8.8	23,634,900	69.6
1906...	4	64	3,898,800	10.3	25,407,000	66.9	37,979,300	6,457,500	17.0	3,797,200	10.0	25,490,500	67.2
1907...	5	65	4,314,600	10.0	28,796,900	66.8	43,035,000	7,444,300	17.3	3,268,900	7.6	29,489,600	68.5
1908...	5	74	5,739,600	13.1	28,345,300	64.6	43,823,700	7,436,900	17.0	3,274,300	7.1	30,103,800	68.7
1909...	5	79	5,949,300	13.5	31,002,300	70.5	44,032,900	9,367,700	21.3	3,477,200	7.9	28,883,700	65.5
1910...	5	87	6,100,000	12.9	34,547,000	72.9	47,339,600	8,312,300	17.6	4,139,400	8.7	32,101,200	67.8
1911...	6	95	6,830,300	12.6	39,082,300	72.3	54,068,300	8,915,600	16.5	3,995,200	7.4	38,326,600	70.8
1912...	6	103	7,010,600	13.1	40,780,300	70.5	57,953,700	10,308,000	17.8	4,252,000	7.4	39,879,100	68.9
1913...	6	104	7,219,100	11.5	43,470,800	69.2	62,671,800	10,822,800	17.3	4,083,600	6.5	43,745,100	69.8

The Educational World.

Business Training Experience.

The fitting of a man for commercial life may be described, in the words of the *Saddlery and Harness*, as two schoolings—the first is that period the closing of which finds individuals capable of conducting any business in the world; the second is that stage when one realises how much those who are in the whirl of trade do know and what little service is likely to be rendered until the second education is well under weigh.

The journal has no faith in the various guide and text books on the subject of commercial education, for, it says, the ramifications of trade are too wide and varied for any writer to cover even in the form of a brief summary.

But the journal has managed to lay down certain principles which we quote below:—

(1) Labour, efficiency, honesty, and courtesy are four excellent corner stones in the support of trade;

(2) the much repeated statement that there is nothing new under the sun is no concern of ours in these days;

(3) advertising forms another important part of business education in its second stage; and

(4) the use of trade journals.

Agricultural Education in Austria.

In Austria, agricultural education is imparted in technical agricultural schools and by travelling lecturers. Often the teaching staff of the schools act as travelling lecturers, while some of the latter hold courses which resemble those given in the schools, differing from them only in being of shorter duration.

From a contribution made by Professor Ernst Vital to a recent number of the *Bulletin of Agricultural Intelligence and Plant Diseases*, we learn that a regular agricultural school education is, under present conditions, available for only a limited number of intending farmers. Consequently it is sought to use

other methods besides schools to promote the spread of agricultural instruction. These methods are travelling lectureships and special courses. The lectures are given either by travelling lecturers specially appointed for the purpose or by some of the teachers of agricultural schools, both classes of lecturers visiting in turn the various localities of a district.

The travelling lecturers are either appointed by the State, or are officials of the independent local authorities or of the principal agricultural corporations and associations. Nevertheless, the State contributes in most cases to their salaries.

As the effect of a lecture is in general but slight, the lecturer is bound by the regulation to keep himself posted in the progress of his territory, to keep in touch with the rural populations and to assist the people with advice and action in any difficulty connected with farming.

Among the duties of the lecturer there is also the holding of courses, which may last a day or more, in order to instruct farmers, anxious to learn, in certain branches of agriculture, such as dairying, live stock keeping, poultry keeping, fruit tree grafting, forage growing, etc. Such courses are often held by teachers of the winter or other agricultural schools during their free time, either in the same schools or elsewhere, and contribute efficiently to the spread of modern farming methods. These courses are not limited to the men and boys only, but extended under the form of lectures on cooking and domestic economy to the women also.

All the members of the teaching staff, whether travelling or otherwise, must before being definitely appointed pass an examination as to aptitude for teaching. This examination is held at one of the colleges in Vienna or in Prague, and is divided into an examination for medium schools and one for lower schools. There are, besides, examinations for fruit and

vine growing and for agricultural housekeeping schools. For these examinations there are special regulations drawn up by the Ministries for Education and for Agriculture.

Agricultural instruction in Austria is not all under one single control, but is managed partly by the State and partly by other bodies, such as local governments, district municipalities, associations and even by private persons.

Manual Training.

The National Association of Manual Training Teachers held a meeting at the University of London under the presidency of Sir John Cockburn in furtherance of the claims of handicraft teaching to larger recognition in the educational curriculum.

The Chairman said that manual training had shown a more excellent way of forming the intellect and the character than mere bookwork, which it was destined altogether to supplant. Hand-work was nature's way to education. Let education be true activity and every individual would rejoice in it.

Mr. J. H. Judd read a paper entitled "Is Manual Training Worth While?" in which he urged that the profession should take steps to secure that manual training should be compulsorily made a recognised part of the training of elementary school teachers.

Mr. H. Holman pointed out some dangers concerning hand-work education. Perhaps the first and greatest was the idea that they had at last found the universal specific for all educational ills. Manual teaching was not going to transform education, however much it would reform it. It was not going to do away with reading, writing, and arithmetic, but it would deprive them of their usurped and false pre-eminence. He claimed, however, that these subjects would not be less but better taught because of the introduction of hand-teaching. Science, literature, music and all other regular school studies would also not lose but gain, and physical training would gain most of all. He warned them, however, to beware of the idea that manual teaching was going to relieve school life alto-

gether of its monotony and make it interesting, for such an assertion was an outrageous insult to their fellow-teachers. The danger that the general public would try to put hand work teaching on a vocational, instead of, an educational basis was a very real and serious one. The greatest security for the success of teaching was the personal equipment and training of the teachers. They must have a good liberal education given on sound educational lines up to the level of an ordinary university degree. No teacher could be too good for hand-work teaching.

Professor Whyte stated that in every large school and in most of the small schools in New Zealand hand-work was given at every stage from the first to the highest standard, as a compulsory subject. In his own training college too, his students had to attend two hours a week to learn their manual training.

A School Garden in the Making.

Lieutenant-Colonel J. J. Cronin, I.A., Deputy Commissioner, Kyankse, contributes to the first quarterly number of the *Agricultural Journal of India* for 1914 an interesting article on the work of the school-gardens in Burma.

Burma is at present far behind other countries even in the East where school gardens have been in existence for some years; for instance, Ceylon with over 200, Java, and the Philippines. In America and England they are found scattered all over the country.

The writer says that the possibilities and usefulness of a school garden are far greater than is ordinarily supposed; in fact, it is now held that the development of the school-garden is the most important advance in modern education.

The functions of the school garden are greatest in agricultural countries, and in the words of the writer, it is one of the great needs of the countryside that the children should be taught not merely the ordinary indoor curriculum of the elementary school but that advantage should be taken of the child's longing for the open air and for playing at work, to develop its powers of observa-

tion and the acquiring of practical information from the material provided in the school garden for arithmetic, mensuration, drawing, composition, and nature study, in a living, actual form.

In agricultural countries some of the more important uses of school gardens are, to serve as object lessons in the cultivation of useful plants, as centres for the distribution of useful seeds or improved varieties of common seeds together with information about them, to induce the cultivator to take up the cultivation of new or improved products, to encourage children to establish gardens at their homes, and to induce competition between the school children and between adjoining schools.

According to the writer, the school garden at Indaing is the best in the Kyankse District. The school-garden, of an area of a quarter of an acre, has been laid out facing the school building, and has been divided into (1) individual plots, each 8 feet by 4, four feet being found to be a width a child can stretch over from either side without having to walk on the beds, (2) collective plots for cultivation by parties of children, and (3) demonstration plots for showing the villagers some new crop.

A weed plot is also formed to enable the children to distinguish between weeds, useful, troublesome, or poisonous, and plants which they have sown. The paths are laid out and sanded by the children themselves. Only useful plants are put down such as will yield a quick return.

According to the writer, for one anna it is possible to start a garden in Burma, which will repay its cost many hundred times, owing to the cheapness with which seeds of excellent varieties are obtainable.

Children will be instructed in laying out plots, calculating the amount of seed required to a plot, in recognising the various common weeds, the different useful grasses, and the useful or destructive insects and birds of the garden. Later they will be instructed in the necessity for a rotation of crops, etc. The advantages of inter-cropping are explained

and the elder boys are instructed in the kind of cattle disease common in the neighbourhood, their symptoms and simple methods of treatment and prevention.

Industrial Education.

An American lecturer said recently that the "demand for the introduction of industrial education into our public schools comes not only from educators and friends of social welfare, but also from manufacturers and employees. The educator realizes that at present millions of pupils leave the schools without having received sufficient education to fit them for their duties in after life, and notwithstanding his natural conservatism, he desires that our schools should be the equal of those in any other land. Those interested in social welfare favour it because in their enthusiasm they look upon industrial education as a panacea for many of the ills. They realize the helplessness of the native-born American who has to start life without having a trade or specific knowledge of some industry. No system of industrial education can succeed, however, without the co-operation of the manufacturer and wage earner. The manufacturers favour it because they desire to improve the morale and increase the efficiency of those whom they employ; the wage earners, because they feel that the returns they will receive for their labour in the form of wages will be larger if they are fitted by their training in school and shop to turn out better work.

"The main object of most schools is to impart knowledge, with little regard as to the usefulness of that knowledge in after life, and, knowing how to do a thing has been considered more important than doing it. Any industrial education which stops with knowing how is doomed to failure.

INDUSTRIAL EDUCATION IN ITS INFANCY.

"Laws providing for the introduction of industrial education into the public schools have been passed by the legislatures of a number of States. But the introduction of industrial education means a thorough revision of our school system in order to furnish those engag-

ed in industrial pursuits an education which bears the same relation to their prospective life work as the college education does to that of the professional and managerial classes. It means the fitting of a particular boy for a particular job. It is concerned primarily with material products. Its mainspring is to produce better goods at a decreased cost.

"In Germany, industrial education is within the reach of every boy and girl; in the United States, out of twenty millions between the ages of ten and twenty years only twelve millions are in school, and of these twelve millions not more than three hundred thousand are receiving an industrial education. From the United States statistics it would appear that there is a better chance for an Indian, a negro or a boy or girl committed to a reformatory by the courts to learn a trade than for the ordinary well behaved child.

"When manual training schools were started it was thought they would solve the problem of industrial education, but owing to the fact that they were entirely in the hands of teachers they became mainly cultural schools and not trade schools. The majority of their graduates follow professional or commercial lines of work and only a small percentage of them take up industrial work.

"In order to reach the great mass of those between the ages of fourteen and eighteen years, who either from compulsion or choice become wage earners, two kinds of schools have generally been successful wherever they have been tried. One is the continuation school in which the worker continues his education by studies in day or evening classes. In Germany, it is made compulsory for the employer to allow sufficient time in the day for this purpose. The other is the part-time co-operative plan, where the pupils spend alternate and equal periods in school and shop, receiving wages from their employers for the time spent in the shop. The Principal of the Fitchburg High School says that in these schools they have vacation all the year round—one week is a vacation from work, the other week is a vacation from school.

"Any system of industrial education in which shopwork forms an important feature should be carried on under the advice of practical men and the instructors in the shop should also be practical men. If this is not done the probabilities are very great that the good results expected from industrial education will never be realized.

DIGNITY OF LABOR.

"While all the various forms of industrial education are essential, in any scheme of public education those in which industrial art is applied to the industries are probably the most important from a commercial standpoint.

"Bismarck said that the future belongs to the nation with the best schools and immediately proceeded to develop the educational system of Germany along industrial and commercial lines. Let us, whenever we have the opportunity, impress upon those in public life, whether in city, state or nation, the importance of industrial education not only for the maintenance of our commercial supremacy but also for the salvation of our industries.

"After all, the great feature of industrial education is the dignity it gives to labor."

The above comes from an American. Does not the Indian stand in as much need of commercial education as anybody else, if not more?

Technical Education in India.

The *Commerce* in reviewing the sixth quinquennial review of the progress of education in India, dealing with the period 1907-12 as regards the branches of technical, industrial and commercial education, remarks that a great deal has been done, during the past quinquennium, in the way of providing facilities in different parts of India for commercial, technical, and industrial education. The objects sought by education of this type are two-fold—(1) To produce a supply of efficient managers, foremen, and efficient subordinates for the mines, mills, factories and other commercial enterprises; and (2) to promote a revival of certain indigenous industries, and, where possible, to start new ones. The first is the

object, roughly speaking, sought by the technical institutions, the second by the industrial schools, and the main reason for the comparative failure of most of these institutions is that they are conducted on lines too much academic, too little practical.

The progress of the last five years is indicated by the following figures for technical and industrial (exclusive of art and commercial) schools. The number of schools has risen from 147 to 242, the largest increases being in Madras, Bengal, the United Provinces and the Punjab. Pupils have increased from 6,820 to 12,064, and it is noteworthy that the present number is nearly four times that in 1897. Expenditure has risen from Rs. 5,91,095 to Rs. 11,72,947 a year; and the amount spent from public funds from Rs. 2,12,504 to Rs. 5,25,506. The most important of the higher technological institutions is the Indian Institute of Science at Bangalore initiated by Mr. J. N. Tata.

The institute opened in July 1911, and 17 students entered it that year. It provides for research, the application of new processes and the production of thoroughly trained managers. It possesses departments of general, organic and applied chemistry and electrical technology, and also provides instruction in French and German to enable students to read technical journals. As the first batch of students entered within a year of the end of the quinquennium it is too early to judge of its results.

The establishment of a technological institute for the United Provinces was one of the proposals of the Naini Tal Conference. It was decided that it should consist of two parts. Classes in mechanical and electrical engineering were to be attached to the Thomason College. The department was opened in 1909 and took the place of a previously existing technical class. It was intended to attract a higher class of students, particularly those who had business connections and were destined to be managers or employers of labour. No candidates joined. A three-fold division was then made, the highest department offering engineering and training in textiles, the second and third being on a lower plane and in-

tended for mechanics. The engineering section has hitherto drawn the right class of students. A whole-time textile instructor was engaged and plant was provided. It was found difficult to obtain any students with the necessary qualification. The instructor resigned. It is intended to render the class more attractive by adding weaving, bleaching and dyeing. The first experiences, says Mr. de la Fosse, have not been very encouraging, owing to the reluctance or inability of the class which it was proposed to benefit to take advantage of the opportunities offered. The lower division or mechanical apprentice class (which belongs rather to the category of technical schools) has been more successful. The second branch was to be established at Cawnpore with the object of encouraging research in applied chemistry with reference to important industries in the province. The Secretary of State did not sanction the scheme. A more modest scheme was accordingly formulated, intended to give instruction in the chemical aspect of sugar, leather, acid and alkali manufacture, dyeing, bleaching, printing, colouring and finishing of manufactured goods and paper-making. Hitherto a site has been secured and buildings commenced.

In this connection it is a matter of regret that, according to the report, the mining classes at Sibpur have not been found to be a success, and it is to be hoped that the project for a Central Institution at Asansol will soon take definite shape. Amongst the industrial institutions, the most important industry dealt with appears to be weaving, and considerable success has attended the attempts to promote a revival of the handloom industry, while in Bombay the powerloom industry receives attention at the Victoria Technical Institute.

Commercial education still, comparatively speaking, a novelty even in the West, has made very striking progress. The University of Bombay has instituted degrees in commerce and a commercial college of an advanced type has been started, while the universities of Allahabad and the Punjab grant commercial certificates. There are, besides, commercial

schools in Madras, Agra, Lucknow, Meerut and Lahore, while in Calcutta, the commercial classes in Bengal were transferred from the Presidency College in 1907 and became a separate institute under the name of the Government Commercial Institute. It offers a day course extending over two years and comprising modern English, commercial correspondence and precis-writing, commercial and mental arithmetic and geography, book-keeping, shorthand, typewriting, and commercial Bengali. Evening classes have been held in reporters' shorthand, political economy and mercantile law. The examinations are controlled by a board including representatives of the chambers of commerce. The report complains of the disposition of pupils to neglect all subjects in favour of shorthand, typewriting and book-keeping, the difficulty of convincing employers that there is virtue in any of the subjects taught save the first two of these, the preference for university examinations, and the competition of private schools, which (says the principal) "are prepared to teach any one just as much or as little as he pleases, and that too at whatever time of the year it may be convenient to him, and at whatever hour of the day."

Belgium Farmwomen's Club.

The beneficent influence that women exert in the field of agricultural economics is recognised by all. They occupy themselves individually with agricultural interests. But they possess no institution uniting new forces for definite and permanent action.

Belgium, a country very prolific in social experiments, gives us an example of what may be achieved by the organization of farm women.

Indeed by the side of the very numerous agricultural associations, formed for the most part of men, in that country, farmwomen's clubs spring up and extend themselves, after the example set by Canada.

The principal inducement for the foundation of these institutions was, the necessity of arresting the rural exodus that is assuming more and more alarming proportions, and extending itself even among women.

It was considered that one of the most effectual means of opposing this tendency would be to appeal directly to the women, to make them appreciate the benefits of country life and warn them against the delusions and dangers of the cities, as well as give them professional instruction, so that they might be better fitted for the performance of the special duties entrusted to them, such as dairying, poultry improvement, gardening, etc.

For this purpose, the farmwomen had to be united in permanent associations. There thus arose in 1906 the first *cercles de fermieres*, spreading rapidly through the whole of Belgium. It is calculated that there are now more than two hundred of them.

A recent number of the *Monthly Bulletin of Economic and Social Intelligence* supplies us with very useful information regarding these.

It is stated that their organization is very simple. During the session of a women's agricultural school, the pupils recruit members from among the farmwomen of the neighbourhood and the first nucleus of the club is thus formed. It is managed by a lady president, two vice-presidents, three councillors and secretary-treasurer. The members pay a contribution of fifty centimes (nearly 5 annas in Indian money). With this, provision is made for the needs of the society, and articles of domestic use, agricultural implements, selected seeds, etc., are purchased.

In the course of the meetings, held generally four or five times a year, lectures and practical lessons are given, agricultural competitions and shows are held and lotteries organized.

Almost all the clubs also possess a library of books on domestic economy, agriculture, hygiene, dairying, livestock improvement, gardening, etc. The clubs supply newspapers also.

The number of members, reports the bulletin, shows a continual increase, which is significant. Many clubs have already more than 200 members. The numbers of those attending the lectures are also encouraging and they appreciably increase from year to year.

Like the other forms of association in

Belgium, the farmwomen's clubs also tend to unite in federations.

First of all, there is the "*Comité National des Fédérations des Cercles de Fermières*," presided over by a Baroness, to which are due various undertakings which have not a little contributed to the improvement of the associations.

This Committee, convinced of the utility of an interchange of ideas with regard to the best manner of enabling the farmwomen to accomplish their work, promoted the 3rd International Congress of Farmwomen's Clubs, which was recently held at Ghent this year under the patronage of the Belgian Government.

The Committee, in its desire to supply its affiliated clubs with competent lecturers, has instituted an examination for a special lecturers' certificate and fixed a severe programme for it.

This includes the theory of organization, the means of procedure in the clubs, rural book-keeping, the education of children, the question of rural exodus, as well as the study of the means for rendering life in the country agreeable; it also includes various subjects as to the cultivation of gardens, the sanitation of farm houses and cattle stalls, the diet of the peasants, livestock improvement, women's work, etc.

Another question which keenly interested the National Committee of the Federations of Farmwomen's Clubs recently was that of agricultural professional instruction to be imparted to the young women of the rural communes. While waiting for a law sanctioning such instruction, the Committee decided on organizing a higher course of rural economics, and the success of the lectures given was most flattering.

An idea of the range of subjects dealt with may be formed from the following lectures delivered at the meetings of the Farmwomen's Clubs of the Province of Hainaut, 1907-1912:—

The farm in history; the hygiene of the farm; improvements to be introduced on the farm; lighting of the farm; livestock improvement and its future; the fight against apthons stomatitis; care to be taken in dairying; the hygiene of the cattle stalls; microbes in milk; butter making; poultry

improvement; gardening; horticulture; preservation of vegetables; the farmwoman's duties as wife; the farmwoman's social duties; the farmwoman's day; household education; health of babies; babies' sleep and food; teething, tuberculosis; the development of the will in children; badly trained children; an apostleship to be exercised; anti-alcoholism; the care of the wounded; a new defence against hail; a journey to the Holy Land, with lantern slides; and patriotism and the mothers.

The moral and religious subjects as also everything of the nature of recreation (moving pictures, limelight views, etc., etc.), are usually entrusted to priests. The others of technical character are, instead, dealt with, according to the nature of the themes by doctors, lawyers, schoolmasters and State scientific agriculturists.

It will be interesting to reproduce the desires expressed at the Ghent Congress, in relation to the clubs of the Province of Hainaut. They were:—

(1) That the above clubs may above all keep faithful to the line of conduct marked out at their foundation, that is to say, may always include in their programme both professional and moral or religious education.

(2) That the lime light views and moving pictures, exhibited in these clubs, even if intended for purposes of recreation, may always have for their object that of developing the sense of the true, the beautiful and the good.

(3) That the farmwomen adhering may always become, in a greater degree, participants in the advantages offered by the professional unions and mutual institutions.

(4) That the number of honorary members and patrons may increase.

The *Bulletin* concludes:—The results of these interesting women's organizations in Belgium have been most happy. As may be seen in the various publications and reports dealing with the matter, the farmwomen flock most eagerly to the meetings, take keen interest in the lectures and derive great profit from

them ; this appears in no doubtful manner in the considerable progress already observed in poultry improvement, dairying, gardening, preparation of preserves and finally in every department in which women's action is prominent.

Primary Education in Mysore.

A special grant of one lakh of rupees has been allotted in the current year's budget for the expansion of primary education in the Mysore State. Recently the proposals of the Inspector-General of Education for the opening of 158 new schools and for strengthening the establishment of existing schools at a total cost of Rs. 41,685 per annum have been sanctioned, and the expense will be met out of the grant of one lakh of rupees above referred to.

We learn also that a lump sum of Rs. 15,000 has been also sanctioned, for furniture and appliances to the new schools. The amount of attention that is being devoted in the Mysore State to education, agriculture, commerce and industry should serve as an object lesson to all other Native States in India.

Agricultural Education.

According to an article appearing in the *Farm and Home*, Belgium is one of the countries which possess a sound and well-graduated system of agricultural education. Facilities appear to be afforded by the State for the study of all branches of agriculture by all classes of agriculturists, both male and female. The Tirlement Provincial School of Agriculture gives instruction during the winter months only ; each course extends to four weeks, and young men (farmers' sons) attend five days a week. During the summer months the Director occupies himself by visiting farmers. In this way he is kept in touch with the practical side of agriculture, and undoubtedly becomes possessed of good knowledge which proves useful to him when framing the courses of instruction for the winter. The subjects taught include agriculture, farm machinery, elementary science, veterinary

science, hygiene, and horticulture, and in the teaching of all these subjects the practical and useful side is kept well in view.

In the State Agricultural Institute the highest form of agricultural teaching is given, and students come from all parts of the world to undergo a course of training. The institute includes museums, lecture rooms, and laboratories. There is a farm attached, a chemical and bacteriological station, and a pot culture station.

A School of Commerce.

Anent the Hon'ble Mr. K. R. V. Krishna Row's plea for the opening of a new School of Commerce at Cocanada, which the Government unfavourably considered, the *Educational Review* remarks that we are considerably behind the Provinces of Bombay and Bengal in the matter of Commercial Education. The Government of Bombay has recently established an up-to-date College of Commerce, intended to train up young men in all the advanced methods of the commerce of to-day. And the Government of Bengal is also embarking on a gigantic scheme of a Technological Institute at Calcutta which is to cost several lakhs of Rupees. But the Government of Madras declines to open a new School of Commerce at an expense of twelve thousand rupees ! The location of a solitary School of Commerce on the West Coast, at Calicut, is a circumstance on which the Government of an extensive province embracing forty millions of people, cannot congratulate itself.

Agricultural Journal.

Sanction has been accorded for the publication of a quarterly agricultural journal in Malayalam by the Agricultural Department of Travancore. With a view to bring the journal within the reach of even poor ryots, the annual subscription has been fixed at Re. (1) one only. It is hoped that the journal will become popular among the ryot population and prove an efficient means of spreading scientific agricultural knowledge among them.

Departmental Notes.

INSURANCE.

Loans on Life Policies.

As observed by the *Insurance and Finance Gazette*, as security for loans, life policies render important services to the insured ; up to the surrender value there is no superior security in the market.

All other negotiable securities are liable to depreciation in value.

There can be no such thing as shrinkage in the worth of surrender values ; instead of there being any fall, the older the policy becomes, the surrender value increases.

To enable a company to meet its obligations, life insurance funds must be profitably employed and earn interest.

Valuations assume that funds earn an estimated rate ; the estimated rate is placed at a lower figure than the anticipated rate, and the difference is one of the most important sources of profit.

The estimated rate is from $2\frac{1}{2}$ to 3 per cent., and companies would be well satisfied if they could rely on 4 per cent. at a dead certainty.

What is intended to be implied by a dead certainty is earning 4 per cent., free from the possibility of shrinkage in capital value.

These conditions are fulfilled by loans on surrender values ; the security is absolute, the earning of a profit rate by the company a certainty.

Loans may be invaluable to the policy-holder by enabling him to keep his policy in force, and monstrous would be the proposition that loans should be granted to any one else on more favourable terms than would be conceded to the policy holder.

The Sun Life Assurance Society.

We learn that the Governor-General in Council is pleased to exempt the Sun Life Assurance Society of London, from all the provisions of the Indian Life Assurance Companies Act, on the condition that the Company does not accept any new business in India.

ECONOMIC PRODUCTS.

Rice Straw.

The burning of the fine rice straw by the Negroes at their dances was a great autumnal event in the American Continent. A Detroit chemist obtained some of the straw and declares it good paper-making material.

A Pepper Substitute.

According to a German inventor, a good substitute for natural pepper can be made from nettles by the following method :—

The nettles are harvested just before flowering and dried. After drying they are ground and then boiled for a couple of hours with 20 per cent. of their weight of alcohol, 3 per cent. of vinegar, 10 per cent. of water, 5 per cent. of oil and 2 per cent. of salt. After the greater part of the liquor has evaporated the remaining mass is dried and pulverized.

It is said that this product is a complete substitute for natural pepper and can be manufactured at a fraction of the cost of the natural tropical article.

Paper Saws to Cut Veneer Wood.

Circular saws made of paper, for use in making veneer and fine furniture, are being turned out in a factory in England. Thin plates of wood cut by these saws are so finely finished that cabinet makers do not have to plane them at all before they are used. Such saws were originally shown at an English exposition and were driven by an electric motor. They are manufactured from compressed drawing paper. Indeed, compressed paper of such hardness has been made in England that it has even been used in place of building stone. Experiments in the manufacture of car wheels from compressed paper have been made in America for a number of years but the product has never competed seriously with the ordinary steel wheels. It is only in the production of certain articles as the veneer saws that any advantage is found.

MACHINERY AND APPLIANCES.

Sun Power for Mechanical Purposes.

It is reported that public demonstrations are now being given of the working of a sun-power plant recently erected at Meadi, near Cairo. The principle involved in the plant is the invention of an American. Its mechanism may be said to consist of a series of reflectors and absorbers, a low-pressure steam engine, a condenser and a pump. There are five reflectors (each 204 ft. long and paraboloid in form) spaced at intervals of 20 ft. and made up of a series of 4 in. glass mirrors. These mirrors automatically follow the course of the sun and are regulated by what is called a "thermostat," the secret of the invention. The reflected sun rays are concentrated on the boilers, and the steam generated is conveyed to the engine, while the exhaust is condensed to water and returned to the boilers.

Testing Machinery for India.

The College of Engineering at Poona has recently been equipped with machinery for testing materials of construction, comprising appliances for performing impact, tension, torsion, and transverse strain tests. The torsion testing machine has a capacity of 10,000 lb., and is similar in design to that employed at Birmingham University. It is fitted with Avery's improved type of steelyard on which the travelling poise, by means of which the strain is indicated, is propelled by means of a central screw which is rotated by a hand-wheel. The capacity can be made either 5,000 in. lb. or 10,000 in. lb. by altering the position of the fulcrum of the main lever. The combined testing machine for tensile and transverse strains is the "laboratory" pattern, and is constructed to test to 80 cwt. tensile and 50 cwt. transverse. The strains can be ascertained at any moment of the test. For the tensile test specimens $\frac{1}{2}$ in. in diameter, and for transverse tests bars 2 in. by 1 in. section (or less), and up to 36 in. span, are used. The cement tester is designed to test by tension to 1,200 lb. The strain is applied by means of fine shot flowing into a receiver at the end of the steelyard at a uniform rate of 500 lb. a minute as laid down by the British Standard Specification.

SCIENCE AND INVENTION.

"Algin."

A new product of seaweed, the invention of which is announced from Liverpool, is called "algin," and is used in the manufacture of non-inflammable cinematograph films and in the treatment of paper to make the latter water, flame and germ proof. Algin is said to be odorless.

Control over Atmosphere.

Sir Oliver Lodge, the great scientist, thinks that it is possible to acquire some sort of control over the weather and to manufacture sun-shine or rain, as may be desired. Addressing the Institution of Electrical Engineers, Sir Oliver contended that if the clearing of the weather was due to electricity, as was generally believed, it would be possible to control the electrification of the atmosphere and thereby to control the atmosphere itself. For instance if rain was to be produced, all that was necessary was to send up a kite to reach the clouds and to discharge sufficient electricity into the clouds. The drops would then coalesce, and once that had been done, it might spread and give a "real rain shower." If they wanted rain, "they should reverse the electricity of the earth and send up negative electricity; and if they wanted fine weather they should send up positive electricity."

A New Method of Paper Manufacturing.

It is reported that a company has been formed in Gothenburg for the purpose of manufacturing paper, cardboard, etc., by a new method. The new method differs chiefly in one respect from that now in use for paper-making, viz., the employment of chalk as filling as well as binding material. Chalk has certainly been used in many places before now as a paper-filling material, but it has always been neutralised by adding carbonic acid to the solution, and it has thus been necessary to use a binding material. By this new method chalk is, however, used as a binding material as well and a double purpose is thus served. The chief advantage is, of course, the comparative cheapness of the new product. It is said that the paper is of smart appearance, the quality at the same time being very good.

HEALTH AND HYGIENE.

Fainting Persons.

They should be laid flat on their backs, and to raise a fainting person might easily convert faintness into death.

Heat as a Remedy.

When an attack of pain comes on, no matter where it may be, the best remedy for the moment is heat. This may be applied in various ways, a hot-water bottle or a salt-bag may be laid against the skin; a wad of plain cotton wool made hot and bound in place by a bandage, or a stimulating lotion or cream may be rubbed on the skin.

Soaps and Their Effects.

Those who use soap largely in their baths may like to know that—

1. All soaps, from their chemical constitution, must be irritant to the normal skin.

2. The effect varies with the individual skin, and is more pronounced in senile and diseased skins.

3. Cotton-seed oil and rancid fats are probably largely responsible for the irritant effects in cheaper soaps. They are much more commonly used now than in former years. Gardine is of the opinion that the first mentioned is, uncombined, a skin irritant, but this is a matter for further inquiry.

4. The bactericidal power of soaps is *nil*, and even when combined with antiseptics they are of no value as germicides.

5. There may be some reason for the introduction of such substances as sulphur and ichthyol, into soaps because of their effects on the glands and blood-vessels of the skin, but, clinically, antiseptics, and above all carbolic acid, increase irritation.

6. There is no scientific basis for the addition of extra fat to soaps, as when soap is mixed with water, the alkali freed will at once unite with the superfluous fat.

7. Resin and impurities have no significance from the present standpoint, but paraffin and benzene derivatives, when incorporated with soaps for cleansing purposes, increase the harmful effect on the skin.

8. The minimum of soap should be employed and well washed off.

HINTS AND RECIPES.

Stains.

A cut lemon will often remove even obstinate stains, but strong spirits should on no account be used for removing them or grease spots.

To Clean Coffee Pots.

Use dampened salt to clean the coffee-pot, which needs it occasionally to get rid of bad stainings. Thoroughly rinse in tepid water afterwards. Turn it base upwards to drain and dry.

To Address an Envelope with a Pencil.

If you have to address an envelope and ink is not available, write with a pencil, breathe well immediately after writing. It will never smudge or become indistinct.

Preventing Mould on Books.

An effective way to prevent books from becoming musty and possibly mouldy in moist weather is to place a few drops of oil of lavender and Canadian balsam in a back corner of each shelf. This will not injure the bindings of leather books as sulphur compounds do, but helps to preserve the bindings.

Onion Odour.

If the hands, after peeling onions, are washed in water to which a little vinegar has been added, the unpleasant smell of the onions will entirely disappear. Saucepans used for boiling onions can be made sweet again in the same way—that is, by boiling vinegar and water in them for a moment or two.

The Making of Mirrors with Hydrogen.

Metal-backed mirrors can, it is claimed, be produced in 30 seconds by what is stated to be a new process of electro deposition. A glass plate for the mirror, in juxtaposition to a sheet of metal to be used as backing, is enclosed in a glass bell resting on a ground-glass plate. When, after the bell has been exhausted of air, hydrogen is passed through the bell simultaneously with an electric current, the metal is disintegrated and deposited in a thin film on the glass plate, producing an opaque mirror. Gold, silver, platinum, copper, nickel, iron, palladium, or iridium can be used as the metal backing.

MISCELLANEA.

The Mysore Silk Association.

The Mysore Silk Association was formed on the 2nd of April at Chennapatna. About 90 members have already joined the Association.

Industrial Education.

At the annual meeting of the Association for the advancement of the Scientific and Industrial Education of Indians held recently, the Hon'ble Rai Sita Nath Roy Bahadur, the President, said that the Association had been working for the last ten years and had sent about three hundred boys to different parts of the civilized world. He prayed that Government would do all to promote the industrial development of the country and desired the immediate establishment of a Technological College in all provincial capitals.

Financing Feeder Railways.

In November last the Government of India published a Resolution revising the terms for the construction of branch railways by private enterprise. It has been represented to Government that it will facilitate the raising of capital for the construction of feeder railways under the Resolution referred to if a part of the required capital be provided on guarantee terms and the balance on rebate terms. The Government of India have accordingly modified the original Resolution in order to permit of the capital required for feeder lines being raised in the manner proposed.

The Water Power of India.

When the *per capita* water power of Canada is compared with that of India the developed power of the latter dwindles into utter insignificance, taking the population of India at 815,500,000 and that of Canada at 8,000,000 of people. The water power already developed in Canada is a little over 100,000 horse-power and the works now in construction will add to it about 1,860,000. The potentiality of the water power in Canada, as officially surveyed and estimated, reaches an amazing figure of

40,000,000 horse-power. Has the Government of India ever carried out even an accurate survey of the potential water power in the country? asks the *Hindustanee* pertinently.

Indian Pig Iron.

The exports of Indian pig iron have notably expanded owing to the establishment of the Tata Iron and Steel Works at Sakchi, their total production for last year being 97,637 tons. The Barrakur Iron Works also increase their production from 49,183 to 58,041 tons. The exports from Calcutta were 92,000 tons and the value about 47 lakhs. Of this quantity, Japan took the total of 80,000 tons and 10,818 tons went to Australia. There was also a small demand springing up in India, the exports to Indian ports being 3,763 tons.

Kirkee Dairy Farm.

The Bombay Government have decided to increase the scope and function of the Civil Dairy at Kirkee, which, at present, supplies milk to hospitals and some private consumers in Poona. A scheme formulated by the Agricultural Department for the daily output of one thousand pounds of milk has been sanctioned and the necessary provision has been made in the Budget for a non-recurring grant of Rs. 64 thousand and odd.

Punjab Cement.

Ancient the Punjab Government's cement contract, the *Indian and Eastern Engineer* remarks that the endeavour to secure a cheaper source of supply is thoroughly to be commended, but with a number of companies already in the field to develop local cement manufacture, all that seems necessary is to state that the Punjab Government will be open to receive certain quantities, at a proper standard, and leave the concerns to work out their own manufacturing salvation. With effective competition the price is bound to be the right one, and it appears very undesirable that a monopoly should be handed over to an untried and unproved syndicate, none of the members of which appear to possess either local or technical knowledge.

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Current Topics

BY ECONOMICUS.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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The usurious money lender has earned an unenviable notoriety in all climes and ages, and in India the rapacity of the sowkar is proverbial. The Christian Church in the Middle Ages, it is well-known, condemned usury and even the taking of ordinary interest and the State, inspired by the metaphysical ideals of the time, lent its support to the canon laws about usury, regulating the taking of interest, from time to time. Heathen philosophers held similar views and the taking of interest had long been looked upon as taking advantage of the distress of the helpless. In spite of this chorus of disapproval and the obviously malevolent character of usury, the conveniences and advantages of a universal system of lending and borrowing under certain conditions came gradually to be appreciated, the restrictive laws were easily evaded and the money lender became a benefactor—though not a disinterested one—of society. The economic structure of modern times has been raised upon the foundations of credit, and therefore of lending and borrowing. Though the power of what is called capitalism is looked upon with a jealous eye, and rightly so, the money lender, corporate or individual, has obtained a well recognized and secure place in society. This does not mean that usury—the exacting of exorbitant rates of interest—is approved; far from it. On the contrary, efforts are being made to enable a

person to get loans on easy terms, and the rate of interest has considerably fallen. A man wants money for improving his position, setting up a small business, purchasing tools and implements, building a house for himself and so forth and he can obtain the necessary funds from a Co-operative society. The co-operative credit movement in India, however vigorous, is only of recent growth and the indebtedness of the masses and the power of the money lenders over them in this country are notorious. The ways of the sowkar are inscrutable and his grip firm and relentless. Something can, of course, be said on the side of the money lender who is apt to regard himself as a person unfairly treated by society. The needy go to him and press for immediate accommodation. They have little or small security to offer and the sowkar must ensure against non-payment of the capital by exacting a high rate of interest. He performs a useful function in society by assisting the needy and the distressed, has often to incur considerable losses and yet is branded as a rapacious creature preying upon the ignorant and the necessitous. Whatever truth there may be in this self defence of the sowkar, it is the clear duty of the statesman and the reformer to render the trade of the usurer unprofitable and thus impossible by providing credit facilities to any person who would use the borrowed funds in a reasonable way. All borrowing and money lending cannot be stopped; that would be too puritanical and autocratic to succeed and to have wholesome effects even if it does succeed. What can and need be attempted is the limitation of the power of the money lender in the interests of the community and the prevention of an abuse of that power.

It is not only in India that temptations to borrowing are great or that the money lenders are a danger. Laws already exist in England and other countries which are designed to protect the borrower from the clutches of the money lender. Even now there is a Bill before the British Parliament which seeks to improve further the law

in the matter. Under it the money lender will have to register himself under a particular name, the rate of interest will be limited to 15 per cent. per annum and other restrictions will be imposed upon his operations. Violation of the laws will be visited with punishment in the form of fine and imprisonment. It is said that in England, the money lending spiders cast their nets far and wide and entrap the unwary and the needy. By means of alluring circulars and advertisements they draw in their prey into the glittering meshes of their webs, and when once they are in, escape is well nigh impossible. In India marriage and funeral expenses and what Dr. Marshall would call "conventional necessities" drive a man of ordinary means into the clutches of the money lender and the poor ryot has often to borrow in times of insufficient rainfall and other calamities as well. A poor man who has no security to offer—as he usually has not—is reduced to the condition of a slave and is often clapped into jail for his inability to meet his obligations. As the *Madras Times* remarks, "sowkars and others are now ready to give loans to persons holding permanent employment without tangible security, and such loans would not be given if the punishment of imprisonment for debt were abolished." It is therefore gratifying to learn that the Government of India has under consideration legislation for this country somewhat on the lines of the English Money Lenders' Act. In certain parts of the country there are in operation such laws designed to protect particular classes of debtors, for instance, the Deccan Agriculturists' Relief Act, and a comprehensive Act for the whole of India is badly needed. It would, however, be an error to suppose that the problem of the evil of indebtedness would be solved by a mere Act of the legislature. The evil is social and economic and the disease lies deeper. In certain cases the sowkar is the friend of the needy cultivator, but the former can be eliminated with advantage if sufficient credit facilities are made available to the ryot or the artisan and the employee. The one efficacious remedy is the extension of the co-

operative credit movement and already there are signs that the money lender is losing his power in places where there are credit societies working. Co-operation is working wonders in other lands and it is bound to have beneficial results in this country too. If a prospective debtor cannot get credit from a usurious sowkar, he will perforce have to learn thrift and self-reliance, and from this point of view a Money Lender's Act seems to be desirable in India, though the measure will have to be framed with great care so as to suit the peculiar conditions and needs of this country.

The Chancellor of the British Exchequer has been all along acting upon the principle that the rich must be made

to pay for the efficiency, health and comfort of the nation while the poor must as far as practicable, be relieved of the burden of taxation. Though wedded to a policy of retrenchment and economy, as a party, the Liberals have, during their regime, witnessed with equanimity and perhaps even with a sense of pride and triumph, the national expenditure mounting up year after year till at last during the current year it has reached the unprecedented figure of about £210,000,000. A section of the Liberal party has been loudly protesting against the increased expenditure on the navy, but the Government have been compelled by force of circumstances to foot a heavier naval bill every year. Besides this item of expenditure, the Government have entered upon liberal schemes of social reform, calculated to ameliorate the condition of the mass of the people and liberal grants for health, education and insurance are being made. In introducing the new Budget, Mr. Lloyd George remarked that his proposals marked a decisive step forward in the happiness and efficiency of the people for the greater strength and honour of the nation. A section of the Liberal party has been urging upon the attention of the Chancellor the urgency of removing the duty upon tea and sugar but he has not been able to give them what is described as a "free breakfast table." Far from being in a position to remit

taxation, Mr. Lloyd George has had to raise the necessary amount by additional taxation, though this fresh burden falls upon the shoulders of the richer classes. Fortunately for the Liberal party, Great Britain is being borne upon a tide of industrial and commercial prosperity and the optimistic calculations of the Chancellor on which the last year's budget was based have been justified. During the lifetime of the present Ministry, the national expenditure of Great Britain has increased by about £50 millions, but undeterred by the rapid pace which has been characterised by hostile critics as reckless and insane, Mr. Lloyd George has budgeted for additional expenditure of nearly ten millions. On the last year's basis of taxation the revenue would have been £200,655,000 and the total expenditure £205,985,000 leaving a deficit of £5,330,000. To this last sum must be added new grants amounting to £4,218,000 made for health, education and Insurance Act charges. This excess of expenditure will be met by a tightening of the income tax screw and an increase in the death duties, and one million will be provided from the sinking fund. Whatever one may think of Mr. Lloyd George's methods of finance and principles of taxation, we in India cannot but admire the spirit in which he is providing for the promotion of social reform and the amelioration of the condition of the masses. We are only made conscious of the work that lies before the Government in India in the matter of the spread of education and sanitary reforms, and are tempted to cry for a Lloyd George as Finance Member in this country. We are told that the increase in the education grant in the new budget would amount to £2,750,000 to cover the feeding of necessitous children and physical training. Similarly a further grant is made for fighting tuberculosis, the training of nurses and laboratories for the diagnosis of diseases. There is here a conscious attempt to bend British financial policy towards the promotion of national health, comfort and general efficiency, and it is calculated to teach us a lesson which Government in this country may well take to heart.

We notice that the difficulty which is being experienced by **Technically-trained Indians.** technically-trained Indians in getting suitable employment in mills and factories in this country has recently been the subject of a lively controversy in the columns of a Bombay contemporary. On the one hand public opinion in India is urging upon the Government the desirability of more liberally providing facilities for technical education in this country and abroad, and on the other, there is a loud complaint among those that have received such education that they have no scope for the employment of their knowledge and experience. Several of our students who have returned from foreign countries after undergoing a course of technical and industrial training or who have received their education in India itself, have indeed been engaged in industries and they are reported to be doing well. Government, of course, provides facilities for technical education in England or in this country but it does not take upon itself the responsibility of providing work to the trained men. Such young men are therefore selected for foreign State Scholarships as have had some preliminary training in India and are also expected to enter an industry on their return home. But if our young men do not get suitable work, what is the use, it is asked, of turning out technically-trained youths year after year only to swell the ranks of the unemployed B.A.'s. This is indeed a practical question of great importance to which serious public attention must be directed. Our readers may remember that this subject was inquired into by Government some time ago, and Messrs. Dawson and Atkinson presented an interesting report upon the prospects of the technically-trained Indians. In that report which was mainly devoted to the question of bringing employers of labour and trained Indians into touch with one another, the opinions of several mill owners were quoted. Many of them found fault with the young men whom they represented as conceited youths who wanted fat salaries but who were unwill-

ing to begin at the lower rungs of the ladder and to take off their coats. The controversy to which we have made reference above brings out this sharp conflict between the two parties. While on the one hand the trained youths are put down as useless for practical work, on the other, the employers are described as unpatriotic and ignorant men who do not want to deal fairly with their own ambitious and promising young men. It is alleged that Europeans with no better qualifications are preferred to Indians by Indian employers who, barring a few exceptions, are out of touch with the trend of things in the country. We believe recrimination of this sort will do nobody good. There can be no doubt that the attitude of Indian employers is not what it should be, but our young men must make the best of the situation. They should take concerted action to bring the employers round to their view and the more enlightened among our mill owners and capitalists ought to bring home to the minds of their brethren their responsibilities to their country in this respect.

The action of the Government of the Punjab in granting a monopoly **Cement Con-** to a London syndicate for the manufacture and supply of Portland cement for a period of ten years, has justly provoked adverse comment. State assistance for the exploitation of Indian resources in the direct interests of the people of the country will be welcomed and has indeed been solicited. Concessions are granted here and there by the Government to pioneers of indigenous industries, but it is a long-standing complaint of the people that the State in India does not evince the requisite solicitude for the conservation of the mineral and other resources of the country. In his presidential address at the Industrial Conference held in this city in 1908, Mr. R. N. Mudholkar observed:—"The desire to stimulate production cannot justify the complete handing over of mines to persons who have no permanent interest in the land. . . . On the other hand, as trustees of the permanent wel-

fare of the Indian people the Government should recognize the serious injury that would be caused to those interests from exploitation by outsiders who have no permanent stake in the country." Far from actively stimulating indigenous enterprise by the direct action of the State, the Government laid down the limits of that action with reference to this Presidency when Lord Morley was Secretary of State, in a way which was disapproved by the people and the Local and Imperial Governments. We now see the Punjab Government making a ten years' agreement with a London syndicate for the manufacture and supply of cement to that Government. No other cement works will be allowed to be started in the province for a period of ten years, so as to give the syndicate the full benefit of the local market, and the Punjab Government bind themselves to buy, for the next ten years, all the cement required by it and its contractors in all departments from the syndicate and not from any other suppliers at a certain rate. It is now pointed out, in spite of the statement of Sir Louis Dane that the contract is perfectly satisfactory, that there are already four new cement concerns started during the last year or two and that there was absolutely no need to grant a monopoly to a London syndicate. It is difficult to understand what advantage to themselves or the people of the country the Government of the Punjab expect to gain by this sort of agreement. We are told that a powerful cement trust in London is going to take over the whole or a substantial portion of the company which it is proposed to form on the strength of the recent negotiations and contract with the Punjab Government. If this is so, the action of that Government becomes still more indefensible. The explanation given by Sir Louis Dane for the information of the public with regard to this transaction is not convincing and until stronger reasons are forthcoming, the agreement will continue to be regarded as an extraordinary one. From the Indian point of view the monopoly granted to the London syndicate appears to be thoroughly unjustifiable

and if the Government of the Punjab wished to assist the exploitation of the resources of its province, there are other and better methods by which the object could have and ought to have been attained.

Apart from the very interesting question which was raised some time back in the Imperial **Railway Finance.** Legislative Council as to the desirability of the State in India, which owns the bulk of the railways in the country, managing them also, instead of entrusting the management to private companies, the policy of the Government with respect to its programme of railway construction has an importance of its own. People interested in the rapid transportation of goods from one part of the country to another, especially those who want to facilitate the diffusion of foreign goods throughout the land as also the exportation of its raw produce, have been clamouring for an extensive programme of capital expenditure on railways. The Indian railways are an important financial asset and have begun to yield a decent revenue. While appreciating the value of this asset, Sir G. F. Wilson gave a warning last year against hasty schemes and regarded the railways as a business proposition. Larger capital expenditure upon railways would mean greater cost and a reduction in revenue. But the Mackay Committee of 1907-08 recommended that the programme of capital expenditure on railways should be fixed at £12½ millions per annum and this decision was endorsed by the Government of India and accepted by the Secretary of State. Attempts have been made to work up to this standard but it was only during 1913-14 that the standard of expenditure could be attained. This result was possible owing to certain fortuitous circumstances, particularly the heavy cash balances which had accumulated in the Government Treasury. Recently, the Secretary of State has found it very difficult to raise loans in the London market for financing the railway programme and during the past five years only about ten millions could on an average be ex-

raise a much superior variety that will even compete with the Havannah makes and it is surprising that the identical seeds, when scientifically preserved, will go a long way in accomplishing the feat. Below we give one of the methods, which is applicable to all sorts of seeds and grains :—

The receptacle should be well closed. If it is a room,—the shutters, windows and doors should be carefully closed with mud, and if a wooden box, with mud and cowdung paste at the joints and openings finishing with a final touch of coal tar along those lines. The cases are to be placed on bricks to allow sufficient play of air and light all round them. But the cases themselves should be air and light tight.

First of all, select the best variety of the seed available. Dry in the sun and also season in the night mist for a day or two, finishing with the sunning. Now clean them as far as practicable. In the meantime have the case prepared as above and let it be in the sun. Procure plenty of dried neem leaves and put a layer in the bottom of the case. Sprinkle a small quantity of naphthalene powder, (a pinch or two will do), then put in the seeds yet dry from the sunning, and make a layer of about a couple of inches thick. Then repeat the layers as above and so on, till the case is filled up; then put on the lid and close and seal with mud and cowdung as suggested above. It would be better to fumigate the case once a month with sulphur. This is nothing but burning a small piece of sulphur near the case. Keep the surrounding spaces neat and clean. Carbon disulphide is a better preserver and a few drops put on the top before sealing the box will be very useful, the fumes from it being heavier than the atmospheric air sink gradu-

ally to the bottom and thereafter spread to all the corners of the case by the physical action of osmos and a dialysis of gases. The carbon dioxide is a little costly article no doubt, being Re. 1 per lb. but an ounce or so of it will last for several years.

We have dealt with the preservation as above on a small scale of course, but there will be no difficulty in applying the same principle to all other purposes, whether in bottles, earthen jars, granaries, or big rooms. If in rooms or vats, it will be useful to line the floor with a thin coating of coal tar surmounted by another layer of dried neem leaves or straw for receiving the seeds or grains. Probably the outturn from such seeds will be about double the amount of that raised generally and the quality decidedly superior.

The main principles to be observed in the preservation are, therefore, the following :—

(1) Expel all the moisture from the seeds as far as practicable, but the exposure to the night mist is necessary for thoroughly carbonising the outer skin and the sub-cutaneous layer under it. After this is effected, the moisture can again be driven out by another sunning.

(2) In the above condition, insects or bacilli cannot easily attack the seed, and this risk should be further minimised by removing from the neighbourhood all dirt, and unclean matters.

(3) The function of the neem leaves, naphthalene and carbon disulphide is two-fold. While repelling all insect and fungus pests they keep the young plant-food fresh and healthy. But these functions are to a certain extent counteracted by the moisture of the atmosphere and the deoxidising action of diffused light. Hence the necessity of excluding air and light from the seeds.

A GOLD STANDARD AND CURRENCY

By the Editor.

The main object of all discussion in recent times on the subject of Indian Finance and Currency is to secure and maintain a stable rate of exchange in the transactions between silver-using India and the gold using countries of the world, notably England. All are agreed on the object but the question is how to secure it.

The Fowler Committee of 1898 recommended a gold standard for India and also a gold currency in the place of silver in India. They looked forward to "the effective establishment in India of a gold standard and currency based on the free inflow and outflow of gold" for the solution of the exchange problem. Under an effective gold standard, rupees would be token coins subsidiary to the sovereign, but until conditions should be ripe the rupee was to continue as unlimited legal tender. They also made certain subsidiary recommendations to achieve the main object in view. These were:—

1. that the sovereign should be made legal tender. This has already been done ;
2. that the Indian Mints should be thrown open to the free coinage of gold;
3. that fresh rupees should not be coined until the proportion of gold in the currency is found to exceed the requirement of the public ;
4. that any profit on the coinage of rupees should be kept in gold in a special reserve;
5. that this reserve should be used, in the first instance to maintain the exchange and later on, for issue to the public in discharge of the obligations of Government.

It is thus clear that the Fowler Committee of 1898 looked forward to the ultimate establishment in India not merely of a gold standard but also of a gold currency in active circulation and *in the mean while* the currency of India was to be on the French model, both the Sovereign and the Rupee circulating and being alike unlimited legal tender.

The recent Chamberlain Commission of 1913 however consider that "India neither demands nor requires gold coins to any consider-

able extent for purposes of circulation (as opposed to saving or hoarding), that the most generally suitable media of internal circulation in India are at present rupees and notes and that the Government should, as opportunity may offer, encourage notes while providing, and this is the cardinal feature of the whole system—absolute security for the convertibility into sterling of so much of the internal currency as may at any moment be required for the settlement of India's external obligations." Briefly put, while the Fowler Committee recommended the ultimate *dethronement of the rupee* and the installation of the sovereign in its place, the Chamberlain Commission recommend the *retention of the rupee* and the provision of a gold reserve sufficient to meet foreign gold obligations alone.

In other words, the ultimate goal of a gold standard and an automatic gold currency set by the Fowler Committee has been given up and in its place the *transitory* arrangements suggested by them to work up to that goal, *viz.*, a silver token currency for internal purposes and a gold reserve to meet foreign obligations are to be permanently adopted.

Such a radical change of policy requires to be supported by ample justification and convincing proof and here I am afraid the Chamberlain Commission wholly fail.

They do not appear to have a correct idea, at any rate, they have not expressed themselves clearly, about the standard of value in India. In para. 8 of their report they observe that it is "impossible to deny, in face of all the evidence that India has derived enormous benefits from the substitution of gold for silver as the standard of value and India's future prosperity is in our opinion bound up with the maintenance of the *Gold Standard*. We proceed therefore to the consideration of the steps which should be taken in pursuance of the policy recommended by the Committee of 1898." Later on in para. 51 of the report, they speak of the "Indian currency system (as) based on what is now known as the *Gold Exchange*

Standard” and have framed their recommendations on this basis.

The Commission do not apparently consider that there is any difference between a Gold Standard and a Gold Exchange Standard, nor are they prepared to accept the ordinary meaning attached to the phrase “gold currency.” The difference in view on these points will appear from the extracts from the minutes of evidence given below.

Sir James Begbie asked Mr. Lionel Abrahams C.B. :—

“877. The Gold Standard Reserve is peculiar, is it not, to the Indian Currency System?—Not quite. I think you will find that some of the Eastern Colonies, certainly, the Straits Settlements, have a Gold Standard Reserve, in a small way. I think the Philippines have one. In addition I know, because I was a member of the Committee that helped to establish it, that in a very humble way West Africa has a Similar Reserve.

“878. I was speaking more of the *old gold standard countries* in the world; none of them have it, have they?—No; *in fact the gold standard countries in the older sense of the word scarcely have such a reserve*, except so far as the reserve of the Bank of England is in a sense a gold standard reserve.

“879. That is different to the Gold Standard Reserve in India, which is accumulated from the profits on the coinage?—Yes, as regards its origin it is entirely different. I meant as regards the purpose that it serves, that is to say, maintaining a stable exchange with other countries, there are points of resemblance.

Again replying to Mr. Gillan Mr. Abrahams said:—“(1029) When you are speaking of a gold currency you are speaking, I think, of an obligation undertaken by or imposed on the Government to give gold in exchange for rupees.

“1030. I want to ask you whether you do not consider that that is a condition essential to a gold currency in any full sense of the term?—You and I are, I think, at one as regards substance; but I think we should express ourselves differently. I should say that a gold currency means

the absence of any discouragement and the presence of a certain amount of encouragement to the use of gold for the purpose of effecting exchanges; that that exists in India and that therefore India now has, so far as it desires it, a gold currency. You put it rather that a gold currency means the undertaking of an obligation by the Government to give gold in exchange for other forms of currency. I think one might also say that if that is what a gold currency means, the United Kingdom does not possess it and will not possess it until it undertakes to give a sovereign in exchange for twenty shillings which it does not now undertake to do.”

Sir Shapurji Broacha asked M. de P. Webb, “5972. I think there is not gold currency in any country at all. You put down the Indians for savages for not having a gold currency, but where is there a gold currency—in England? I think there is a gold currency in England.

“5975. Beyond England is there any country where there is a gold currency? Yes.

“5976. Where is it? There is a gold currency in Australia, and in Canada and in South Africa.

“5977 No; gold is not used in Canada, and South Africa does not want a mint?—I do not know what the authority for that assertion is.

“5979. Suppose there is a gold currency and Government is not able to supply against rupees, what then? If you have a gold currency that means you have to give gold against all rupees tendered, does it not?—No.

“5980. What is it then?—There is no connection between a gold currency and Government supplying gold for silver. I do not think the Government supplies gold for silver in any part of the world.

“5981. Allow me to differ from you. A gold currency means that you have to give gold against all rupees tendered? I do not attach that meaning to it myself.

“5982. What meaning do you attach to it?—By a gold currency I mean gold used for the purpose of trade as between buyers and sellers.

“5983. That is not a gold currency; a gold currency means that you have to give sovereigns

against all rupees tendered?—I have never heard that view of the question put forward before.

Again, Mr. Gillan asked Mr. Webb:—“5993. It is quite obvious from the questions that were put to you by Sir Shapurji that the term gold currency is one that has different meanings to different minds; but you have, I think, defined what you mean. Will you look at Part VIII, para. 2 of Appendix XXI (page 568)? There you speak of a ‘pukka gold currency system of the British type’; that is what is in your mind?—Yes.

“5994. The first thing I wish to ask you about that is whether you consider that that is really in accordance with the recommendations of the Fowler Committee?—I think so.

“5995. In para. 54 of their report they said that they looked forward ‘to the effective establishment in India of a gold standard and currency’?—Yes, that is so.

“5996. But they went on in the next paragraph to point out that ‘under an effective gold standard rupees would be token coins, subsidiary to the sovereign. But existing conditions in India do not warrant the imposition of a limit on the amount for which they should constitute a legal tender; indeed, for some time to come, no such limitation can be contemplated.’ Then they conclude in para. 59 that things being as they are in India, they must be content with a system such as exists in France and the United States?—That is so.

“5997. How do you reconcile your present recommendation with those recommendations?—I think those recommendations were very wise when they were made. I understand them to mean that in those days, when the question of introducing a gold currency was being considered, the Members of the Committee did not think it possible to impose a limit on the amount for which rupees should be legal tender, but I take it that in course of time when there is plenty of gold in the country it will be possible to impose a limit on the amount of token coinage that is legal tender, and that is the direction in which I imagine India is progressing. The time will

come when the gold is circulating so freely that it will be possible and desirable to impose a limit on the amount of rupees that are legal tender.

“5998. Then this British type of system that you speak of is not a thing that is immediately obtainable, but it is something to look forward to in the future?—In the near future.

“5999. You would not, as a matter of fact have that type of currency system until you are able to make the rupee a subsidiary coin?—I would not suggest that a limit should be imposed on the amount of rupees that are legal tender until such time as there is a more general currency of gold than at present.

“6000. But you recognise that the relegation of the rupee to a subsidiary qualification is a necessary condition before this particular type of currency system which you have in your mind can be established?—Yes.”

It should be hardly necessary to tell a Commission of Currency Experts that a Gold Standard and a Gold Exchange Standard are not one and the same. In the former case, the basis of the currency is gold and in the latter, gold and silver. A gold currency under the gold standard is practically automatic and based on the free inflow and outflow of gold while under a gold exchange standard, the currency is largely manipulated and artificially maintained by means of a gold reserve. In recommending for India a silver currency and standard for internal circulation and a gold standard reserve to secure the convertibility of such silver into gold for settling foreign exchanges, the Commission are under a delusion if they think that they have recommended the “gold standard” with the maintenance of which, they admit, “India’s future prosperity is bound up.” The ideal system which India should aim at and which the Fowler Committee of 1898 also recommended is the gold standard and gold currency on the model in force in Great Britain. What the Chamberlain Commission have recommended is the gold exchange standard which is preliminary to and a preparation for the gold standard. For a country like India with vast interests at stake, a Gold Exchange Standard is a perpetual source of anxiety and danger as I shall show on another occasion.

Books of the Month.

Progressive British India; Japan's Modernisation

By Saint Nihal Singh, *Manuals for Christian Thinkers*, Charles H. Kelly, 25-35 City Road, London, E.C., 1/each.

Among Oriental nations no two countries have attracted the attention of the Western world so much as India and Japan. The linking up of India with Great Britain and in a lesser measure with the rest of the world has had the most far-reaching effects on the life of the Indian Empire, and invested the subject with a deal of interest for the Easterner and Westerner alike. The action of modern tendencies on Indian conservatism is often baffling. The first-mentioned manual by Mr. Saint Nihal Singh has been designed to guide the average reader so that the cross-currents of the transition in India may be easily followed. It traces the economic, intellectual, social, religious and political developments of the people of India from the time when the Occident began to implant new ideas and ideals in their minds.

Ever since Japan scored those war-triumphs against Russia, the world's attention has been upon her. Something is constantly happening in the Sunrise Empire, natural disasters, political and industrial crisis, the rapid multiplication of armaments, the quarrels caused by Japanese emigrants forcing themselves upon nations which do not want them, and the growing ascendancy of Japanese industrialists in the eastern markets—incidents like these serve to keep up the world's lively interest in Nippon. The second volume by Saint Nihal Singh noted above describes in a handy compass the good and evil consequences of Japan's Modernisation, and the problems that confront it.

Each book consists of about 128 pages and should appeal strongly to the general reader in India and elsewhere.

The People's Books.

T. C. and E. C. Jack, London, W. C., price, 6 d. net each.

We have received from the publishers the following from among their new series of books:—

Biology, by Prof. W. D. Henderson, M. A.

Heredity, by J. A. S. Watson, B. Sc.

Embryology, by Prof. Gerald Leighton M. D.

The Foundations of Religion, by Stanley A. Cook, M.A.

Evolution by E. S. Goodrich, M.A., F.R.S. Henri Bergson: the Philosophy of change by H. Wildon Cars.

Psychology, by H. J. Watt, M.A., Ph. D., D. Phil.

Theosophy, by Mrs. Annie Beasant.

Schopenhauer, by Margrieta Beer, M.A.

The publishers deserve well of the public for bringing out such an excellent series which cover practically the whole range of Modern Knowledge—Science, Philosophy, Politics, Pedagogy, etc. Each subject is handled in a thoroughly complete and lucid manner by an author well versed in it. The educative influence of the books must be very great, as any one with average intelligence can readily follow the subject-matter. As the books are priced cheap, they are bound to be read widely. There is a judiciously chosen bibliography at the end of each volume which will help the reader to a more detailed study of the subjects dealt with.

The Panama Canal.

By C. Reginald Enock F.R.G.S., the Nation's Library, Collin's Clear Type Press, London, price 1 s. net.

The story of the opening of the Panama Canal is a romance in the history of human progress and forms one of the most remarkable achievements of a half-century already noted for the material advancement of the world. The author has brought forward in a masterful manner the 'human' side of the enterprise, in addition to the matters of engineering and commercial, as well as historical, interest connected therewith. The opening of the Panama Canal is bound to have far-reaching effects on "Human Geography, on the true science of collective living upon the earth." The book is therefore bound to be widely read by all who are interested in economic progress.

The Agricultural World

Manuring Cocoanuts.

A writer in the *Tropical Agriculturist* mentions two points which should not be lost sight of in the matter of manuring cocoanuts. The first is that chemical manures should not be applied wholesale over an entire plantation, but only to those trees which do not bear a satisfactory number of nuts without them. The second point is that only sufficient manure should be applied to such trees to make them produce a satisfactory number of nuts without any unnatural exertion. There is a very great difference between manuring cereals and manuring trees. In the former case you manure the soil to obtain certain desired results within a comparatively short time, after which the plant dies. In the latter case you may apply the manure to plants which should go on bearing for upwards of a hundred years. There is no doubt that you can increase the trees' productive powers very considerably, but only at the cost of curtailing the period during which they, under natural conditions, would continue to bear nuts. The writer expresses the opinion that when trees are looking healthy and bearing satisfactorily in a natural way they should be left alone and not encouraged to unnaturally large productiveness by artificial means. These latter may be applied to trees which actually require them in order to become productive at all.

Milk Fever.

Once a cow has had an attack of milk fever, or what is called dropping after calving, she is liable to go down again till about the sixth calf, when she becomes much less liable, the immunity increasing with each successive calf, till later on she is practically immune. The following suggestions contained in the *Farm and Home* will be found useful in this connection. Do not keep the cow too fat, let her have a daily run at pasture with a little hay and roots at night. Give about a fortnight

before calving time, a drink composed of eight ounces of Epsom salts, four ounces of glauber salts, and half an ounce of powdered ginger, mixed with a pint and a half of water or gruel. Give the above drink again a day or so before calving, and, after calving, Epsom salts one pound, powdered aloes one ounce, liquid extract of ergot one ounce, powdered ginger half an ounce: these should be given in a pint and a half of warm ale, or can be made up ready for use by your chemists, and given cold. Leave the calf with the cow and do not milk her before calving, unless she is very swollen, and then only remove a little of the milk; she must not be thoroughly milked. Well watch the cow for a day or so after calving, and should she show any symptoms of dropping, milk her as dry as possible. By no means give her any drink whatever after she shows any inclination to milk fever.

The Study of Soils.

Bulletin 85 of the U. S. A. Bureau of Soils, says:—"The old idea of soil investigation was to collect samples, examine them in the laboratory, and see what differences could there be determined; the newer idea is to study the characteristics and properties of soils in the field, classify them according to obvious differences, and, with this information in hand, use the laboratory as a means of ascertaining the cause of such variations as cannot be determined in the field. This method of attacking soil problems is the reverse of the usual practice, but because of the great difficulty in duplicating field conditions, it is believed that a field examination should precede laboratory studies. The field observations can thus be used as a check upon laboratory investigation, and as an aid in their interpretation. Field studies furnish a safe and necessary anchor with which to keep the laboratory experiments from being dashed against the rock of pure speculation. The classifying and mapping of

the various soil types, together with the study of the conditions and processes under which they have been formed, will furnish essential and invaluable data for the conduct of laboratory investigations. Nature's great laboratory is in the field and a study of her methods cannot fail to offer many valuable suggestions, and in some cases, is the only means of solving her problems. It is through a combination of field and laboratory investigations that an understanding of this extremely complex body, the soil, can be reached."

The Bulletin treats exhaustively of the soils, their origin, formation and best treatment for agricultural purposes, the great difference between the many types, and adds :—

"Since the soil varies so much as regards both its inorganic and organic constituents, marked differences in character must necessarily result from the almost indefinite number of combinations which may be found. All these differences, however, may be traced to two sets of factors : First, the character of the rock or material from which the soil has been derived and, second, the processes or agencies by means of which this material has been changed from mere rock or rock debris into a medium more suitable for the growth of plants. The former has to do with soil-forming material, the latter with soil-forming agencies. To these two groups of factors are to be attributed the numerous variations in soil conditions found over various parts of the earth."

Ensilage.

For many years the Agricultural Department has been carrying out experiments for providing suitable fodder for cattle in many parts of India. The Department of Agriculture of Bihar and Orissa in their annual Report on the Agricultural Stations for the year 1912-13, says that excellent fodder was obtained by them in pit silos and thinks that better results would have been obtained from the masonry silo, had the floor been of concrete instead of loose brick thrown in and a thin plaster put over it. The report proceeds to say that it is quite obvious that a masonry

silo from which air and water can be excluded to a very great extent will give the best results, but only the more wealthy of the zemindars of the province can afford this heavy expenditure. To suit the means of the poorer community ensilage was prepared in pits dug on the highest piece of land which had a good slope to take the water off during the rains. The dimensions of the pit were given by the Agricultural Research Institute, Pusa, and a thatched roof was placed over the pits, although with a covering of three feet of earth over the green material, it is doubtful whether this protection is necessary. The bottom of the pit was soled with a layer of bricks and the sides in some cases were lined with rough matting while in others with only *rahar* stalks. If the site chosen for a silo pit is high and well drained, *i.e.*, with a good slope, *rahar* stalks are found sufficient to keep the material in good condition.

To choose a site for the silo pit is an obvious difficulty, as the highest land is always cultivated for the more valuable crops. The fodder crop is generally a good distance away so that the expense of carting the material to the silo increases the cost of the undertaking to a great extent.

The following experiments were conducted by the Department:—

Four silo pits were dug of the same dimensions (diameter 12 feet and depth 10 feet) and they were filled to a height of seven feet, three feet of earth being then placed over the material in the shape of a cone to allow of a good slope if water should get to it. As the material sunk and became more compact fresh earth was added. On an average a pit accommodated 200 maunds of silage which works out to 20 lbs. of settled material per cubic foot. This figure shows clearly that the material was not pressed down sufficiently as 40 to 45 lbs. per cubic foot can confidently be expected to be filled in. The total amount of silage made from the four pits was about 840 maunds and 24 lbs. was given to each animal daily, so that it lasted the 79 head of cattle for a little over one month.

The following table gives the cost of the construction of the silos in detail, but it is necessary to point out that a considerable sum is only an initial expenditure and not an annual recurring cost. Deducting the amount, Rs. 5-0-1 for excavating and Rs. 3-6-2 for the shed over the pit the total recurring cost is only about Rs. 30. This again is subject to

decrease where the cost of cartage is not at a maximum as it was in the case on the Farm where the material had to be carted a quarter of a mile to the silo pits. The pits are again to be filled next season when the actual recurring cost can be ascertained, and an effort made to reduce the cost of filling.

Silo No.	Cost of harvesting.	Chaffing.	Cartage.	Digging.	Pressing materials.	Earthing up.	Thatched Shed and Materials.	Re-opening.	Total Cost.
1	2	3	4	5	6	7	8	9	10
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1	5 4 6	12 9 7	5 15 6	5 10 11	1 10 0	3 7 7	2 7 3	2 5 8	39 7 0
2	6 8 8	11 15 0	4 13 11	4 15 0	2 2 0	2 10 11	3 6 11	1 8 1	38 0 6
3	8 7 8	12 13 5	5 8 6	4 11 3	4 7 10	3 11 5	4 4 7	1 4 6	45 5 2
4	7 0 8	9 12 6	2 9 3	4 11 3	1 12 0	2 6 6	3 6 1	1 3 2	32 18 5
Average	6 13 4	11 12 7	4 11 9	5 0 1	2 7 11	3 1 1	3 6 2	1 9 4	38 14 6

The cost of making silage is appreciably reduced or increased according to the material being long or short and the distance the material has to be carted to the pits. In the case of silo No. 3 the cost is more on account of increased expenditure on harvesting and pressing the material; while in the case of silo No. 4 the cost is cheaper owing to less expenditure on cartage and chaffing.

The Cattle Survey of Madras.

The Report on the Cattle Survey of the Madras Presidency made by Mr. H. C. Sampson, Deputy Director of Agriculture, Southern Circle, at the instance of the Government of Madras, is an interesting and valuable document. The information collected by Mr. Sampson throws a good deal of light on the question of the improvement of the indigenous breeds of cattle and is bound to awaken much public interest. Live stock breeding has not received much attention in India, though the main occupation of the people is agriculture. The raising of live-stock on agricultural holdings has

been reduced to a science and is now a passion among western farmers and landholders. In India, however, many of the landholders are not cultivating agriculturists who take a direct interest in all that constitutes agricultural wealth, and the tenants that actually carry on the agricultural operations do not possess sufficient capital or enthusiasm to devote intelligent thought to the problem of live-stock breeding. A better knowledge of the possibilities of developing agricultural industries such as cattle raising and dairy-farming and the demand from large cities for a pure milk supply for the provision of wholesome ghee and butter are calculated to divert the attention of farmers to the question of raising healthy breeds of cattle. The farmer needs to be told of the value of breeding healthy cattle for other purposes than for the plough or the soil, for lifting water for irrigating fields, etc. Mr. Sampson's report deals with all the aspects of the problem, namely, the question of fodder supply, breeding and rearing tracts, milch

cattle, dairying and the chance of deriving profits from stock breeding. He also suggests where assistance might be rendered by the Government for the improvement of cattle and the maintenance of a steady supply to meet the increasing demand.

The investigations of Mr. Sampson show that on the whole the stock of draught cattle is sufficient for the present demand, and this conclusion is supported by the cattle census figures for the last twenty years which show that the total number of cattle in the Presidency amounted to 14,970,813 in 1890-1891, to 15,429,325 in 1894-1895, to 15,057,180 in 1899-1900, to 16,690,261 in 1904-1905 and 20,089,397 in 1909-1910. During the same period between 1890-1891 and 1909-1910 the number of adult male stock rose from 5,126,368 to 7,403,387 and, as, in that period, the area under crops advanced from 23,702,280 to 32,217,353 acres, the ratio of male stock to cropped area remained practically constant, namely, one pair to every nine acres or thereabouts. Mr. Sampson, however, remarks that in certain districts the supply of cattle hardly meets the demand. The Government order on the report, says that the Government do not find any reason to apprehend that the supply of animals will not continue to keep pace with the demand. Mr. Sampson observes:—"The rise in the price of cattle has, however, been an incentive to produce better cattle. Many cases have come to notice where petty ryots have of recent years taken to raising promising looking young cattle as a means of adding to their income. Such animals would formerly have been left to feed for themselves in which case they would never have been of much value." At the same time Mr. Sampson indicates certain ways in which, in his opinion, the State might help in the improvement of stock. Of his proposals on this subject the most important is that the Government should establish a stock-breeding farm in the Kangayam tract. He accordingly proposes to take steps to add to the Agricultural Department a Deputy Director with experience in stock raising whose duty it will be to establish and manage stock-farms in localities where a good breed of cattle

exists. In these farms systematic efforts will be made to improve the draught and milking qualities of cattle by selection and crossing. The Deputy Director will at the same time devote attention to the establishment of milk-record societies on the model of the Danish "control" bodies in order that the selection of bulls of known quality may be made with certainty and the uselessness of inferior cows may be brought home to breeders.

A subsidiary method of improving stock is to be found in the distribution of bulls of good quality. This method is employed at present but the existing mode of distributing bulls is admittedly faulty. It is the intention of Government that when a Special Deputy Director has been appointed the whole control of stock-breeding shall be vested in the Agricultural Department. They will be prepared to increase largely the number of bulls for distribution and the class of recipients of bulls may be extended to include certain Veterinary Assistants, Managers of Government Agricultural Stations, and grazing panchayats.

Mr. Sampson, then, comments upon the evil effects of communal pasturage. He cites the Dharapuram taluk as one of the best known cattle breeding centres of the Presidency although, or because, it possesses "no culturable waste, no communal grazing land and no forest grazing," and closes his remarks with the observation "even if the ryot were desirous of improving his stock by more careful breeding, this is impossible so long as he has to depend on communal grazing."

The remarks of Mr. Sampson upon the advantages resulting from the use of private enclosed pastures instead of communal grazing grounds deserve particular attention. The Government observe that it might be advisable to assist ryots to provide themselves with private grazing grounds by supplying them with the seed of good sorts of grass free or at cost-price.

Mr. Sampson remarks that with the possible exceptions of those at Tiruppur and Ongole, cattle-shows are, under present circumstances, of no practical use and, as regards even the

Ongole cattle show, Mr. Sampson observes that it cannot, as at present constituted, be regarded as a success. He makes various suggestions for the better attainment of the real objects of the show. As to cattle-shows generally the Government concur that they do nothing to stimulate the improvement of stock and they consider that no Government grants should be given in future in aid of any such shows except that at Ongole and, should occasion arise for a grant, that at Tiruppur.

Agriculture in Tropical Countries.

Mr. G. F. Keatinge, I.C.S., C.I.E., Director of Agriculture, Bombay Presidency, who was deputed by the Government of Bombay to study the latest developments in agriculture in tropical countries, summed up his experience in a lecture recently delivered at the Deccan Agricultural Association.

Mr. Keatinge said that in no country that he had visited had he found any cultivator attempting to cultivate such thin soils as the *Inhal* soils to be found in parts of Deccan. In Japan the cultivator did not take the trouble to cultivate the unproductive portions of land. The same was the case in Java. It would be far better, Mr. Keatinge said, that instead of cultivating the thin soils, the people of Gujerat took to cultivating the good black soils that existed in the Deccan and other parts of the Presidency. The majority of cultivators in East and West Deccan, the lecturer remarked, were very deficient in the knowledge and other qualities that go to make the good cultivator. In the East Deccan, conditions were very difficult owing to the hardness of the thick black soils which in the monsoon were covered with crops. In California the problem of tackling such thick black soils as were found in the Deccan, had been solved, for there they had the best implements and the finest labour that could be had. The Californian mule was largely employed in ploughing the hard black soils to be found in that country.

He suggested that as a means to solving the problem of tackling the thick black soils of Deccan, improvements in the teams of bullocks

and of the Agricultural implements should be carried still further.

In Java he had found the same kind of thick black soil. The Javanese had a method of breaking up this black soil with hoes of a kind (which he had not seen anything approaching it in India) and the results achieved were really wonderful. The Javanese worked these hoes in a very effective way striking the soil with them and making a hole about 9 or 10 inches deep.

The speaker next dwelt upon the question of dry farming which was a system that had been introduced in countries where the rainfall was scanty or scarce to enable the farmer to get good crops. In Mid-West America, in the region around Salt Lake City dry farming had reached its highest perfection. In Utah and the adjoining districts the rainfall was only 14 inches a year and here the settlers produce really excellent crops. The system required deep ploughing and once the moisture was in the ground the farmer had to see to it that it was not used up by evaporation. In this tract the farmers sowed very deep about 5 inches under the surface, and when the roots were thrown out they kept pace with the moisture which has a tendency to sink. Mr. Keatinge said that this system could not be made applicable to the Deccan at present. A thorough study of our soil physics was the first essential step and this would mean a complete soil survey of these dry districts. Until this had been done it was impossible to introduce a good system of dryfarming, as unless the soils readily responded to these methods, their adoption would prove too expensive.

Mr. Keatinge said that the little valley of Santa Clara where there was only an average rainfall of six inches and in good years ten inches, was at one time a desert, but at the present time was covered with luxuriant vegetation and produced some of the best vegetables and most delicious fruit. It had been found that at depths of from 100 to 300 feet water exists and the settlers after many failures and disappointments introduced a system of artesian wells, which were merely pipes sunk into the

ground to the required depth and the water rushed up.

Here was a system, Mr. Keatinge said, that was certainly applicable to such places as Ahmedabad and parts of the Deccan. The reasons for the partial failure of this system were that the tools could only bore to a depth of 100 feet. But at the present time implements were available which could bore down to twice this depth and with these, experiments should be made, as he felt sure water could be found at a 200 ft. level.

There were the different soils to be taken into consideration and as far as the Deccan "trap" was concerned he was not hopeful. Still in the Hubli district he had heard that at a depth of 300 ft. water had been found which had risen to a height of about 9 feet from the surface.

As regards sugarcane, Mr. Keatinge said, there were two considerations to be borne in mind before the cultivation of cane was undertaken and these were a good water-supply and cheap labour.

Another difficulty was land. Where much land was available the population was scarce, and in thickly populated tracts land was hard to get. In Hawaii the system by which water was procured was most elaborate, and one company alone had spent 50 lakhs of rupees on channels and tunnels constructed on the hill sides to conduct water to the cane fields. It costs the Hawaiian Rs. 16 a ton to produce cane, and the labourer was well paid earning about Rs. 2 and over a day. The only difficulty was the typhoons, (which fortunately only visited the country about once in ten years) but when they did, they washed down the hill sides, flattened out the cane crops which were then valueless being covered in debris in which state they had to be left to rot.

In Java where the large population was sitting on the land the mills had to hire large blocks of land for the cultivation of cane and the cost of this was moderate and labour cheap.

With these economical and physical advantages Java was the most favourable country for the manufacture of sugar. In Cuba the farmers

did only one sowing in 20 years. They left the cane roots in the ground and as soon as the rain came they sprouted again. This of course was not possible in the Deccan.

On the question of the cost of producing cane in the Deccan Mr. Keatinge said that this had been found to be Rs. 10 per ton while in Java it was only Rs. 7-8-0 a ton. With improved implement, however, the costs in the Deccan might be reduced but people in the Deccan should remember that Java could flood the country with sugar produced at a lower cost.

If, however, the making of "ghool" was undertaken instead, the improved methods of manufacture available would make it a most profitable undertaking. He thought it would be a good thing if a company was started for this purpose though it might be necessary to take the cultivator into their confidence.

The Development of American Agriculture.

American railway companies have come to realize the importance of agriculture to their own prosperity and many of them, in addition to providing a quick and efficient service for the carriage of farm produce, are spending money directly for the promotion of agriculture. A recent number of the *Monthly Bulletin of Economic and Social Intelligence* reviews some of their work in this direction. The railways are not alone in being prompted by an enlightened self-interest to offer encouragement and aid to the farmers of the country. It is said that numerous development associations have been formed, generally with the primary object of bringing in new settlers who will become farmers, and among the members of these associations are to be found not only railway and steamship companies, but also lumber companies, insurance agents, bankers, wholesale and retail merchants, and manufacturers.

There are two main reasons why the railways of the United States find it to their interest to assist in every possible way the development of agriculture. In the first place, a large part of their revenue is derived from the carriage of farm products.

These railways carried about half the total tonnage of the country, and it is calculated that

10 per cent. of the total freight revenue of the United States railways is derived from the carriage of grain, hay, cotton and livestock. These four products represent about half the total amount of farm produce carried by rail, and, assuming that other products have about the same freight yielding capacity, the revenue from the carriage of farm produce amounts to 20 per cent. of the total freight revenue.

In the second place, the companies have had for sale large areas of land which had been granted to them by Congress as an inducement to build the railways.

Another important supply of farm land, in the settlement of which the companies are interested, is the land open to "homestead entry," the undeveloped land offered to persons who will establish homes thereon. From encouraging settlers to take up farms, it was a natural step for the companies to undertake instruction in farming, and offer their advice and co-operation to farmers with the object of securing the best results possible from the land. This educational work came into vogue largely within the past ten years.

THE WORK OF THE RAILWAY COMPANIES.

Many of the companies have created special divisions charged with the work of attracting settlers. The railway companies make known the attractions of new districts through printed pamphlets, advertisements in newspapers and other periodicals, lectures and exhibitions. The descriptive pamphlets are illustrated by photographs, not only of livestock and soil products, but also of landscapes, groups of farm buildings and general views, so as to serve, to a slight extent at least, as a guide to the farmers seeking a new home. Exhibitions are arranged and moved from one town to another until a wide circuit is completed; while in another form, the exhibition is housed in a special car which travels from point to point on the railway, thus giving the people even in the very small places, an opportunity of seeing the exhibits.

As an inducement to prospective settlers to visit the places advertised, many railways offer excursions at low rates.

Much advertising matter is printed and dis-

tributed; and railway immigration officials co-operate with State immigration boards in attracting settlers. The efforts of the railway companies to promote agricultural education are made, as a rule, in co-operation with Federal or State authorities, or local bodies interested in agricultural development.

Agricultural instruction trains are an example of such co-operation. Many railways run such trains regularly, the trips occupying, in some cases, two or three months; other railways organize demonstration trips at irregular intervals. As a rule the company provides the train, either gratis or at a very low rate, and advertises the trip along the intended route. The exhibits are usually arranged by the State Experiment Station, which also provides travelling lecturers. The instruction may be devoted to a single topic but as a rule it covers a number of subjects adapted to the type of farming throughout the district covered. Thus, in the South, such subjects as diversified farming, good roads and the cotton boll weevil have received considerable attention; in the North Central States, grain, bacon production and silos are favourite topics; while in the Mountain States, instruction is given in fruit growing, rotation of crops and conservation of moisture. The value of the instruction given is undoubtedly great, and the scheme is eminently practical. Some of the demonstration trains are models of completeness and utility. Many of them carry exhibits of live stock, the property of the State Agricultural College, and at least one of them included a model silo constructed on a flat railway wagon.

Many of the companies employ an agricultural expert, and it would be part of his duty to organize instruction trains. His work consists chiefly in visiting farms and giving advice to farmers, in supervising a demonstration farm, and in assisting State or Federal Agricultural authorities who are carrying out experiments or giving demonstrations in his territory.

The representative of the railway is often occupied with work in connection with farmer's associations, either as a consulting expert or as an active organizer. Some of the agents

take part in organizing the marketing of farm produce, but as a rule they confine their efforts in this direction to the first few seasons among the early settlers in new districts where the farmers have not had time to organize associations of their own.

The agricultural agents fulfil another useful function in helping farmers to find labourers. One of the railways most active in this work adopts the following plan. The farmer who wishes to hire a man fills in a form stating the kind of labour to be done, the wages offered and any other particulars which will guide those who are to seek for a suitable labourer. This form is handed to any railway station agent who forwards it to the proper official. The request is then handed on to the State Department of Agriculture. When it is necessary for the farmer to advance money to pay the labourer's railway fare, he may remit it through the passenger office of the railway. A corresponding service is rendered in finding employment for farm labourers, information being published regularly with respect to the demand for farm labour in the various districts.

The forestry work undertaken by some of the railways is of considerable importance, contributing as it does, in the most direct way possible, to the conservation of the natural resources of the country.

The planting of forest trees and the systematic preservation of existing forests is undertaken by the companies in their own interests, with a view to future supplies of timber for railway construction and up-keep.

The net results of the efforts of the railways in the cause of agricultural advancement cannot be determined with any exactness. Much educational work admits of no exact measurement, and the influence of the railways is often only one of the factors among many contributing to a certain result. Whenever possible the railway companies work in connection with public or semi public institutions. It is the combination of the two factors which forms the effective instrument. The railway companies in the United States recognize that in promoting agriculture they are promoting

their own interests; and further that they are in a position to lend effective aid to State or other institutions connected with agriculture.

Freight Concession for Fodder.

In view of the scarcity of fodder in parts of the Punjab, the Government of India have decided that with effect from April 28rd, 1914 and until further order, the freight on all consignments of fodder excepting fodder for the Army Department, booked from any station on any railway to any station in the Karnal and Gurgaon Districts of the Punjab, shall be recovered from the consignor or the consignee at the rate of half an anna per four wheeled, nine pies per six-wheeled, and one anna per bogie wagon per mile, and the balance of the freight charges calculated at the ordinary tariff rates shall be paid by Government and debited to the head "33 Famine Relief" in the accounts.

Profitable Farming.

Agriculture is made to pay. Generally speaking, in England to-day, farming is profitable in proportion to the extent of the land farmed under one control, and the moral of that is that farming only pays when it is organised.

The difference between one big profitable farm and ten little unprofitable farms is simply that one is an organised unit while the others are ten units with no organisation to economise their effort and deal with their produce. Small holdings can only pay in connection with an organised system. This is an essential part of a land policy.—*World's Work*.

An Agriculturists' Friend.

Agriculturists in India owe much to King Crow—not the noisy scavenger, but the jet black, fish-tailed bird that is to be seen from early dawn at work in the fields, destroying all manner of pests. Cultivators should encourage it to frequent their field, and one way of doing this is to provide perches—sticks stuck firmly about a crop with their tops appearing above its level—where the crop is being grown. Bushy trees and bamboo clumps overhanging water provide the most desired nesting places.

The Co-operative World.

Co-operation, the Panacea of Agricultural Indebtedness.

Evidences are accumulating which tend to prove the remarkable effect of co-operation in reducing agricultural indebtedness in India. Thus, in his opening speech at the recent Midnapore District Co-operative Conference, Mr. F. Bradley-Birt, I.C.S., said that those who knew the district would realise under how heavy a handicap the cultivator lies. Always in debt, and often so deeply in debt at exorbitant rates of interest that by no conceivable chance can he ever hope to escape from it, he is robbed of all incentive to strive after better things. There can be little improvement in the condition of the labourer and in agriculture generally while such indebtedness remains. It is to fight this great evil that the Co-operative Credit system has been planned and gradually the cultivator is beginning to grasp all the possibilities that it opens out to him. With loans available at a reasonable rate of interest he can hope in time to pay off his debts and improve his holding.

At the same Conference, Mr. Chakravarti pointed out that the agriculturists by getting loans from Co-operative Societies at fair interest have made a saving of about 20 lacs of rupees in the matter of payment of interest in comparison with the prevailing rates of interest of money lenders in his District.

Co-operative Credit Societies and Debt Recovery.

The Bombay Government have just issued a draft notification dealing with disputes touching the business of a Co-operative Credit Society between members or past members or between members and the society and invite suggestions or objections from those interested. The draft, *inter alia*, proposes that "the Registrar, on receiving notice of such dispute, shall at his discretion, either decide the dispute himself or shall appoint an arbitrator or shall

refer it to three arbitrators of whom one shall be nominated by each of the parties to the dispute and the third by the Registrar. Where any party to a dispute fails to nominate an arbitrator within fifteen days, the Registrar may himself make the nomination." It is proposed to vest the Registrar and arbitrators with the powers of a civil court, their awards to be final and conclusive and to be enforceable by a civil court as a decree of its own. These innovations, if given effect to, are expected to provide a simple procedure of summary recovery of loans and to do away with the delay, trouble and expense involved in filing suits in the civil courts. It is interesting to note that the Registrar or arbitrator will be required to give his decision or award "in accordance with Justice."

Scope of Co-operative Societies.

The *Times of Assam* brings to light an interesting instance of the scope that exists for rural Co-operative Societies to extend their beneficial work. We read that a very hopeful and interesting report was presented to the recent Midnapur District Co-operative Conference by all the workers from different areas, of the social, economic, educational, sanitary and other works done by the village societies in collaboration in the shape of metalling roads, excavating old tanks, running free primary schools, distribution of quinine to the people of malaria stricken areas, thus extending the scope of the Credit Societies to truly co-operative activities. Another interesting sphere of useful work has been opened to these societies by the action of the Local Board there which has adopted a resolution that the unions of Rural Co-operative Societies be requested to send every year to the District Board a statement showing the requirements of the respective villages under them in respect of pure water-supply, roads, education, clearing of silt in natural water

reservoirs and river-beds and land improvements. It is expected, that by this means the the District and Local Boards would be much relieved in their allotments which they have to do without local inspection or sometimes with nominal inspections by one or two of their underlings. We should think along with the *Assam Times* that here is a lesson by which our Local Boards may also greatly profit.

The Dharmagola.

The *Amrita Bazaar Patrika* understands that the Co-operative Conference recently held in Calcutta has tentatively approved the Dharmagola scheme of Rai Parvati Sanker Chaudhuri of Teota, as the following report will show :—

"The Committee were much interested in the account given by Rai Parvati Sankara Chaudhuri of the Dharmagola established at Jaygunj. They see no objection to having such Dharmagola societies registered under the Co-operative Societies Act (II of 1912) and to put them under the control of the Co-operative Department. Rai Parvati Sanker Chaudhuri requested that existing societies should be exempted from the provisions of the Act in so far that they should not be subject to liability. The committee recommend this in the case of existing societies, but in the case of future societies, this question should be again brought up at the time the societies are opened. It may be found possible to introduce the principle of liability in the case of future societies."

The Dharmagola scheme is a simple one, and we give here a brief summary of it. The villagers in a particular area are required to make a reliable contribution of paddy or its equivalent in money, "putting the stock in charge of a small committee of fellow villagers, in whom they may have full confidence," one of these villagers being in immediate charge of the stock of grain. The details regarding loan, interest, etc., for working out the scheme may be settled by the villagers themselves. The originator says that the scheme is indigenous to the country. The obvious advantage of the scheme is that though the contribution from each man, be small, the granary will

supply people in the time of famine, thus obviating the disastrous result of borrowing at an exorbitant interest. The old grain may be replaced by new one and thus the injury incidental to the eating of new rice may be got rid of. The promoter of the scheme himself experimented it in his own Zamindary at Dinajpur and its phenomenal success has been amply exemplified, e.g., in 20 years the stock increased to 2,700 maunds from interest on loan.

Difficulties of Co-operation.

Mr. H. G. Powell in a short article in a recent issue of the *Journal of Agriculture*, points out the various difficulties that may interfere with the progress of a co-operative concern, and his remarks are worth our attention. Mr. Powell writes :—

"A co-operative organization is more difficult to manage than an ordinary corporation. In the latter, the stockholders do not often take an active interest in its management, because they are not experts in the business of the corporation.

"There are two extremes in the method of managing a co-operative organization of farmers; one is a method in which the manager becomes an arbitrary dictator in developing and executing the policies of the association similar to the method in many stock corporations; in the other, the directors establish the policies and execute them through clerical assistants. Either system is almost certain to fail in the end. Neither is founded on principles that are adapted to a farmers' co-operative organization.

"Between the two extremes lies the successful method of management. The manager who succeeds is he who holds the confidence of the directors and the interest of the members, and who shapes them into a working policy, who acts on matters of policy only after the approval of the directors, and who, at the same time, takes the initiative in the development of a progressive constructive business policy for the directors to adopt. Again from the stand point of the association itself, no co-operative organization can succeed if the di-

rectors are unwilling to place its business management in the hands of a strong, aggressive, thoroughly experienced, well-paid man and to carry out all of its policies through him alone.

"Of all the different factors that have been contributory, no single factor, unless it is the disloyalty of the members themselves or the meddling of the members in the duties of management, has operated so strongly against the success of farmers' business associations as the low salaried, inexperienced, incompetent managers selected by the directors to handle these organizations.

"This position is not a place to be filled by a popular local leader who has often failed in business, or who has been only moderately successful. There are many association managers of this type. They are 'good fellows,' but they often stand in the way of real progress in the co-operative movement, because they have none of the elements of leadership or do not possess convictions of a kind that lead to the uplifting of the co-operative method."

The Co-operative Idea.

The Hon'ble Mr. Justice A. Chaudhri, in his presidential speech at the Pabna District Co-operative Conference, said that the idea of co-operation was formulated in Europe about the latter half of the last century. It had been elaborated in Germany which was still leading Europe in matters of co-operation. It had also been accepted freely in Italy. Ireland, the most needy country in Great Britain, had more Co-operative Societies than England or Scotland. When the question was first discussed in India doubts were freely expressed that the country was not sufficiently advanced to make Co-operative Societies a success. The matter was finally taken up with the result that we had the Act of 1904, which it has since been found necessary to amend and enlarge to meet contingencies which had not been provided for. In ten years 12,000 such societies had come into existence consisting of 6,00,000 individuals. If we took each individual society as representing one family of five persons about 3 millions people are being directly benefited by these societies. It was a

remarkable progress but we must not be too quickly elated at the advance made. He would not bring back to mind the painful recollection of certain enterprizes which came into existence a few years ago, which seemed to flourish at the outset but which have died untimely. But there was no need to apprehend that our Co-operative Societies would meet with a similar fate.

The main point to remember was that the village was the unit. If such units were properly organised the main work was at once done. The liability was unlimited and persons who formed these units unless they had common interests would not readily take such liability. It ensured careful consideration by the community of the use to which the money was going to be put by the borrower. Personal credit and prestige in the community were also a considerable element; his character and reputation for rectitude were important elements. Every one of the members had to keep up his reputation. Every one was interested in seeing that the money taken was not misspent. It was, therefore, necessary to limit the members, to see that the members had some common interest and were known to one another and enjoyed mutual confidence. That being secured the rest was not very difficult. As the security was personal, mortgages and pledges were to be discouraged.

The indirect benefits were a great many. We had mainly dealt with co-operative credit, not questions of co-operative purchase or sale or insurance. It would take a long time to deal with the possible phases but one matter proximately connected with co-operative work might be referred to. Indications were found in practical work that these societies were checking litigation. Disputes involving expensive litigation requiring to be financed by these village societies were frequently being settled by the arbitration of the members. The results had in several instances been found to be very satisfactory. The idea ought to be encouraged.

Distributive Co-operation.

Mr. N. Ramaswami Iyer, B.A., B.L., contri-

butes an interesting article on the above subject to the special co-operation and agricultural supplement of the *Commonweal*. The writer remarks that the expansion of these distributive Co-operative Societies is almost phenomenal in its nature since the passing of the first Co-operative Societies Act in 1904. On examining the statistics of Co-operative Societies, the writer finds that the number of distributive societies or stores (or associations of consumers for the purpose of purchase and sale, among members, of the necessities of life on the profit-sharing system) for the whole of India up to now has only been 69 and the Madras Presidency gets to its credit only 9 societies and of these 9, only 6 are found to be working well, i.e., the stores in Triplicane, Madura, Madanapalle, Coimbatore, Kurnool and Pudupalayam. The results of the other provinces are far from encouraging and the Punjab with its 23 stores has been able to sell goods to members of the value of only Rs. 236,780, only about a third of the work done in Madras, and Bombay with its 15 stores has been able to do business for only Rs. 46,936.

From the above figures the writer is convinced that distributive co-operation has not taken root in the country, and that the progress of co-operation has so far been only one sided, i.e., more along the lines of credit and agricultural societies. In India distributive co-operation stands in need of strenuous help and development especially when one remembers the fact that some societies which were started in the towns of Tenali, Guntur and Salem had to be closed for want of support.

The writer next considers a strong objection to the existence and carrying on of distributive societies as they are now. At present distributive societies make wholesale purchases of food-stuffs and other commodities from ordinary traders and sell them in retail at a profit to their members; thus securing to themselves the profits which the petty traders make. But the real object of a distributive society is, says the writer, to bridge the gulf between the producer and the customer, and dispense with the officious middlemen or brok-

ers who appear at every stage of the passage of the article from the producer to the consumer, and who have to be paid their commission. It is therefore necessary that the producer must be brought into touch with the consumer, and both must co-operate. Societies must be started in villages for the purpose of supplying to agriculturists the requisites of cultivation and production, such as seed, seedlings, manure, live stock, implements—materials necessary for village industry and for the purpose of selling in suitable places the profits of such industries. These societies can be started either on the model of the grain-banks, or as a result of combination among agriculturists to bring their produce to a common stock and secure for them a proper market, i.e., a distributive society. The agricultural societies that are now in existence may be made to store grain and sell it to other societies which require it for the use of their members. In this manner a network of societies can be started in suitable places, and all these rural societies can be made members of a Central Stores Agency which will collect all the produce sent to it from village societies, and supply them in turn to the various stores which may stand in need of them. Thus a great deal of interdependence and mutuality can be created between various societies and a strong impetus given to the revival of even the decaying industries which once were the glory of India.

The writer believes that on similar lines milk societies for the sale of fresh milk and production of butter, ghee and manure can be started; as well as weaving societies and different other types of societies, e.g., co-operative oil-press, co-operative carpentry shop, suited to different environments, etc.,—and all of them can be made parts of a central organisation which will have to distribute the articles supplied by each individual society.

The writer urges the necessity of loyalty on the part of the members to make a distributive society a success and is exceedingly optimistic about its future. He sees a special need for starting such societies in India. He says that irresponsibility in domestic manage-

ment and purchasing the necessities of life for credit at exorbitant prices from petty shopkeepers is one of the curses of Indian life. A successful distributive society must be able to check this tendency on the part of its members, and bring about self-reliance and self-control among its members. For self-reliance, self-control, and mutuality are the bed-rocks on which a Co-operative Movement is founded.

The Importance of Agricultural Co-operation.

The progress of industrial development is scarcely, if ever, independent of its environment. The existence of a suitable economic environment is essential to any forward move in the processes of either agriculture or industry. Unless the economic and other conditions under which these are introduced are suitable, they may be expected to fail of success and bring ruin rather than prosperity upon those who attempt to adopt them. This limiting factor in economic advance has been utilised by Mr. H. Clayton, M.A., I.C.S., to drive home the supreme importance of agricultural co-operation, in a scholarly article written to the *Agricultural Journal of India*.

It is especially important to guard against it in the Indian Empire where, owing to the paucity of credit and general lack of capital among the cultivating population, few, if any, of the latter, are in a position to embark on any experiment the financial success of which is not assured.

Indeed, Mr. Clayton has faced the full logic of this sentence and established the fact, so far as Burma is concerned, that the costly and improved methods in agriculture carried out by Government on their farms are valueless to the ryots. He says that the most prominent result of the introduction of irrigation has been the enormous increase of debt among the cultivating classes, due to the expenditure requisite for turning their former dry crop lands into paddy fields, funds to meet which were only forthcoming as the result of loans raised at ruinous rates of interest.

If, therefore, any real agricultural progress

is to be secured, one of two things must happen; either the improvements worked out on the farms must be so converted as to be brought into direct relation with the economic environment of the cultivator, or that economic environment must be modified so as to enable it to assimilate the improvements.

There is here need of some outside organization, having relation both to the farm from which the improvements come and to the cultivator for whom they are to be made available.

The agricultural expert may easily be dismissed as possessing no organizing ability.

Luckily, as Mr. Clayton says, there is an alternative to the domination of the entrepreneur in agriculture, and that is to be found in the organization of the agricultural classes of India.

In fact it would appear that just as no limit can at present be placed on the progressive productivity of the earth under scientific methods of cultivation, so is there no limit to the development of co-operative organization among cultivators, and there is no department of their professional or social life which cannot be brought within the sphere of its beneficent influence. In any scheme for agricultural development, therefore, the inculcation of improved methods of cultivation or stock-breeding and the teaching of co-operation are of equal importance. If anything, the need of the latter is the more urgent, inasmuch as the organized agriculturist may be expected of his own motion to seek out and adopt improved methods, while his neighbour in isolation is likely to reject them even though they may be brought to his doors. Only where both factors are shewing vigorous life, can the final aim of all rural development be attained, namely, the growth of a vigorous, full, and independent social life in country districts, giving as many opportunities for self-improvement and recreation as the more meretricious attractions of the towns.

In conclusion, Mr. Clayton makes a vigorous plea for the co-operation of the Agricultural

Department with the Registrars of Co-operative Societies.

Co-operation in Industry.

The above is the subject of a paper contributed by Mr. S. H. Freemantle, I.C.S., to the Eighth United Provinces Industrial Conference held at Meerut. The writer considers that political privileges and ultimate political independence depend in no small degree on industrial and agricultural development. He says that India is a most interesting subject for the study of production, because we have here industries developed by the aid of European capital and advanced to the highest possible point side by side with small unorganised producers who have inferior tools and hardly any capital behind them. The writer considers the drawbacks of the system of small industries as compared with that of large industries to see whether they can be remedied without putting an end to the system altogether. Those drawbacks are—

First, Lack of capital.

Second, Lack of organisation for buying and selling.

Third, Lack of knowledge of improved materials, tools and processes.

Now, according to the writer, all these wants can be supplied by organisation and the only kind of organisation which ensures that the profits of a business are retained by the producers is organisation on co-operative lines. The first and simplest need, that of capital, is supplied by Co-operative Credit Societies; secondly, the members learn by combining for credit to combine for other purposes and the societies gradually take up the joint purchase of raw material at wholesale rates and the joint sale of finished goods, thus supplying the second want; thirdly the association of men together for a common object renders them much quicker to hear of any new process or improved material or tool and quicker to adopt it.

The writer considers the work of the Co-operative Societies in the United Provinces and remarks that these societies are of great educative value. Their members are learning

business habits, independence and self-respect and their experience in the management of a small credit society will gradually lead them on to the much more difficult task of combination for other purposes.

Mr. Freemantle instanced the work of some foreign Co-operative societies that do work in this direction. The organisation of societies both for purchase of necessities and for sale of produce has received its highest development in Germany and some account thereof will be of interest. Since in that country the factory-system is in full operation the only small industry of much importance is agriculture. In 1912 there were 2,417 co-operative Societies registered as supply societies and the number of societies formed for other purposes which took up also the business of supply was no less than 12,000. The principal business of these societies is the purchase of fertilisers (*i. e.*, chemical manures) and feeding stuffs for cattle and also seeds for the use of their members. The local societies unite to form larger organisations, for they are all affiliated to unions to which central supply associations are attached. And it is easy to see what immense advantages this combination gives. First the concentration of demand enables purchases to be made in bulk at favourable prices. Secondly, the quality of the goods is guaranteed to the members, being tested by the analysts retained by the larger societies or sent to the nearest Government analyst for testing. This is particularly necessary in the case of manures and feeding stuffs since their appearance is no indication of their real value. The extent to which the combination is carried may be to some extent indicated by the fact that the Supply Association of German Farmers purchased in one year 620,000 tons of a particular kind of manure (basic slag). The central associations also maintain their own machinery experts and can both advise as to the suitability of machines and procure them at a greatly reduced cost.

The local supply associations have generally shares of a low value the amount being in the majority of cases under 10 shillings. But there is generally a liability of from 10 to 100 times

the amount of the share and in about half the societies the liability of shareholders is now unlimited. The area of operations in each society is small extending over one or two or three parishes. Larger areas would mean more complex business and would necessitate the employment of a paid staff and the establishment of a warehouse. As it is the operations are of the simplest. Notice is given to members that orders for certain commodities must be sent in by a certain date. Orders are then given in at the office of the society or collected from the members and the quantities indicated for are ordered. Each member takes delivery of his own goods at the place, generally the railway station, selected by the Committee; and so no warehouse or godown and no paid staff is required. Payment is generally made within 20 or 30 days of the receipt of the goods.

The writer says about co-operative production:—A society is said to carry on co-operative production when the members themselves actually own the buildings, the materials and the machines or tools with which they work, and divide in one way or another the profits of the business after payment of interest on borrowed capital. This kind of co-operation presents of course great difficulties and there have been many failures, more especially in France, where the idea was first carried into execution. The great difficulties are, (1) the absence of a proper sense of discipline when the workers are themselves owners, (2) the inability of manual workers to appreciate the importance of business capacity and their consequent unwillingness to pay sufficiently for management, and (3) the difficulty of marketing.

Mr. Freemantle concludes his most interesting paper by quoting the following from the *Irish Homestead* on co-operative ideals and enterprise. What is said of Ireland can with the alteration of a word or two be applied to India:—

“So long as there is a spark of youth in our minds until old age brings its inevitable conservatism of soul, we will always try to stir up discontent in Ireland, with deep-rooted con-

viction that it is the natural mode of human life to be always struggling for an ideal. What we want for every Irishman and woman is an opportunity for the fullest and freest play of their intellectual, social, and economic faculties, and we do not believe this can be brought about except by the organisation of Irish men and women to secure what they want. Nobody is going to bring prosperity, art, culture, literature, science and civilisation into our Irish villages unless it be the people living in the villages, and they cannot do it unless they unite first to get economic power, and if they get that they will find that every other kind of power, political and social and intellectual, goes with it. It is too little realised how easy it is after the first economic victory to go on adding one advantage to another. Monsieur Decharne, Chief of the French Department of Agricultural Co-operation, said in 1906: ‘How true it is that the various branches of agricultural mutuality are inseparable and dependent on each other, and all animated by the same spirit; they should unite and work in concert to remove the same obstacles, to triumph over the same difficulties, and to enjoy together the success won through united actions. He had found in France that the first co-operative associations made it easy and possible to go on from one thing to another, the agricultural syndicates made it easy to organise mutual insurance societies and co-operative credit banks and old age pension associations and friendly societies for one purpose after another. The profits and earnings in one branch assisted the French co-operators to create new enterprises. The organisation of the first made the rest easy. There was a centre to work from, a place where people could meet, committees with business experience, and the rest became inevitable. Hence we find that, after the first troublesome years of pioneering, suddenly society after society springs up as if it were a crop on some specially fertilised soil. We are expecting the same rapid developments to take place in Ireland in the near future. Nay they are beginning to-day.’ And the same may well be said of India.

Basis of Credit.

There is a disposition observable in India to use mechanical methods to regulate credit, observes H. W. Wolff in the *Wednesday Review*. "It makes things so much easier. Aye, it makes them very much less safe. At the Simla Conference one Registrar wanted a member's shares to be made the standard of his credit. That means—though he may not have perceived it—take up many shares and you will receive abundant credit. That is putting the rich man before the poor, and that is no co-operation. And as the share—which in the bank's hands is of no earthly value to the bank—was to ensure, not its nominal equivalent in credit, but very much more, the risk must be serious. One friend appealed to the example of some Italian banks. Aye, but they are not good bankers. In one province there was a talk of adopting a *Laisirai*. Very good, if it is intended only as a help. But as a measure for credit actually given, if you want to be safe, you will have to inquire into the object of each loan and watch its being put to such employment."

The Farmers' Union.

A powerful Association with 3,000,000 members has been formed in America whose full title is, "The Farmers' Educational and Co-operative Union of America," but which is usually known as "The Farmers' Union." It is an active force in politics. According to its charter its object is "to assist (farmers) in marketing and obtaining better prices for their products, for fraternal purposes, and to co-operate with them in the protection of their interests." Its published programme sandwiches practical aims, such as the teaching of scientific farming and the elimination of gambling by speculators in farm produce between high flying items like the establishment of justice and "to garner the tears of the distressed, the blood of martyrs, the laugh of innocent childhood, the sweat of honest labour, and the virtue of a happy home." It has fought the cotton rings by the legitimate weapons of co-operative warehousing and the

establishment of selling agencies. In order to raise prices it has adopted the doubtful expedients of exhorting its members to reduce the outturn by lowering the acreage under cotton and making a corresponding reduction in their purchases of fertilisers.

Dharwar Weavers' Society.

How the co-operative movement is improving the condition of small industries in the Bombay Presidency is testified by the interesting account of Dharwar Weavers' Society. The society buys the required wholesale raw materials such as silk, yarn and indigo dye and retails them to the members at a reasonable rate of profit usually three pies on a rupee either for cash or on credit, thus saving the weavers from the clutches of Marwaries who had the monopoly so long in this line. The society advances money on the finished products deposited with it. The owner is permitted to take it to the market every week and offer it for sale. He may repeat this process several times before he finally disposes of it. This system enables the weaver to sell his finished product to the best advantage and tide over the slack seasons.

Co-operative Cow Insurance.

At the end of 1912 there were in operation, in England and Wales, 22 Co-operative cow insurance societies, registered under the Friendly Societies Act, the same number as in the previous year. Statistics have been obtained for 21 of these societies for the year 1912. The total number of members was 1,498, giving an average of 71 members per society, the number varying from 12 in one society to 298 in another. The number of cows and calves insured was 4,639 (as compared with 4,517 in the previous year), or an average of 221 animals insured per society and 31 animals insured per member. The smallest number of animals insured for any one society was 12, and the largest 1,895.

No Registrar's Conference.

We learn that there is to be no conference of registrars of co-operative societies this year at Simla.

The Industrial World.

Cement Monopoly.

The Bombay Indian Merchants' Chamber and Bureau have addressed the Government of India protesting against the Punjab Government's grant of cement monopoly to a London syndicate. They say the monopoly will injure the four cement making plants already started without Government subsidies. The Chamber urge that, as a rule, no monopoly should be granted even for an industry which is quite new to the country unless the Government are satisfied by public inquiries that such an industry cannot be started without their assistance and that the amount of the subsidy in any form is justifiable and does not fall too heavily on the general tax payer. If after inquiries it is decided to grant concessions these should be notified publicly so that industrialists in this country may have opportunity of tendering for them. The Chamber adds, "It may interest the Government to know that the Agents of one of the four companies mentioned as already established in India had as far back as 1912 approached the Government with proposals for erecting a factory in the Punjab. They were told in reply that the Government are making their own inquiries and would proceed on their own lines. In view of this reply, the granting of concessions the value of which is reported in newspapers to be £150,000 seems to show, my committee regret to note, want of business capacity if nothing else in those who negotiated the tender on behalf of the Punjab Government." The Chamber finally request the Government of India not to sanction the Punjab Government's proposals without publishing the terms of the concessions in the *Gazette of India* and inviting public opinion in the matter.

The Sugar Industry in Bombay.

Some sensible suggestions are offered by the *Times of India* on the possibilities of the sugar industry in the Bombay Presidency.

Although sugar-cane is grown extensively in that Province and of a quality which is equal to the best grown anywhere, nearly 200,000 tons are imported from Mauritius, where the factories are run with Indian labour. There is not a single cane-sugar factory existing in the Presidency, for the reason that all the cane grown is converted by the cultivators into "jaggery," which is in demand among the poorer classes and fetches a price equivalent to that of the refined imported sugar. Seeing, however, that only 60 or 70 per cent. of the juice is expressed in the native mills, the losses from the annual cane crop, when taken as a whole, are enormous. The question of establishing sugar factories must be considered in conjunction with the demand for "jaggery." Its sale may have reached its limit, due to the improving condition of the people and the greater demand for luxuries, of which sugar, in the refined state, is by no means the least. The importations from Mauritius and elsewhere support this aspect. Sugar-cane must be obtainable by the factory in sufficient quantity and at such a price as would enable it to sell its product at a similar price to that of the imported article.

In order to establish a successful cane-sugar factory in the midst of the cane cultivation in the Bombay Presidency, it is essential that it should be away from the "jaggery" making district, and that it co-operate with the cultivators in the same way as is done in the case of the most successful co-operative sugar factory in Holland, which gives the cultivator shares in the concern on condition that he supplies a certain quantity of his crop to it.

The other way would be for the company to own its own land and grow its own cane for supplying the factory, if the difficulty of procuring the land at a reasonable figure could be surmounted. But the system of co-operation, by which the cultivator would have an interest in the factory and be in close touch

With regard to the work of co-operation in other countries, Mr. Patro observed that co-operation is a powerful factor in the economic life of the nation. He said that it was very useful to enquire why Germany with a poor soil, unfavourable climate, bad geographical conditions, insufficient transport facilities and a somewhat intractable peasantry (bearing analogy with Indian conditions) possesses a prosperous and vigorously expanding agriculture whilst the agriculture of Great Britain is rapidly and irretrievably decaying. He observed that the nature of rural education, small freehold farms, co-operation and State supervision of agriculture tended to that prosperity. Then he briefly touched upon the means of aiding cultivation in India against the caprices of the monsoon, by irrigation by canals, tanks and wells. Another means mentioned by Mr. Patro of increasing agricultural efficiency was Railway communication. He, then, emphasised the financial aspect of the question and remarked that there was no provision made for the financing of agriculture. Then he referred to the Swadeshi movement as a great elevating factor in both the moral and economic sphere and concluded a most interesting presidential address in the following glowing terms :—

"The spirit of nationality is with us ; already we see on the mountain tops of time the glimmering rays of the morning sun. The country has awakened to the sense of its own responsibility. Ere long the valley will be flooded with light. March steadily onward and carry the spirit of Swadeshi to the highest glory with patience, courage and self-reliance till the whole country takes its proud position in the industrial nations of the world."

Industrial Development in the Central Provinces.

The following are extracts from the Resolution published in the *Central Provinces Gazette* of 25th April :—The improvement of industries and the provision of opportunities for industrial training are subjects which have long been under the consideration both of the Local administration and of the Government of India. Though

the matter was brought to notice as far back as 1888, it was not till the Queen Victoria Memorial Fund was raised in 1901 that any practical steps were taken in this direction, and the expansion of the cotton industry and the exploitation of the mineral deposit of the country had by that time awakened the educated classes to the inadequate nature of the arrangements which were available for fitting youths for an Industrial career, and in accordance with the general feeling the greater part of the subscriptions to the Memorial Fund was entrusted to the Central Provinces Victoria Technical Institute. The object of the Society was the development and improvement of agriculture and industries, the promotion and diffusion of technical and scientific knowledge generally, and the establishment of Agricultural, Technical and Industrial Schools. These aims the Society has steadily pursued, so far as opportunities have allowed, since its establishment, but, though it was at first expected that the encouragement of industries would engage as much of the Society's attention as the improvement of agriculture, equally appreciable results have, owing to the general apathy of the public, hitherto not been achieved on the industrial side of its activities.

About the same time that the Victoria Technical Institute was founded, the question of the provision of instruction in handicrafts was brought to the attention of the Administration by the Government of India, and a scheme, for which it was at first contemplated that the support of private persons should be enlisted, has since been carried out by Government in the foundation of the Nagpur School of handicrafts. Meanwhile attention was drawn to the condition of the cottage industries of the Province and the consideration of the measures which were necessary for their improvement and regeneration. The attempt to revive and preserve these industries is one for which little justification is required. It can seldom be foretold beyond doubt that an industry is bound to decay, and it is only right to give improved methods every chance of success that research and experience can

afford before abandoning the struggle. Factory methods are at best a necessary evil, and this is more especially true in India where home industries are far more suitable to the simple family life of the people and conduce far more to their happiness and comfort than the conditions of organized labour in crowded centres, where the best measures for the health and well-being of the workers that philanthropy can devise are only palliatives of necessarily undesirable social surroundings. These were the considerations which justified the institution of the industrial survey and led to its scope being confined in the first place to an enquiry into the condition of cottage industries. It now remains to make practical use of the information thus collected for the improvement of handicrafts by the detailed examination of selected industries by experts with the object of finding out defects and devising practical improvements. To this end the aid of the Government of India has been invoked and the appointment of a textile expert is shortly expected.

In view of the importance of the subject it is necessary that the Department of Industries, which is at present combined with that of Agriculture, should be organized on commercial lines, and that the Director should be in a position to command the advice of business men and non-officials who are thoroughly interested in industrial matters. The Chief Commissioner has therefore determined, with the assent and approval of the Government of India, that an Advisory Board to be designated "the Central Provinces and Berar Advisory Board of Industries" should be associated with the Director of Industries to assist him in industrial matters generally and in particular in the revival and development of cottage industries in the Province. The functions of the Board, which will be composed of seven members, official and non-official, will be to offer advice in the following matters :—(a) the branches of industry to be examined and encouraged ; (b) the types of implements and appliances to be introduced ; (c) the recruitment of pupils to schools of handicrafts, the

curriculum to be followed at such schools, and the employment of passed pupils ; (d) the localities to be selected for demonstration.

Accordingly the Chief Commissioner has constituted the Central Provinces and Berar Advisory Board of Industries, consisting partly of Government Officers, and partly of non-official gentlemen. The members include among others :—(1) the Director of Agriculture and Industries ; (2) the Director of Public Instruction ; (3) a member of the Public Works Department ; (4) a member nominated by the Registrar of Co-operative Societies.

Is Fruit-Growing Economically Sound.

In a paper presented to the Kanara Agricultural Exhibition this year by Mr. W. Burns, B.Sc., Economic Botanist to the Government of Bombay, which is printed in the March number of the *Poona Agricultural College Magazine*, the question is considered whether fruit-growing is economically sound. The following general principles are laid down by the writer :—

In the first place man, in vegetarian countries, depends for his main food supply on certain cereals and pulses. The cultivation of these must necessarily take a first place when considering the country as a whole. Man, however, not merely desires to be nourished, but to enjoy his food. To this end he adds sweetening and condiments, and in addition, indulges in those pleasantly coloured juicy vegetable products, which we call fruits. Fruits are of course *foods* in the true sense, as well as being mere pleasure-giving articles, and in addition are valuable for the health of the eater. The prices fetched by fruits in all markets demonstrate the demand for them. It is often the case that the bigger the market the bigger the price, this being due to the fact that in large centres of civilisation there is an enhanced demand for such articles as fruits, and there is the cash to pay for them.

The writer says that the huge dimensions of the fruit trade in America and Australia are worth studying. In these countries fruit-growing is commercially sound in the main areas where it is carried on. In Australia, in

addition to supplying local markets, fruit growers export a considerable amount of produce overseas.

Whether fruit-growing is economically sound or not in any given locality is a matter that has to be answered calculating the Revenue and Expenditure in that locality. There is also the question whether the cultivator could not grow more paying crops. Considered from the point of view of actual gross returns per acre Mr. Burns is sure that fruit-growing is very paying.

Taking the case of a few selected fruits and calculating the income derived from growing and selling them, Mr. Burns concludes that fruit-growing with its large acreage return seems a sound thing for a small holding provided the holder knows how to cultivate his land, can afford to wait till the trees bear, and secure reasonable market prices.

It is also sound for a large land-owner to put a suitable portion of his land under fruit or to let a small portion out to a suitable and clever tenant for fruit-culture.

Regarding the market for fruit, the writer says that in the case of the mango between 600 and 700 cases, each containing six dozen mangoes, are conveyed from Bombay to London each season. In addition, all countries bordering on the Mediterranean are possible markets for mangoes, and, indeed, if India does not secure these markets, Egypt will do so in a short time. The problems in this case are (1) to select a mango variety that will keep, (2) to get that form of packing that will stand transit best, (3) to arrange quick and safe transit both in India and overseas.

Canning of fruits also offers another market to the fruit-grower. There is at present a certain amount of preservation of the mango in tins and bottles, but the demand for these canned products in India and overseas is not yet developed. It *can*, however, be developed by judicious advertising and when it is sufficiently large, the possibilities of profit for mango-growers will be still better.

A most important point in fruit-culture is to grow only what is suited to the soil and climate

of the area in question. Thus figs and pomegranates thrive in the hilly dry district near Poona but would be unsuitable for the coast. On the other hand, plantains are pre-eminently a product needing damp atmospheric conditions, such as prevail on the coast, and would not suit a dry hill district. The distribution of fruits in this Presidency has followed natural laws with the result that we now find many fruits in areas suited to them. This does not mean however that all areas have their suitable fruit. Far from it, still less does it mean that every area growing a certain fruit has the most suitable and profitable variety of that fruit, so that before fruit-culture can be economically sound.—

(1) Each area must grow those fruits only which are suited to it, and,

(2) Each area must grow the most suitable and profitable variety of every such fruit.

Mr. Burns concludes his paper with the following definite suggestions :—

(1) Study the prices got for fruits in all the markets at your command.

(2) Get facts as to outturn of fruit-trees in your area.

(3) Compare these two and work out for yourselves, where the present position of things is such as to make fruit-culture a sound investment.

(4) Remember that from fruit-culture, with the exception of plantains, you have to wait about 5 years for any considerable outturn.

(5) If you decide that it is sound, then before planting trees or buying a plantation, consult the Agricultural Department which will be glad to advise as to the best varieties and methods of culture.

The Behar Industrial Conference.

At the last Behar Industrial Conference, Rai Purnendu Narayan Singh Bahadur presided and he confined his presidential address mainly to Industrial Education in Behar and the improvement of Behar industries.

Regarding the general principles in Industrial education, he remarked :—

First of all, it is necessary that we should

infuse and evoke a spirit of honesty, efficiency and devotion to work.

Secondly, we must get over all caste prejudices in the handling of implements. It is very necessary that we should understand this, and it is a matter that lies entirely in the hands of the people and not of the Government.

Thirdly, our object should be to see that the education reaches all except those that seek employment in channels other than industrial and also that all that receive education in industry get employment in some form or other.

Fourthly, industrial education should be so graduated as to give full scope to the dullest and the most intelligent boy, and the routine worker and the organiser, to the boy that remakes and the boy that initiates.

Fifthly, we should take into consideration the existing cast industries, and drive them into well-organised guilds or co-operative units.

Sixthly, we should consider the new industries best suited to the conditions of Behar and the possible improvement and expansion of existing industries, and direct the lines of industrial education accordingly.

Seventhly, we should see that factory work does not interfere to any appreciable extent with existing occupation and that the undesirable labour complication of the West are not repeated in the East.

Eighthly, we should also see that factory work does not clash with or stifle any art industry of Behar.

Ninthly, we must devise means to keep alive the existing art industries and to encourage them.

Then, Rai Purnendu Narayan Singh Bahadur gave a detailed plan for the reorganization of agricultural education in Behar and divided agricultural education into five classes as follows :—

(1) Ordinary cultivation, (2) Cultivation of special crops, fruits and vegetables, (3) Raising of Farm stock, (4) Culture of poultry, bees and silk worms, and (5) Forestry.

He said that ordinary cultivation must be taught in all farms.

He, then, made a mastery-survey of the present conditions and future possibilities of Behar in respect of the following:—Sugar-cane-tobacco, cotton, indigo, tea, farm-stock bee-culture, sericulture. He laid marked emphasis on the need for an Engineering College for Behar. In this connection he remarked :—

The Government of Behar and Orissa has made a practical scheme in connection with the work of Behar School of Engineering. I am generally in agreement with those suggestions. But I am bound to say that Behar aspirations will never be fulfilled till there is an Engineering College with full fledged Mechanical and Electrical Department. That may be a question of time. But it must come in good time, for we have opportunity of post-graduate training in Tata's Workshop, and because Nature has provided us with coal and iron.

He expressed that something more should be done for industrial chemistry. In this connection he said :—

The chemical atmosphere of Germany is the work of a century. But applied chemistry must have a definite place in our industries, if they have to hold their own in this age of scientific surprises. At least we have our hides to tan, our cotton wool and silk to bleach and dye, we have to make inks, soaps, scented oil, perfumery, medicated powders and what not. Many industries can be helped by a greater knowledge of chemistry. He hoped that a chair for Applied Chemistry would be created in the Patna University.

Talking of the new industries possible in Behar, he suggested paper and glass-making. He asked the Government for the encouragement of Behar industries. He declared that Behar was entitled to local preference and there were industries in Behar which could be encouraged by the local Government. For the art industries of Behar, Mr. Rai Purnendu suggested a stall for them in the important Railway Stations within the Province.

The whole tenor of Rai Purnendu Narayan Singh Bahadur's speech was cast in an

optimistic vein and the *finale* of his valuable thoughts on the subject could not be better presented than by quoting the following few lines :—

The levelling influence of industry is the guarantee of its success. You must be honest, you must be devoted to your work and you must be prepared to do even the smallest work with your own hands. He who would guide an industry or supervise it must have first hand knowledge of every detail of that industry. If India would grow industrially great, the Indian youth must accept these conditions.

Madras Department of Industries.

A Department of Industries will be created in Madras under a Director of Industries. The functions of the Director will be :—

(i) To collect information as to existing industries, their needs and the possibility of improving them or of introducing new industries ;

(ii) To carry out and direct experiments connected with such enquiries ;

(iii) To keep in touch with local manufacturers, to bring the results of his experiments to their notice and to obtain their co-operation in the conduct of operations on a commercial scale ;

(iv) To supervise the training of students, and,

(v) To advise Government with regard to technical matters involving legislation.

With effect from the date of creation of the Department of Industries:—

(i) The Pumping and Boring Department, the officer in charge of the Pumping and Boring Operations and the Bureau of Industrial information will cease to exist as such and the work at present done by that department and bureau and the establishment appertaining thereto will be transferred to the Department of Industries ;

(ii) the appointment of the Superintendent of Industrial Education will be abolished and the industrial experts under the control of that officer will in future be under the control of the Director of Industries.

A New Paper.

We learn that a new non-porous paper is just coming into the market and will probably constitute a great factor in the rapidly growing cinematograph-film trade. This paper, which is known as "Algin," is manufactured from various kinds of sea-weed (*algæ*) and is said to be water-proof, fire-proof, germ-proof and odourless. Its non-inflammable quality renders it of the highest value for cinematograph films.

Development of Industries in Mysore.

Rules regarding facilities afforded to experts who are willing to offer their services for the investigation of new, and the development of existing, industries in the Mysore State are published in the *Government Gazette*, dated 19th February. Persons interested may communicate with the Secretary, Industries and Commerce Committee, Mysore Economic Conference, Bangalore.

A Synthetic Milk Factory.

A factory for the making of synthetic milk from soy beans and other ingredients has, it is said, recently been established in Liverpool. Soy beans contain 40 per cent. of "soluble casein" under conditions which admit of its ready utilization for the making of milk which, as regards nutriment, is claimed to be equal to cow's milk having a fat more easily assimilable than that of the latter.

Output of Coal in India.

The following figures show the output of coal in British India during the year 1913:—

Province.	Tons.
Bengal...	4,649,852
Behar and Orissa	10,226,389
The Punjab	51,040
Assam	270,364
Baluchistan	52,982
Central Provinces	285,651
North-Western Provinces	90
Total	15,486,318

The Commercial World.

Business Enterprise in India.

The Commercial enterprise of India during the month of February 1914 may be judged by the following abstract of Companies registered in that month :—

	Rs.
4 Banking and Loan Companies...	5,69,970
5 Insurance Companies ...	1,30,000
1 Navigation Company ...	24,00,000
1 Railway Company ...	50,00,000
1 Printing, Publishing and Stationery ...	20,000
7 Trading Companies (other than specified above) ...	10,05,000
1 Cotton Mills Company ...	9,00,000
1 Tea Planting Company ...	1,50,000
1 Land and Building Company ...	15,15,000
2 Companies (other than specified above) ...	56,00,000
24 Grand Total ...	1,72,89,970

Things to Avoid.

The shop-keeper, if he wishes to succeed in his business, must avoid these things :—

Putting the end of the string into the mouth when tying a bundle ; chewing gum or tobacco back of a counter ; allowing attention to be taken by any employee while waiting on a customer ; wearing a hat in the store ; speaking across the store ; allowing a customer to wait impatiently without a word of recognition ; wearing a soiled coat, collar or apron.

Again, there is to be avoided the giving special attention to the well dressed ; ignoring children ; overdoing it with "our own" brands ; neglecting to say "Thank you" whether the order is paid for at the time or not ; criticising orders from head-quarters ; speaking disrespectfully of a superior working for the same wages you are getting.

And, finally, don't say you "don't know."

Hall-Marking of Gold and Silver Articles.

The Bombay Trades Association, in a memorial to the Local Government, advocates the English system of hall-marking for gold and silver articles in India. The Association proposes that at present a small department should be attached to each Mint, where persons, so desirous, can have articles marked with a Government stamp, certifying that the metal is of correct composition. The Association does not propose that it should be made compulsory at once, as that would possibly cause a good deal of friction, and as at present a demand for this is confined to those in the trade who desire protection to enable them to compete fairly. But it believes that the adoption of the plan it proposes would in a short time give publicity to the system and nobody would purchase any article of gold or silver, made in this country, that is not marked in this way. It would then be a simple matter to make hall-marking compulsory. Further, an enormous quantity of silver articles is made in this country and the initial outlay by Government would be a very small item while there would be a steady revenue from this source, which would undoubtedly leave a handsome surplus to Government.

The Middleman in Commerce.

In economic literature, next to the usurer, perhaps, none has provoked the lash of the righteous moralist more than the middleman in whatever capacity he might appear in trade transactions. But, before admitting that the middleman who stands between the producer and the consumer is economically superfluous, it is important, admits the *Dun's Review*, to understand clearly his functions. It is no doubt true that the shortest route between these two indispensable factors to industrial and commercial activity is the cheapest when the articles

produced are consumed in their country of origin. The situation is entirely different, however, when one desires to purchase in some distant country an article that he proposes to introduce into his home market, whether it be to supplement a shortage in domestic production, or because of the cheapness or renown of the product in question. Under such conditions, it is unquestionable that the honest merchant, who understands his business and the requirements of his customer, is a most useful link between the manufacturer and the buyer overseas.

There are many reasons for this. At the outset it is proper to state that the rule here laid down is not necessarily of universal application, but relates more particularly to raw materials which are sold either in the rough or partly finished, such as window glass, mirror, glass, cement, etc. The manufacturer who produces merchandise of this kind is limited by his output, or the capacity of his plant, so that he is not under that incentive to develop his business which acts as a spur to the ordinary merchant. The result is that if he has great technical ability he is apt to pay scant attention to the requirements of the buyer, especially if the latter is in a foreign country. He cares little for the loss of a client, provided he is replaced by another, since he requires only enough to take care of his output.

The manufacturer feels that it is his interest to regulate the amount of his production so as to be sure that it is completely consumed, thus keeping supply and demand as evenly balanced as possible. With this object in view, associations have been organized whose principal purpose is to regulate the sale of certain products by fixing rigidly prices and terms. This policy, however, overlooks the rights and requirements of the buyers and if carried to its utmost extreme would result in bringing trade to a deadlock—at least as far as international transactions are concerned. It is right here that the large mercantile house finds its opportunity, and its reason for existence, in bringing manufacturers and buyers together on common ground.

Finding the Leaks.

There are but few employers or proprietors who realise what a cranky vessel they own—that is, if the number of leaks actually existing, or to which their craft is subject, are taken into consideration. The number of such is legion, writes the *Saddlery and Harness*, and as a rule the larger the concern the greater the leaks or possibilities thereof.

Petty thefts, larceny, incorrect costings, errors in pricing, and dishonesty in many forms of employees all add to the difficulties of those conducting a business, and the experience of years shows that precautions, watchfulness, and every kind of care must be persisted in, for as soon as one leak is discovered and stopped another breaks out.

The journal suggests the following loss-preventing means:—

1. The periodical taking of stock is to some extent a preventive, but it is not easy to keep track of goods in this way, for all systems of stock account are dependent on the correctness of the individual keeping the books. Further, in many concerns it is almost impracticable to register purchase and sales.

The only safe way is to watch and investigate, especially where goods are loaded direct into vans, for no matter how well thought out the system of checking may be, collusion will upset almost any theft-preventing arrangement. It will be obvious that a careman in league with a packer can be the medium for removing more goods than entered on the invoice or packing notes. The same applies to goods conveyed by porters, who can, if so disposed, take up an extra parcel without being suspected.

2. Another source of aggravating theft is the corruption of the staff by outsiders.

3. Errors in costing are a much greater source of loss than many would imagine, and are divided mainly between incorrect calculations and confusion of figures. The former is usually owing to insufficient checking, and amounts almost to carelessness on the part of the employer by not seeing that this known leak is watched closely. The confusion of

figures is chiefly in evidence amongst smaller traders who rely on their memory rather than the system of ticketing goods with cost price. It is somewhat curious that oft-repeated figures are unconsciously changed.

4. Another source of errors with figures is the carrying forward of totals from one page to another, and repeatedly it is found that where two sets of figures have not tallied a mistake has been made in the brought forward total.

5. With stock-taking over and balance sheets being considered, it may be that some of the foregoing will find a satisfactory resting place which may stop a supposed leak or show where one actually existed.

6. There is just one other note of caution concerning leaks which has much to do with the all-round increase in the cost of most goods, whether manufactured or raw material. There is always a tendency to refrain from increasing prices, especially in the wholesale trade, and it is not uncommon when competition is particularly keen for an order to be booked at a reduction on to-day's prices rather than the business should be lost, but unfortunately costs have crept upwards during the last twelve months or so, and the margin that was never too wide has been considerably narrowed, if not completely closed, thus to-day a review of costings is of the utmost importance and may prevent not one but several leaks.

The Weight of Paper.

The following notes on the weight of paper have been prepared by the *Paper Makers' Monthly*:—

(1) *Weighing the whole Ream*.—This method is only available when the full number of sheets is obtainable, and also scales capable of taking the whole ream. We may take as an instance for convenience in these exercises, a ream containing 500 sheets of Double Crown 20 ins. × 30 ins., found to weigh 28 lbs. We may assume for the sake of example that the ream when actually tested does weigh 28 lbs.

(2) *Single sheet reading on Quadrant Scales*.—With the well-known form of paper scales such

as those of Leunig's, a single sheet measuring 20 ins. × 30 ins. is folded and weighed, and the reading on the quadrant indicates directly the weight of the ream. This may be anything between 27 and 28 lbs., according to the uniformity of the making of the paper.

(3) *Quarter sheet*.—It may occur that a full sized sheet such as 20 ins. × 30 ins. is not available and only some odd piece measuring roughly 12 ins. × 17 ins. From this a square piece 10 ins. × 15 ins. can be cut, these dimensions being selected as giving exactly one-quarter the area of a single sheet. This is placed on the ordinary paper scales, and showing a reading of 7 lbs. would indicate that the weight of the ream is $7 \times 4 = 28$ lbs.

(4) *A few odd single sheets*.—It may so happen that the only available balance for determining the weight is an ordinary letter balance found in the office. In that case a number of the odd sheets are weighed and the ream weight calculated. Thus, for example, if 5 sheets were found to weigh $4\frac{1}{2}$ ounces, then the ream weight would be $100 \times 4\frac{1}{2} = 450$ ounces = 28 lbs. approximately.

(5) *A sheet of odd size*.—If the sample of paper obtainable measures some odd size and it is desired to determine the weight of the ream without cutting the sheet or reducing its size by means of the ordinary paper scales, the process of weighing can be effected on a quadrant scale or a balance. The subsequent calculation may be seen from the example quoted. Thus if the piece of paper measures 17 ins. × 12 ins. and gives a reading of $9\frac{1}{2}$ lbs. when weighed on the Leunig quadrant scales, then the weight of the ream for Double Crown is 28 lbs. Since a sheet 17 ins. × 12 ins. gives a reading of $9\frac{1}{2}$ lbs. a sheet 20 ins. × 30 ins. = $(9\frac{1}{2} \times 20 \times 30) \div (17 \times 12) = 28$ lbs.

(6) *Small piece measuring approximately 4 ins. × 5 ins.*—If Leunig's special Demy balance is available the sheet can be cut down to exactly 4 ins. × 4 ins. This hung on the balance gives the direct reading for Demy size. The equivalent weight of the Demy in terms of Double Crown can be calculated, or found by reference to tables. The reading on the balance for

Demy at $18\frac{1}{2}$ lbs. would be equal to a reading of 28 lbs. Double Crown.

(7) *Sheets of small area.*—With sheets of very small area it is necessary to employ a delicate chemical balance, particularly in the case of thin paper of light weight. For example, if the small piece of paper is cut to an exact area of 1 in. $\times$ 3 ins. and shows a weight of 2 grains on a delicate balance, the weight of the ream is calculated quite simply by Rule of Three. Since the piece 1 in. $\times$ 3 ins. = 2 grains then 500 sheets each 20 ins. $\times$ 30 ins. = 200,000 grains.

As 7,000 grains = 1 lb. the weight of the ream is thus $28\frac{1}{2}$ lbs.

(8) *Circular piece of paper.*—As a matter of curiosity the method for ascertaining the weight of the ream from a circular piece may be mentioned. For example, a small piece of paper measuring 1 in. diameter, when weighed on a delicate balance showing a weight of $\frac{1}{2}$ grain would give a ream weight for Double Crown of $27\frac{1}{2}$ lbs. If the weight is taken very closely, as it should be in the case of a small piece, a closer approximation would probably be obtained unless the sheets exhibited considerable variations in substance. The calculation is also simple since a circle 1 in. diameter has an area of $\frac{1}{4}$ square inch. From this it follows that if a piece of paper having an area of $\frac{1}{4}$ square inch. weighs $\frac{1}{2}$ grain then a ream of 500 sheets each 20 ins. $\times$ 30 ins. weighs 190,909 grains, and this divided by 7,000 gives the weight of the ream in lbs., namely, $27\frac{1}{2}$ lbs. approximately.

Selling Power of Premiums.

The *Tea and Coffee Trade Journal* publishes a very interesting article on the above subject taken from Mr. Bunting's latest book on the *Elementary Laws of Advertising* :—

A premium offered as a reward for the purchase of goods is an advertisement whose attention getting power, or attention value, is the highest conceivable. The attention of the individual buyer, of course, is meant here.

The selling power of premium publicity varies with the value of the premium and the time required to win it.

The attention power of publicity is not sel-

ling power when the attention of individuals who are not buyers is attracted.

THE HIGHEST FORM OF ATTRACTING ATTENTION.

All persons who have the necessary buying power and who, for any reason, cannot be persuaded to buy pianos, are not piano buyers. All others who have the buying power are. Now, it is the attention of these latter that is desired—the buyers.

The attention value of the premium (with this kind of individuals) naturally is higher than could possibly be the attention value of any other form of publicity. An offer to give something for nothing will attract the attention of everybody, and will hold it until the individual has found out the value of the thing offered.

When the individual has satisfied himself about the value he forms his judgment as to whether he will or will not accept the gift with its conditions, or accept the gift without conditions, if none are imposed.

The premium system of merchandising is called the "inducement system," the "inducement" method, or other similar term, and the word "inducement" has been, by usage, well tied up with premiums. Inducement means nothing at all if it does not mean suasion. Indeed, suasion by gift, or by bribe, or by the something-for-nothing, good measure, reward, or prize method, is the oldest and most powerful form of suasion.

VALUE THE KEYNOTE OF THE PREMIUM.

The premium is the most vivid, obvious, plain, striking, easily seen and appreciated, easily understood and assimilated argument to the individual's self-interest of all forms of suasion publicity you can imagine. The value of the premium determines its attention power and its suasion. We may say that the attention power and the suasion power of a premium vary with its value.

The higher the value of the premium, the higher will be its attention and suasion power. The lower the value of the premium, the lower will be its attention and suasion power.

THE ELEMENT OF TIME.

If the time required to win the premium be

short, its selling power will be high ; if long, the selling power will be low. Thus, the selling power of the premium varies with the time required to win it.

The time is influenced by the value, the value by the time, and the selling power by the product of these two when taken into each other. We can say therefore, in mathematical terms, that the selling power of a premium is a function of its value and its time.

THE CIRCULATION OF THE PREMIUM OFFER.

Likewise the selling power of premiums, as of other forms of publicity, will vary with the radius of the specific circulation of the premium offer ; that is, with the number of individual buyers of goods with which the premium is offered whose attention is attracted by the fact that premiums are offered. These individuals, or rather number of these individuals are the circulation of the premium offer. They are, too, its specific circulation, i.e., the number of individuals who are in need of the goods and who have the necessary buying power. The larger the number of these individuals reached by the premium offer, the larger will be the sales.

The selling power of the premium varies inversely with its attention-getting power when attention-getting is the sole consideration in the premium offer. That is, the more attention attracted the less goods are sold. The self-destructive nature of this kind of premium giving is seen exemplified in those foolish business houses that offer an automobile or a piano under conditions that make the winning of the prize impossible. The more attention such a house attracts by such an offer, the less goods it sells. The individual buyer, too, soon realizes that such a house is trying to play a confidence game upon him and probably withdraws all his trade in favor of some more honest concern.

CHANGING THE FORM OF APPEAL.

Likewise, the selling power of premiums, as the selling power of other forms of advertising, varies with the frequency of the change in the form of appeal ; that is, with the frequency of

the change of the articles, or merchandise, offered as premiums. It is one of the infallible rules of the premium system never to allow the interest of buyers to lag from the monotony of running the same premium offer into the ground because of its success.

Joint-Stock Companies.

The total number of Joint-Stock Companies, which have been registered in India under the law from the time it was passed, amounts to 6,533. Of these, 2,553 were working at the end of 1912-13, most of the others having been either wound up or otherwise discontinued or never having commenced business, so that about 61 per cent. of the companies started have been failures. The companies that have ceased to work include a number of speculative Gold-Mining Companies formed in Bengal some years ago and a considerable number of "provident" associations and some insurance companies formed in the last few years in several provinces. Some companies have also been taken off the Indian register, to be reconstructed as companies under the English law with their head offices in London.

During the year 287 new companies with a nominal, issued nominal, and issued paid-up capital of Rs. 12,31,31,042, Rs. 38,39,116, and Rs. 19,28,918 respectively were registered, and 198 companies with a nominal, issued nominal, and issued paid-up capital of Rs. 5,46,01,897, Rs. 1,79,31,221, and Rs. 1,36,51,298 respectively ceased to work. The "issued paid up capital" includes vendors' and other shares issued otherwise than for cash, but considered as paid-up.

In 1912-13 there was a net increase of 88 in the number of companies, of Rs. 11,07,96,166 in the nominal capital and of Rs. 2,72,05,980 in the paid-up capital. The nominal capital of 80 companies was increased by Rs. 4,46,80,181, the issued nominal capital of 503 companies by Rs. 4,94,47,116 and the paid-up capital of 711 companies by Rs. 4,21,30,376. The nominal capital of 5 companies was reduced by Rs. 11,24,100, the issued nominal capital of 87 companies by Rs. 60,12,570, and the paid-up capital of 84 companies by Rs. 30,78,028.

At the close of 1912-13 the companies at work had an issued paid-up capital of Rs. 72,09,84,525 ; this was more by Rs. 2,72,05,930 than that of the preceding year. There has been an increase of 86 per cent. in the paid-up capital in the last ten years.

About 76 per cent. of the capital invested in joint-stock enterprise is concentrated in companies registered in Bengal and Bombay. Bengal has Rs. 27,26,76,086 being 37.9 per cent. and Bombay Rs. 27,47,01,104 being 38.1 per cent. of the whole. Thereafter but a long way behind comes Madras with a capital of Rs. 4,89,29,903 being 7 per cent. of the whole.

Nearly two-fifths—about Rs. 28,00,00,000—of the aggregate capital is invested in mills and presses, chiefly for working or pressing cotton jute, wool, and silk. This capital has increased 47 per cent. in the last ten years. A great number of the mills and presses are registered in Bombay, that presidency representing about 50 per cent. of this sum, most of it invested in cotton mills and presses. Mills and presses (mainly jute) registered in Bengal represent about two-thirds of the capital invested in mills and presses in Bombay.

Trading companies account for nearly Rs. 16,82,00,000, of which nearly a third (Rs. 6,42,95,149 or 38 per cent.) is invested in railways and tramways. The companies for the working of these lines are mainly the creation of the last sixteen years.

In tea, coffee, and other plantations, Rs. 4,00,00,000 are invested, of which nearly 88 per cent. is held in Bengal, most of the tea companies being registered in Calcutta. The capital invested in tea (over Rs. 3,82,00,000) increased by 10 per cent. in the last decade. This rupee capital is about one-sixth of the sterling capital invested in this industry.

Banking, loan, and insurance companies account for Rs. 8,69,00,000, of which 34 per cent. is in companies registered in Bengal and 22 per cent. in Madras. The capital of banking and loan companies has increased by nearly 117 per cent. in the last ten years.

The Capital of mining and quarrying companies is Rs. 11,61,00,000, of which 58 per cent.

is invested in companies registered in Bengal most of it representing capital invested in coal mines. The capital invested in coal companies has nearly tripled in the decade.

The average capital of each company is highest in Burma, where it amounts to Rs. 4,63,878, the average of Bombay and Bengal being Rs. 4,63,240 and Rs. 3,21,932 respectively. The average of the 414 companies registered in Madras is only Rs. 1,18,188, the reason being found in the extremely large application of the Companies Act to the business of small money lenders, for no less than 232 out of the 513 "banking and loan" companies in all India are registered in Madras with a paid-up capital of Rs. 1,92,36,656.

It should be noted that the capital stated above represents share capital only, while several companies have issued debentures, the total value of which at the close of the half-year ending June, 1913 amounted to Rs. 9,45,87,147, of which Rs. 5,40,00,000 belongs to Bengal, Rs. 3,56,00,000 to Bombay, and Rs. 26,62,000 to Madras. The value of cotton mill debentures was Rs. 2,44,04,675, of jute mill debentures Rs. 3,59,15,500 and £326,358 and of paper mill debentures Rs. 15,07,650.

There were 299 companies limited by guarantee at the close of the year 1911-12. Of these 99 ceased to work and 10 new companies were registered during the year 1912-13, giving a net total of 210 companies at work on the 31st March 1913.

The total number of companies which are registered elsewhere than in India, but which carry on work exclusively, or nearly so, in India, mostly with sterling capital, is 390, and the paid-up capital amounts to £80,934,523, besides £47,518,888 as debentures. The railways represent £36,175,825 paid-up capital and £41,340,851 debentures. Of the rest, the sterling share capital invested in the tea industry is £14,902,592, in jute mills £2,453,894, in cotton mills £763,521, and in rice mills £2,106,475. The gold fields in Southern India are mostly worked by companies formed in the United Kingdom, the paid-up sterling capital being £2,827,711.

Week-End Cable Letters.

In connection with the recent reduction in cable rates, the Government of India have also approved a proposal submitted by the Cable Companies for the introduction of a system of week-end cable letters which will at present apply to messages between India and the United Kingdom, Germany, South Africa, Australasia and the Far East. The rates for these messages will be one-fourth those for ordinary telegrams exchanged with these countries with the minimum of 20 words (including the prefix of the service indication TWT denoting the nature of cable letters) and they will be dealt with telegraphically throughout. They should be despatched so as to reach the sending office not later than Saturday night and will be delivered to the addressee the following Tuesday. The above arrangement has been brought into effect from the 1st May, 1914.

British Empire Mark.

A successful meeting was recently held in London to advocate a Mark of Origin for goods manufactured or produced in the British Empire. The following resolution was adopted:—

"That this public meeting, held in the Queen's Hall, London, hereby records its conviction that, in the interests of the trade and industry of the British Empire, a mark of origin should be established for goods manufactured or produced within the Empire, and strongly urges the Board of Trade to proceed with the registration of the mark applied for by the British Empire League."

Publication of Sales of Newspapers.

A question of considerable importance to business men was recently discussed at the London Chamber of Commerce. The meeting, convened by the Advertisers' Protection Society, carried a resolution that publication at fixed periods of the net sales of all newspapers, magazines, and other periodicals, is desirable in the best interests of both advertisers and publishers. We heartily endorse this resolution, and the subscribers' register of the *Wealth of*

India is always open to the inspection of advertisers.

International Letter Postage.

The London *Standard* announces that the majority of the nations have decided on a minimum international letter postage fee of one and a half pence instead of two and a half pence from January 1915. Though Australia and others vigorously advocate one penny postage, it is certain that the International Conference in September will confirm one and a half pence fee. Great Britain is one of the opponents of reduction to one penny.

Congress of Chambers of Commerce.

The Sixth International Congress of Chambers of Commerce will be held in Paris from the 8th to 10th June next. Amongst other matters the Congress will discuss the utility of international action against unfair competition, the unification of the laws relating to arbitration proceedings between inhabitants of different countries, and the question of unification of the laws relating to credit on goods.

A New Navigation Company.

We learn that a new Swadeshi Steam Navigation Company will shortly be floated in Rangoon headed by a Japanese gentleman who has knowledge of shipping trade and largely supported by Indians with the avowed object of running against B. I., in Rangoon-Calcutta and Rangoon-Madras trade as also to Persian Gulf.

Wanted Uniform Commercial Laws.

An "Interparliamentary Conference of Commercial Law" will be held on the 18th, 19th and 20th of June next, at Brussels. The chief object of this conference is to bring about a uniform system of commercial laws for all the countries of Europe.

Bi-Weekly Mail Service to India.

At question time in the House of Commons on April 7th Sir John Rees suggested giving, in view of the Indian Post Office surplus, two English Mails to India weekly, which would cost far less than the amount of surplus. Mr. Roberts replied that the matter was under consideration.

Openings for Business.

[For particulars, address the Director-General of Commercial Intelligence, New Imperial Secretariat I, Council Street, Calcutta, mentioning the *Wealth of India*. Firms that may like to follow up any enquiry should give proper references and restrict themselves to those enquiries only which they are fully and seriously qualified to handle.]

BRISTLES AND HAIR.

A merchant in New York, U. S. A., is desirous of communicating with exporters of bristles, horse, cattle and human hair. (C334.)

CARBON AND BORT.

A firm in New York, U. S. A., is desirous of communicating with mining companies or individuals interested in diamond drills who require carbon and bort. (C335.)

CANNED PROVISIONS.

A firm in San Francisco, California, is desirous of appointing agents for the sale of canned fruits and vegetables, canned milk, canned salmon, dried fruits and wines. (C336.)

DRESS GOODS.

A firm in New York, U. S. A., is desirous of appointing agents for the sale of dress goods. (C337.)

DRUGS AND OILS.

A merchant in New York, U. S. A., is desirous of communicating with importers of American drugs and oils of all kinds. (C338.)

FIRE EXTINGUISHERS.

A firm of manufacturers in Boston, U. S. A., is desirous of appointing agents for handling fire extinguishers. (C339.)

HAY BALER.

A firm of manufacturers in Iowa, U. S. A., is desirous of appointing selling agents for a Hay Baler. (C340.)

INK TABLETS.

A firm in Ohio, U. S. A., is desirous of appointing agents for the sale of compressed ink tablets. (C341.)

MACHINERY FOR BUTTONS, CHANK BANGLES, Etc.

A firm in Providence, Rhode Island, U. S. A., manufacturing presses of all kinds, drop hammers, rolling mills, wire drawing machinery,

rotary swaging machines, dies and special tools, roller and ball bearing, desires to be placed in communication with manufacturers of buttons, metal bracelets and other articles of jewellery. The firm also desires to be placed in touch with those who are on the look-out for plant suitable for chank bangle manufacture. (C342.)

MONOZITE AND RED GARNET SAND.

A merchant in Cochin, Madras Presidency, is desirous of communicating with buyers of monozite and red garnet sand. (C343.)

MYRABOLANS.

A merchant in Lille, France, is desirous of communicating with shippers of myrabolans. (C346.)

PICTURE FRAME AND MOULDINGS.

A firm in New York, U. S. A., is desirous of communicating with business houses willing to handle their picture frames and mouldings. (C347.)

PUMP.

A firm in Texas, U. S. A., is desirous of appointing agents for the sale of an automatic air suction and force pump. (C346.)

RADIUM SALTS.

A firm in Pennsylvania, U. S. A., is desirous of appointing agents for the sale of radium salts and other preparations. (C350.)

ROOFING MATERIALS.

A firm in San Francisco, California, is desirous of appointing agents for handling roofing materials made of heavy wool felt saturated with gunny compounds to render them water-proof, and rubber and asbestos compositions. (C351.)

TOOLS.

A firm in Illinois, U. S. A., is desirous of appointing agents for the sale of machine shop tools and those required in railroad repair shops, Government arsenals and Navy Yards. (C352.)

BEEBLE NUTS.

A firm in Bandjermasin, S. E. Borneo, is desirous of communicating with importers of beetle nuts. (C353.)

The Economic World.

The Difficulties of Industrial Life.

Addressing an audience in Britain, Mr. Burns, said:—

"Last year your industries throughout the country paid four million pounds for compensation for accidents and deaths whilst at work. But the sum of four millions does not represent the total burden. As President of the Local Government Board I can give you a startling fact. Thirty per cent. of our total pauperism is due to sickness or accidents, 50 per cent. of the cost of pauperism is due to sickness and accidents, 40 per cent. of the total pauperism is due to widowhood and orphanhood, too often inflicted by the preventible loss of the breadwinner. Industrial accidents, I am glad to say, are diminishing in proportion to the numbers employed, but they are still very serious. Every year a regiment of men are poisoned by their occupation; every year 5,300 men are killed outright; every year 300,000 men are injured, with many weeks of industrial incapacity. In fifteen years 66,000 men have been killed in industry, and over 2,000,000 have been injured. Accidents range from 5 per 1,000 in the carpet-making industry to 56 per 1,000 in the engineering industry, 100 per 1,000 at docks and wharves, and 158 per 1,000 among miners. One out of every 1,400 workmen is killed, one out of every 2,500 is totally disabled, one out of every 300 partially disabled, and 125 per 1,000 are industrially incapacitated for three or four weeks owing to accidents."

Money and Prices.

The *Journal of Political Economy* of the University of Chicago for October and November 1913, contains articles by Mr. James Dysart Magee on "Money and Prices." The problem considered is the relationship which exists between changes in the amount of money (in banks or in circulation), or changes in the amount of bank deposits on the one hand, and changes in general prices and changes in the

prices of particular groups of commodities on the other hand. The study is primarily statistical—a study of what has actually happened; but the bearing of the results upon certain theoretical points of monetary discussion is briefly indicated. The following conclusions summarised in the *Journal of the Royal Statistical Society*, referring, of course, only to the periods and the price movements examined, are drawn, viz.:—(i) The relation of price changes to changes in the amount of money in circulation and in banks, and in the amount of deposits in banks varies with different groups of commodities. Moreover, in any particular group of commodities, the relation may be different when weekly, monthly and yearly averages are considered. (ii) In no case was complete correspondence found between a price movement and the movement of money or deposits in banks, or of money in circulation, (iii) In general, the correspondence is greater between price movements and the movement of money or deposits in banks, or of money in circulation, when the averages used cover longer periods than when they cover shorter periods. (iv) Some of the price movements in local markets show more correspondence with the movement of money and deposits in the local banks than is shown in the comparison of general prices throughout the country with the money in circulation in the whole country. (v) The causal influence runs from money in circulation or in banks to prices more frequently than the reverse. On the other hand, the causal influence runs from prices to bank deposits more frequently than the reverse.

An American View of Railway Nationalization.

We learn from the *Commercial and Financial Chronicle* of New York that opinion appears to have changed rapidly in the United States in recent years in regard to Government ownership of railways. Whether transfer to State or

Federal administration has been brought really nearer by the ordeal of the last few years may be questioned, for there has been little thinking out and no threshing out of what such a transfer would mean. No other country's experience could be taken as a precedent in dealing with systems and properties so large as the American Railway Companies operate. On the other hand, to approach the task piecemeal, State by State, would create impossible disturbance. The reporting correspondent in France to the International Railway Congress finds evidence that State industries are incompatible with a democratic and parliamentary regime. When conducted under the Government administration, subject to political influences, the tendency must inevitably be towards unnecessary expense and inefficiency. Under a paternalistic or socialistic system, where the spur of competition is eliminated, the efficiency can only be maintained by a rigorous bureaucratic administration, and with a degree of acquiescence on the part of the public which is little removed from servitude. In the three years 1909-12 it is shown that the working expenses of the French Railways have been abnormally increased by the extension of State working in consequence of the nationalization of the French Western Railway. While the increase in the expenses of the whole of the private companies in two years was 11 per cent., the increase for the two railway systems operated by the State exceeded 26 per cent. This was caused by the addition to the pay of the employees due to the pressure exerted through political channels by the labour unions, and this addition was badly distributed, and in scarcely any case was compensated for by better efficiency and operation.

Population and Production.

The time-honoured American notion that population never can and never will increase too rapidly in that country is combated in a recent number of *Business America* (New York), by Prof. Frank A. Fetter. Referring to the densely populated countries of Europe, where the standards of living are stated by the writer to be far below those of the United States, Pro-

fessor Fetter declares that in the light of such facts the flights of speculative statistics regarding the possible increase of American population evidence a forgetfulness of economic principles and a recklessness of economic consequences.

As to the cry "back to the land," Professor Fetter says:—As a plan to be followed by masses of men with the hope of relieving the pressure of population it is vain. Every time one pair of hands is added to the agricultural population, three more mouths are added to the city population waiting to consume the products.

Mechanical inventions are internationally patented and are for sale the world over. Whoever finds it profitable may use them. If they are used less in other countries than in America, Professor Fetter maintains that it is because the work may be done more cheaply by hand under the conditions in those countries.

The general level of the use of machinery is largely fixed by the relations between population and resources, and not by any mysterious racial talent for machinery. It is the density of population that mainly explains the contrast in this regard between the people of Europe on the one hand, and on the other those of the same races in America, Canada, and Australia.

Can it be assumed that improvements in agricultural methods will offset the influence of the increase in population? New agricultural methods, important as they have been, have not, we are told, in the last two decades even kept the cost of food from increasing in terms of wages. "The development of water power will undoubtedly retard the trend toward higher prices of coal, forestry will eventually grow lumber to meet the curtailed demand at higher prices, but, given a population steadily increasing at anything like the present rate, and real wages in America must decrease in terms of food, clothing, and fuel, and all the commodities dependent on wood, iron, copper, and other primary materials. The steady increase of

population may offset the popular benefits of industrial progress."

Agricultural Economics.

Mr. L. W. Ellis's article on "Power and Machinery on the farm" in a recent number of *Export American Industries*, suggests a re-ordering of our ideas of agricultural economics. The American farmer conforms, probably, to the best type of an economic agriculturist, quick to conceive and carry out changes, unburdened by immemorial traditions, with a perfect mobility in labour power and efficiency; and America best illustrates in her farming system the successive epochs of the agricultural industry.

"The old idea of a little farm, well tilled by its resident owner," however pleasing a picture, is wholly inadequate to present day conditions or to the knowledge that a great change is taking place. Mr. Ellis divides the entire history of agriculture into three fairly distinct periods based upon the development of farm machinery. Without entering into a chronological description, we may state, in the words of the writer, that the first period covers the era of hand methods, the second from hand to machine and the third period marks a more rapid improvement. During this era, scientific breeding, based on the introduction of improved foreign stock, improved the efficiency of the average farm horse at least twenty-five per cent. The farmer found both his own efficiency and that of his men improved, both being relieved of much drudgery and enabled to live more comfortably and intelligently.

Further, the introduction of machinery on the farm was found to decrease the cost of production and increase the proportion of profit. It was also found to reduce the proportion of labourers required to produce the food supply of the nation, thus freeing men for industrial development along other lines. Writing of American conditions, the writer says that in 1800 there were required four families on the farm to support one family in the town. Today two families in the country support three families in the city, and still leave a balance

for export. Under such a stimulus the cities have felt the necessity of providing work for the increased army of workers, and this again reacts upon the farmer, rendering it necessary for him to produce a continually increasing surplus of food beyond the needs of his own family.

One of the reasons why the application of manufactured power to the soil has been so long delayed lies in the difficult conditions which must be met. The material cannot be brought to a central factory, but the power plant must be capable of going from place to place and doing its work wherever found. This involves the limitations of topography, climate and soil, and renders the mechanical problem of designing an efficient farm tractor much more difficult than that of making a stationary engine. Another reason is found in the conservative attitude of the farmer, who is much slower to adopt changes than the manufacturer in the whirl of modern competition. It is now conceded, however, that the farmer must adopt mechanical power on a scale comparable with the other two great industries. Yet still another reason for the delay in the introduction of mechanical power in agriculture appears in the irregular demands of the service. For a considerable portion of the year the amount of power required is moderate, while during the active season a high peak load is reached. This applies as well to animal power as to manufactured power, and one of the great burdens upon the farmer imposed by animal power is found in the necessity of feeding and caring for horses during the winter season.

But these drawbacks will be found too feeble to resist the increasing demands of the day. The processes of animal reproduction are too slow to cope with the daily extension of cultivated area. The introduction of power and machinery to transport is bound to have its effect on agriculture. The cost of fabrics, illumination, and utensils has been lowered by power manufacturing to a point which has rendered individual production utterly impracticable. The drift of labour has been away from the farm to the factory, and yet it is in the factory that manufactured power is used with

thirdly in getting the children into those schools. Among the obvious advantages of such a procedure would be the discouragement of hoarding, and the banking of earnings in sound financial undertakings.

To the possible objections that the loans recommended to be raised would involve the payment in the shape of interest and sinking fund of large annual sums, and that, in turn, would necessitate a considerable increase in the expenditure, the *Statist* gives the following answer :—

"It would undoubtedly necessitate an increase in the expenditure. But would the increase be so very formidable? Even if we suppose that the Government would have to pay 4 per cent., 10 millions sterling at 4 per cent. interest would mean a yearly payment of only £400,000. Nobody would suggest that the Government should begin by borrowing 10 millions sterling at 4 per cent., because to train teachers would be a difficult and a tedious operation, and there would be no sense in borrowing a great sum which could not be applied effectively for a considerable time. What ought to be done would be to elaborate a great system of teaching for both men and women in India; to borrow whatever might be necessary to put the system in operation; and then to proceed to build schools in preparation for the time when the teachers would be able to set properly to work. The addition to taxation, then, would at first be small. But a new proof would be given of the solicitude of the Government for the welfare of the people."

Blessing of the High Cost of Living.

Let us at once hasten to say that this provocative title is from an article appearing in the *Popular Science Siftings*. There a physician's "Sensational" views on this burning topic of the hour are set out, from a biological standpoint. The above-mentioned journal assures us that the remarks are the "gist of a recent study of birth rates, over-population and the cost of living by that gifted man of science, Doctor Charles E. Woodruff." The Doctor says that all efforts to reduce the

high cost of living are based upon ignorance of biology, ignorance of the laws of evolution, ignorance of the recent progress of medicine and ignorance of elemental economics. The high cost of living has always been with us. It is a blessing because it promotes human efficiency by killing so many.

This is, indeed, a dangerous doctrine to subscribe to, and many still believe that Malthus's was not the last word uttered on the subject of over-population and food supply. But our doctor agrees that Malthus proved that there was a tendency for population to increase in a geometrical ratio and crowd the food supply. He feared that a time would come when, in spite of the checks he mentioned, we would suffer dreadful distress from future overcrowding unless we took measures to keep down population so as to leave fewer to be killed by famines or in the wars due to the search of food or the means to purchase it. His fears, we are assured by Dr. Woodruff, were groundless, as the future over-population he dreaded was really present then, but it required a Darwin to show that the very basis of evolution of better beings of all kinds is this very overpopulation which forces a struggle for existence, during which the best fitted to survive outlast the least fitted and thus cause a change of type. In fact every social phenomenon is based on competition, as there are always more workmen than jobs.

According to Charles Woodruff, sociologists are hopelessly divided and make contradictory proposals for human betterment. Some while insisting on competition as an essential, of society, are constantly making impossible suggestions to end the most basic of all competitions. It is taken for granted that man is not an animal and that there need be no destruction of the unfit; indeed, they say that there never has been over-population and that the unfit for survival do survive."

But the movement to reduce the size of families observable in some parts of the world directly contradicts this view.

"We must recognise that the reduction of the size of families is a world-wide movement

that has been going on for many ages, but only noticed for a century. It is but one of the ways in which thinking people try to ease the struggle for existence and make survival more certain for their healthier, fewer, better-raised offspring. But it must be known that at the present rate there are still produced enough men to overstock the labour market and make it impossible to employ them all."

Again, the doctor observes:—

It may be remarked that few people realise what a narrow margin separates us all from starvation. Before harvest time, the last year's crop is nearly all eaten up.

Mr. Woodruff most graphically describes this search for food all over the world and concludes that a thousand years will not change a phenomenon which has been going on for many million years, and which is the cause of all advances by survival of the fittest.

"The increased cost of living could also be very accurately explained by economists if they would only recognise the significance of Darwin's work. The present theories are so contradictory as to be absurd, yet each has a part truth. It is foolish to complicate the matter by discussing the value of the coins by which we are paid. The real test is whether a labourer can get as much of the necessities of existence for his labour as he formerly did—not the amount of copper, silver, or gold he gets as compared with what he got one or ten decades ago."

The history of man is the history of the fashioning of his tools for more efficient service. Dr. Woodruff says that publicists still use the absurd expression "labour-saving machines," whereas they all know that the only result in our labour competition due to over-population is increase of product. The sweatshop worker pending over an electrically driven sewing machine works just as hard and just as long as the needle woman of a century ago, and gets just about as much of the necessities of survival in exchange for an hour's work.

"Adam Smith first pointed out the natural cost of living (our total energy), but in measuring the price of food he made a remarkable

blunder, due to his ignorance of over-population. He tried to measure the value of wheat by the labour of production, whereas its value is what the competing too numerous consumers are willing to pay for it to keep alive; and that amount is practically the whole labour of the lowest self-supporting layer of society. The labour of production doesn't enter into the problem except secondarily, for no consumer will give more labour for it than he would expend in producing it himself, omitting the costs of transportation and exchange. The Doctor's conclusions are interesting:—

"Modern machinery has enormously reduced the labour of production, but the actual price has not varied in like proportion, because the demand of increased population keeps exact pace with larger crops, and the price of our daily bread is the same as ever—our daily labour—omitting the other necessities for the sake of brevity. The farmer grows much more food for his time than ever before, and would get rich if he could demand an equally increased amount of goods in exchange for his surplus. But he is as poor as ever, for several reasons. His own needs are more, and if his labour was very valuable there are competitors who would overbid him for his rented farm. This actually occurs, and the rents rise so that he has left only enough to live on.

"This is why the tendency is for farms to diminish in size to the point just sufficient to feed a small family and give a tiny surplus to sell for other necessities. The land owner is the real beneficiary of the competition of over population. He gets the unearned increment, and lives in town. That fact is so galling that many economists think it will be taken away from him in time."

It is evident then that the actual amount of gold given for a day's common labour depends solely on the local cost of living, and it cannot be less. The natural wage the world over is just enough to keep a small family alive.

Industries could not exist if there was not an idle mass to call on to fill vacancies instantly, for if a single department cannot get men, the whole works must close. If every locomotive

all the manual labour employed, while the farm thus depleted, is only beginning to apply power to do its work.

The development of the power-driven factory brought about certain changes in the conduct of manufacturing operations, and it is to be expected that similar changes will follow the application of manufactured power to agriculture. These changes will include both scope and management. Mechanical power can be efficiently applied to much better effect upon the large farm than to the smaller area, and with the development of the large, power worked farm must come correspondingly broader management. Mr. Ellis tells us of keen, quiet, college-trained boys taking hold of enormous farm enterprises and handling them quite successfully in America.

There is a syndicate in Kansas operating a ranch of 25,000 acres. One of the largest growers of hard wheat in the country-side of America uses four or five engines to cultivate 14,000 acres; while in California there is a ranch of 16,000 acres. Mr. Ellis is of opinion that large units are undoubtedly the most economical in agriculture, as in other industries. He calculates that a certain farm of 1800 acres in Minnesota, on which accurate statistical investigations have been conducted, pays higher wages than twenty-five small ones on which similar records were kept. While the rates of depreciation on the farm machines are, in the main, higher, yet the machine cost per acre of crop handled is less, because the machines are worked more nearly to their capacity.

Now, assuming that successful farming of the immediate future must be done largely by power machinery, it may be desirable to examine some of the modifications which will probably follow. Mr. Ellis states:—

It is probable that the introduction of mechanical power on the farm will save wages rather than money. Nearly every mechanical equipment to replace human labour has involved the investment of a greater amount of capital than before, but has brought with it a vastly increased output, and this will naturally

continue to be the case. The mechanical equipment represents an investment which must be made as capital. Human labour is paid for piecemeal, as used, but the first cost of the machine must be paid and its operative cost provided for.

With the machine the interest on the investment is substituted for the wages of the men it replaces. The man who has only his labour as his capital is coming to the same point on the farm as he has come elsewhere; he cannot compete with machines, which represent money and provide a lower cost of production. It is to be expected that the entrance of large capacity, power-driven machinery on the farm will meet with opposition similar to that which was met in manufacturing operations, but the extent to which the application of power will create new opportunities for labour will provide for many more men than those displaced by machinery.

The modern world is being shaped by power; and, broadly, this action may be divided into three great departments; the production of raw material, as in mining and agriculture; the transformation of the raw material into forms adapted for service, as in manufacturing, and the transport of both raw material and manufactured products to the points where they may be used.

The development of these three departments has not been symmetrical, and the applications of power to manufacturing and to transportation have been far more highly advanced than has thus far been the case in the production of raw material, especially in agriculture. The factories have centered production and transferred the processes from the homes to the mills, taking with them much of the best blood and capital. Transportation has aided in this process, but both are now acting to equalize the situation by sending back to the country both machines and engines to replace the men which they have absorbed.

Doubtless many will not be disposed to take this rather cheery view, nor will the advent of the extensive use of agricultural machinery send men back to the land. First the

introduction of power into the cultivation of land with its consequent demolition of small holdings sustaining a contented peasantry, will introduce a new class of being, to wit, the agricultural entrepreneur. Now on nothing is speculation so ruinous in practise as on land wherewith the primary wants of a nation are fed. Having seen the result of the appearance of the successful entrepreneur in the field of industry, it will be the grossest perversion of human wisdom to usher his presence in what constitutes the one vital department of human existence.

The Indian Problem.

To the London *Statist*, the Indian problem is fundamentally bound up with the problem of Indian poverty. It marshalls its arguments with a force which is irresistible:—

India is in size about equal to the whole of Europe outside the Russian Empire; its population is between one-sixth and one-fifth of that of the whole globe; it is so mainly dependent upon agriculture for its existence that there are only 27 towns with populations of 100,000 and upwards, the aggregate population of those 27 towns being only 6,296,956, or 2.14 per cent. of the whole Indian population; the people are sunk in the deepest poverty, with the result that the average rate of wages is about 4d. a day, or 10s. a month, or £6 a year; the whole railway network of so vast an Empire comprises only 33,484 miles, while the mileage of the railways of the United States is 254,732 miles—that is to say, while the United States is about twice the size of India it has seven and a half times the railway mileage of India; while the people are dependent upon agriculture for their existence, the crops are dependent upon the monsoon rains, and the monsoon rains are so erratic that they fail altogether every few years; the railways, which might help to relieve the people when the rains fail, and the irrigation works are so deficient that they help little in times of emergency. In short, India at the present day, taking it altogether, is probably not much in advance of what France was when the first

Capet assumed the crown of that country. There are portions of the country, no doubt, more civilised; but there are portions also more backward.

THE FIRST NEED.

Except for the occasional remissions of land revenue, the provision of famine works, etc., at the *statist* says, "there is nothing in India corresponding either to the English Poor Law or to insurance against sickness, old age, infirmity, or want of employment," systematised upon a definite basis as a statutory obligation. This tends, in the opinion of the *Statist*, to the advantage of the well-to-do and to the disadvantage of the very poor.

As a remedy the *Statist* urges the spread of education of the right sort as widely and as fast as possible. It is right and proper for the Government to encourage medical research, and to employ the best talent to discover the causes of the plagues that have been devastating the peninsula for so many years now. But does any man seriously expect that all the labour and all the intelligence brought to bear will give forth proportionate results as long as the people think that the Government is flying in the face of God? After education has been spread among the people, they would learn to regard as just any extra taxation to be applied for progressive and ameliorative measures; and this would considerably strengthen the hands of Government.

A NOVEL SUGGESTION.

As a step in this direction, the *Statist* advises the Government to raise a considerable loan in India itself in rupees; to do so by applying direct to the thrifty portion of the population; to follow the example of the French Government, and to employ its agents in every district to raise the money; to issue, in return, bonds of such small denomination that every thrifty person in India could buy at least one bond, while the moderately thrifty could buy several; and to employ the money so obtained, firstly, in collecting and training the requisite number of teachers; secondly, in building and furnishing the requisite number of schools; and,

engineer were occupied and a sudden disaster overcame some of them and interfered with the milk trains of a great city, it would kill thousands of infants in a week. To avert that disaster other trains would be abandoned and interfere with or stop other business, obligations would not be met, and panic would result. That is, civilisation depends upon an unemployed mass for emergencies, and if there was enough food to go round there would be no competition compelling the unemployed to jump into the vacancies. If any of the bizarre plans to end unemployment could possibly succeed, it would thus, concludes Dr. Woodruff whom we have quoted, destroy civilisation.

Ownership of Land in England.

"Unlike personal property, an absolute and unqualified ownership of land, apart from its uses, is not recognised by old English law. A condition contrary would place all that is necessary to human life in the hands of a few. The theory and the original law of landowning in our country are that all lands belong to the King—that is to the State," writes Mr. Jesse Collings in his new book, *The Colonisation of Rural Britain*.

Cost of Living.

Sir George Paish (editor of the *Statist*), in a paper read before the Manchester Statistical Society, said there appeared to be grounds for the expectation that production was now likely to increase faster than consumption, and that a gradual fall in prices would probably be witnessed, bringing with it, for a time, a reduced cost of living. He said that there was no prospect, however, of prices falling back to the unprofitable level of the nineties.

Tariff Reform.

The four "Vital" or economic problems that Tariff Reformers in England intend to solve are, according to a writer in the *Empire Review*:—

- (1) The broadening of the basis of taxation.
- (2) The safeguarding of the great productive industries from unfair foreign competition.
- (3) the question of foreign markets and the power

to bargain which a tariff confers. (4) The question of the colonial markets and the establishment of Imperial Preference. Four principles which will guide the imposition of a tariff have been laid down. They are that the duties shall be (1) widespread in their incidence, (2) small in amount, (3) not be imposed on raw material, and (4) not alter the proportions in which the working classes are asked to contribute to the cost of government.

Increase of Mahomedans.

A noteworthy fact of the late Census is the increase of Mahomedan population in India as compared with the Hindu. This is said to be due to the absence of those social restraints among the community which the Hindus suffer from. Mr. Gait in the Census report writes: "This (the increase of Moslem population by 6·7 per cent. as compared with 5 per cent. of Hindus) may possibly be due to their (Mahomedan) more nourishing dietary but the main reason is that their social customs are more favourable to a high birth rate than those of the Hindus. The greater productive capacity of the Mahomedans is shown by the fact that the proportion of married females to the total number of females aged 15 to 40 exceeds the corresponding proportion for Hindus. Since 1881 the number of Mahomedans in the areas enumerated has risen by 26·4 per cent., while the corresponding increase for Hindus is only 15·1 per cent."

Machinery has not Reduced Man's Work.

A new outlook was opened up by Sir Thomas Oliver at the recent Congress of the Royal Institute of Public Health. He showed that modern devices have not reduced the labour of men and women, but have simply diminished the labourers needed for the same work. In some cases the workman is enabled to expend more labour, while the highly specialised efforts bring greater fatigue with less powers of resistance than when activities were more varied. Gain in efficiency may be important, but the problem of keeping down the strain of human burdens is more so.

The Financial World.

Ninety Million Dollars Loaned by State to Farmers.

According to a writer in the *Co-operative Farmer*, more than \$90,000,000 have been loaned by the New Zealand and Australian governments to their farmers. The essentials ascribed by the author for successfully operating such a system of loans to farmers are summarized as follows:—(1) It should be self-sustaining. (2) Loans should be made only for special purposes, such as the purchase of land, paying off mortgage debts, and making necessary improvements on the farm. (3) Loans should be limited in amount to one-half, three-fifths, or two-thirds of the market value of the land, exclusive of buildings. (4) Repayment should be on the amortization plan. (5) The aggregate amount of loans to any individual should be limited, preference being given to applications for loans of small amounts. (6) The loans should run for 20, 30, or 40 years, the borrower having the privilege to repay them at any time. (7) The funds should be obtained by the sale of State bonds and the interest charged to the borrower should be just high enough to pay the interest on the bonds, the cost of administering the system, and the creating of a reserve sufficient to cover probable losses. These essentials are said to exist in the system as operated by the New Zealand Government.

Banking Legislation.

The following is the opinion of Sir Charles Armstrong on the subject of Indian Banking legislation:—

I am not in favour of any very stringent regulations in connection with banking. I entirely agree with the view expressed by his Excellency Lord Willingdon that Swadeshi Banking must be encouraged. Every country has to pass through an initial period in the development of its banking, but India is particularly favoured in this respect in that it has the benefit of the many first class banks under

European management which have been working in this country for years with very great success and were in no way mixed up in the recent complications.

As regards the question of audit it has been suggested that this work should be taken over by Government, but I doubt if this is feasible. I think, however, that in banking legislation Government might make provision for more control by them in the appointment and pay of banks' auditors than is now provided by Section 144 of the new Indian Companies Act.

In connection with banking legislation there are other questions which also need some consideration. It appears that in the High Courts it is almost always customary to give the carriage of proceedings to the petitioner and therefore through him to his solicitors but I doubt if this is always in the best interests of all parties. There is also the question as to whether a single shareholder with a very small interest should be able to present a petition to the Court. What, however, I think, is very important is the question of undue publicity when a petition has been presented, for it not only very seriously damages the bank itself, but it tends to impair credit and so injures the whole community. I have no special recommendations to make under these heads, but I think the point I have mentioned should be carefully considered when the Government of India come to close quarters with this important question.

Callable Capital in Banks.

In a leading article, the *Commerce* says that one of the most important of the suggestions that have been put forward in regard to the proposed banking legislation is for the statutory establishment of a minimum fixed proportion between the subscribed and the authorised capital. It is, in these circumstances, interesting to note that so eminent an authority as Sir Inglis Palgrave, a Director of Barclay and Company, recommends, in regard to banking finance, the principle that an absolutely restric-

ted capital, ample in amount, may be the better plan for the safety of a bank and its depositors than the present system of extended, though limited, liability. In plain language this means that the authorised and the subscribed capital of a Bank should be identical. In an article in the current issue of the *Bankers' Magazine*, Sir Inglis Palgrave points out that there are already five Banks in the United Kingdom established on this principle, and all of first rate standing. The Bank of England and the Bank of Ireland are both absolutely limited. But without taking these into account, as the Bank of England is an exception, and the Bank of Ireland also has privileges, it should be remembered that this plan has been in use for more than two centuries in Scotland, a country which possesses, as will be universally admitted, a very fine banking system. That there are three Banks in Scotland founded on this plan, the youngest of which is considerably more than a century and a half old, is felt by the writer to be a sufficient justification for recommending that other banks should follow the same course. An authority in the financial world even more eminent than Sir Inglis Palgrave—Lord Goschen, President of the Institute of Bankers—denounces the system advocated as “a retrograde step, and contrary to the best interests of banking.” Lord Goschen further points out “one further and important consequence of such a policy as the writer advocates, namely, that just as when unlimited liability was taken away, the paid-up capital was much increased, so, if limited liability were done away with, the same course would have to be adopted again.”

In reply to this criticism, Sir Inglis Palgrave says that if this course were taken it would strengthen our banking system in a very desirable way. Between the years 1876 and 1885, (the system of limited liability was introduced in 1879) both included, the additions to the paid-up capital of Banks in England and Wales were as follows:—

Additions to paid up Capital	£8,428,437
" " Reserve Fund	7,847,168
Together	£16,275,605

If a comparison is made between these figures, which show a growth of banking capital of sixteen millions in ten years at a time when the country was far less wealthy and banking deposits were much smaller in amount than they are now, and the progress made by the banks in the United Kingdom between 1894 and 1913, which shows that there was only a growth in the capital of eight millions in the nineteen years ending 1912, and—bearing that fact in mind, it is noted that there was during the same period an increase of fully four hundred millions in the liabilities—the advisability that the course which took place more than thirty years since should now be repeated will be seen.

But, in spite of Sir Inglis Palgrave's very cogent arguments in favour thereof, it is extremely unlikely that so revolutionary a change in the English banking system will ever take place. Since the establishment of Joint-stock Banks and the adoption of the principle of limited liability, callable capital has been regarded as a kind of potential reserve, to be realised in time of need, and the English banking system is largely founded on this principle. In theory, the idea seems a good one,—if adopted in India it would, at any rate, prevent a repetition of those exhibitions of financial jugglery which some of our indigenous institutions have recently given. None the less, it is doubtful whether in this instance the remedy might not be worse than the disease, fatal effects accruing to all local banking enterprise except that of a financially superlative character, for over vigilance, leading to a surfeit of official interference, is apt at all times, to exercise a retarding influence on honest endeavour.

The Proposed State Bank.

We learn from the *Capital* that the first draft of the Chamberlain Commission Report was honeycombed with references to the State Bank and Sir Shapurji Broacha agreed to the draft report subject to a minute of dissent on the State Bank question. The Commission however revised its draft and Sir Shapurji withdrew his dissenting minute which is as follows:—

2. I am not in agreement with the views

expressed in the Report regarding the proposal for a State Bank. I take exception first to the statement made in paragraph 5 which says:—

“At a very early stage in our inquiry we came to the conclusion that there must be added to these subjects the question of the establishment of a Central or State Bank for India, and the opening of a Mint in India for the coinage of gold.”

3. There can be no question that the subject of a State Bank did not come specifically within our terms of reference. My contention is that our Commission is therefore not warranted in raising the question so definitely as has been done, unless some justification can be found in the evidence placed before us.

4. What is the character of the evidence regarding the feasibility of a State Bank? I take first the witnesses who spoke in behalf of the Government of India. Sir James Mes-ton said (Q. 9, 46) that the attitude of the Government of India “might be perfectly fairly described as regarding the problem as for the time being outside practical politics.” Sir Fleetwood Wilson, who had only just relinquished the office of Finance Member, said (Q. 11, 439) that it was quite impossible to establish such a bank.” He added:—“You would increase friction, and you would render the position of the Finance Minister nearly untenable.” The whole of Sir Fleetwood Wilson's answer to the question quoted constitutes a powerful recital of the difficulties and dangers of the scheme for a State Bank. These were the principal witnesses from the Government of India.

5. I have next the witnesses from the India Office. Sir Felix Schuster, though he explained that he was only giving his individual opinion, said (Q. 11, 017) that he “did not think the Government should delegate certain responsibilities and duties to any Bank.” I lay stress on the whole of Sir Felix Schuster's long reply to the question from which I quote. Mr. Laurence Currie, a member of the Finance Committee of the Secretary of State's Council, said (Q. 10, 579):—“Unless there is a strong de-

mand for it in India, I think it would be rather a mistake to establish a State Bank.” I would point out that there is no such demand. Lord Innes said (Q. 10, 862):—“I am very strongly disposed to the opinion that there is nothing to be gained either from the point of view of the Government or from the point of view of the trade of the country, by starting a State Bank in India.”

NOT WANTED.

6. The representatives of the Government of India, and the principal financial advisers of the Secretary of State, are therefore against the proposal. Is there any desire for such a Bank on the part of the public in India? The Chambers of Commerce have not asked for it. The people, through their representatives upon the Councils, have not asked for it. The only unofficial witnesses before us, who were in favour of a State Bank, were Mr. Hunter, the Secretary and Treasurer of the Bank of Madras, and Mr. Marshall Reid. Mr. Hunter thought the Bank would be useful when money got dear at certain parts of the busy season, but I may point out that Government has already taken steps to meet that difficulty. Mr. Marshall Reid thought that Government should appoint all Directors and run the Bank themselves but the report does not contemplate such a course. Except in these two unconvincing instances, the Commission can find no support in the evidence for its references to a State Bank.

7. I may proceed to note some of the manifest objections to the establishment of a State Bank. There is first the difficulty of choosing a place for its head office. If you select one of the Presidency towns, the other Presidency towns will not tolerate the Bank. If you make Delhi the headquarters, the conductors of the Bank will be out of touch with the Indian financial world. It must be remembered further that we are dealing with a country as large as all Europe, save about half of Russia. It is a country which reveals far greater diversities than Europe. The various provinces have different methods of credit and different ways of carrying on their business. In

my belief one State Bank could not cover the requirements of the whole of India. In the United States they are talking of a State Bank just now, but the line the discussion is taking is whether there should be four or twelve State Banks. The report suggests, not only that one State Bank should serve the infinitely varied needs of India, but, that it should handle as well the vast and complicated business of the Secretary of State in London. I venture to urge that such a scheme is impossible and unworkable. In attempting to put it into practice Government would be shouldering a responsibility which it should never undertake. In times of financial crisis it would be almost dangerous burden, for Government would find itself saddled with responsibility unaccompanied by control. It would have to bear all the blame of whatever trouble might arise, and yet might be unable to intervene. The scheme is also undesirable because it would mean the ruin of the Exchange Banks, which have handled the business and the trade of India well and economically. The excellent character of the work of the Exchange Banks has been testified to by every expert witness.

8. I oppose the proposal further because it does not mean economy, but the reverse. Mr. Laurence Currie says (see note attached to his evidence) that he feels certain that it would prove "vastly more expensive." It has been shown in evidence that it would bring no relief to the Finance Departments of the Government of India and of the Secretary of State. Far from lightening the burdens of the Government, it would assuredly increase them, would produce disputes between the Presidency towns, disputes between the Government of India and the Secretary of State, disputes between its head office, which would have the ear of the Governor-General and the London Office which would have the ear of the Secretary of State.

NO COMPENSATION.

9. I can discern no compensating benefits which a State Bank would produce. It is said (paragraph 115) that it would have an educative influence specially by encouraging the

public to make a greater use of currency notes. Such an educative influence is already far more efficiently exercised through the 271 District Treasuries and over 1,500 subsidiary Treasuries which are managed by men who speak the language and know the people. The circulation of currency notes has increased 250 per cent. in the last 23 years. The suggestion made in paragraph 108, that the management of the Paper Currency Department might be transferred to the Bank would be in practice not only of no benefit but a positive disadvantage. The people would mistrust a scheme which substituted the name of a State Bank for that of the Government of India upon the currency notes. I believe the circulation of notes would in such an event actually diminish.

10. I express my disagreement with the last part of paragraph 114, which suggests that a State Bank might hold commercial paper against loans, both in London and in India. We have never even considered this subject and to hold commercial paper as fiduciary security would, in my opinion, be not only unwise, but probably impossible. It would certainly be absolutely against the general trend of Indian opinion on this particular subject. Paragraph 151 suggests that a State Bank would put an end to the jealousies caused in selecting Banks for handling the remittances for home charges but I think it may be truly said that such a bank would also put an end to the Exchange Banks altogether, because it would have power to undercut them. I consider that the present methods of the India Office in this respect could not be improved upon.

11. In the final paragraphs of the Report, which deal more exclusively with the question of a State Bank, it is implied that such an institution would militate against the present tendency in India to establish banks of a flimsy and insecure kind. I can see no warrant for this suggestion. A State Bank would leave the bad institutions exactly where they were before. It would not prevent the establishment of mushroom banks. Only legis-

lation, which is urgently required will do that. Just as a State Bank could do nothing tangible or new to encourage sound banking, so it could not, in my view, help the co-operative credit movement any more than is being done to day. The curious difference between the States Banks of other countries and the State Bank, which it is proposed to start in India, is that in other countries the State Banks help the Government while the Government does little for them in return whereas in India the Government would be doing everything and would receive no corresponding benefit.

12. I may be permitted to note that Mr. Hambro and Lord Rothschild, who advocated a State Bank before the 1898 Committee have not on this occasion given evidence, and that Sir Edward Holden, another advocate of a State Bank, declined to appear before us.

"NOT PEACE BUT A SWORD."

13. I have only touched upon a few of the objections to a State Bank, some of which will be found in greater detail in the evidence of the witnesses I have indicated. I feel constrained to place on record my strong disapproval of the manner in which the Report again and again reverts to the theme of a State Bank as the great solution of India's financial problems. In some mysterious way, the State Bank becomes almost the central theme of the Report, and recurs time after time in the most unexpected places. There is nothing in the evidence to justify the Commission in pressing this impracticable proposal. On the contrary, the weight of evidence is entirely against it, and I submit that it is almost without precedent for a Royal Commission so deliberately to ignore the evidence placed before it. While the Commission disregards the testimony of the eminent and experienced witnesses who advised against a State Bank, it does not support its guarded recommendations by any powerful reasons of its own. I contend that in this matter the Commission should be guided by the evidence placed before it, and not follow its own illusory devices. I press this contention with all the more emphasis, because I am convinced that in its present

form the Report will bring to India not peace but a sword. Instead of settling old and embittered disputes, it will create a new and formidable controversial issue, which will disturb the business world of India to its foundations.

14. I am against the proposal to establish a Central or State Bank in India and disapprove of the manner in which the proposal is brought forward in the Report.

Indian Banking.

In a series of lectures which he delivered in Calcutta on questions of finance and currency, Mr. Findlay Shirras spoke on "Banking in India".

Before the British era, the lecturer said, trade was entirely financed by *banias*, who combined money-lending and finance with trade. Throughout the length and breadth of India these *banias* undertook the financing of agricultural operations. They were chiefly Marwaris from Marwar, Chetties from Southern India, and Bhattias and Parsees in Bombay and Gujrat. To-day the money-lender or money changer was still in a flourishing condition. The larger Indian bankers, shroffs, still continued to do a large part of the internal Banking business. They were depositories of much of the money wealth of the villages or districts in which they resided, and they were also engaged in exchange operations, as well as trading on their own account. They used *hundis* or bills which were drawn up in *Mahajani* or a written character peculiar to Bankers, and these were usually illegible to anyone outside this class. A dishonoured *hundi* was an event of rare occurrence with them. *Hundis*, despite the increase in joint-stock banking, were not decreasing but increasing and the circulation of *hundis* was the most perfect portion of the purely Indian system. The *bania* class was one to which India was greatly indebted for financing agriculturalists, and removing products from the growing to the consuming districts and distributing goods of all kinds all over India. Joint-stock Banks were not

in any way a hindrance to their trade; in fact, they relieved them of much trouble and risk.

It was pointed out that in times of stringency the rates charged by native bankers in the bazaars were not so high as the discount Bank rate. The Indian Banker, especially in Calcutta, Bombay and Madras, was coming into closer touch with the joint-stock bank system, and in discussing Indian Banking it was impossible now to regard the Indian native banker as completely separated from the joint-stock bank.

THE EUROPEAN SYSTEM.

The European system of Banking was introduced into India by the Agency Houses of Calcutta. These were not merely merchants and agents but also Bankers who did business with the merchant Princes of India, planters, and the civil and military services. They possessed a note circulation which was extremely beneficial to them. After the passing of the Act in 1813, which gave greater inducements to Europeans to settle in India, there was a considerable extension of Banking in connection with the Agency Houses, but the great commercial crisis of 1829-30 put an end to most of these Houses. In 1829 the Union Bank was established, and in 1848 the Bank failed and the failure had many points in common, with the failures of last year. The causes of the failures of the Bank were:—(1) the system of making large advances to indigo houses in Calcutta on their factories—advances which were non-realizable; (2) certain firms were given special facilities of contracting loans with the Bank. The directors secured an unreasonable amount of the banks' patronage.

After going into the details of the history of many banks, the lecturer remarked that it was unfortunate that statistics regarding Exchange banks were so meagre. It would be very useful, he said, if these Banks supplied annually statistics showing their Indian deposits apart from their outside Indian deposits and also deposits on current account as distinguished from fixed deposits. It might also be possible to

publish six-monthly annual balance sheets for the Indian part of the business of exchange banks. An average balance sheet, whether half yearly or yearly, was more valuable than a balance sheet for a particular day in the year. Messrs. Toomey and Fraser, representatives of the exchange banks—with the exception of the Delhi and London Bank, said before the Chamberlain Commission recently, that if all the Banks agreed to publish an account of their Indian deposits and Indian cash apart from their outside Indian deposits and cash they would have no objection to the publication of the figures by Government. It was then shown statistically that although exchange banks have increased their deposits during the last ten or fifteen years in a very remarkable manner, their cash balances have not increased *pari passu*. Exchange bankers would probably explain this by saying that it was unnecessary to keep large cash balances in India because in an emergency money could be drawn from the head office in London. It is questionable, however, whether it would not be advantageous to make it compulsory by legislation that a cash balance of a fixed percentage, perhaps 10 to 30 per cent. be kept in India where the vagaries of the monsoon are so uncertain. In addition to exchange business the exchange banks also had a local business in lending money. The Secretary of the Bank of Bengal, in his evidence before the Chamberlain Commission pointed out that the Bank of Bengal, have had to reduce their rates in Calcutta for advances to jute mills to a half per cent. below the Bank's published minimum in order to compete successfully with the exchange banks. Exchange banks also sent bar gold to India at about 1½ per cent. above the sovereign rate, taking the sovereign at Rs. 15, and this includes the Bank's profit, and other charges for exchange purposes.

SAVINGS BANKS.

In dealing with Savings Banks, Mr. Shirras pointed out that in 1833 with the failure of the commercial houses of Calcutta a Government Savings Bank was formed to afford to Europeans and Indians alike a means of investing their savings apart from the uncertain influences

of commerce. Until 1882-83 the business of the Government Savings Bank was conducted by the Presidency Banks in Calcutta, Bombay, and Madras and by Government treasuries elsewhere. The Post Office took over the management of them from that date and in the first year of the existence of a Savings Bank under the control of the Post Office a great change was manifest and Government had actually to take measures to prevent a too rapid increase in deposits. In 1911 the deposits, inclusive of interest, amounted to 17 crores, of which 15½ belonged to Indians. These deposits were used by Government chiefly for capital expenditure and at any time the depositors, should they withdraw their deposits, would have to receive their money from the general balances of the Government of India. From the 1st April 1914 it has been decided:—(1) That the present limit on the annual addition of cash held at call should be raised from Rs. 500 to Rs. 750, the new limit being fixed on the depositor's net annual deposit and not as at present on his gross deposit; (2) the limit on the aggregate amount which might be held at call in any individual account should be raised from Rs. 2,000 to Rs. 5,000; (3) Rs. 5,000 should be fixed as the total limit for investment through the Post Office Savings Bank in Government securities, irrespective of the increased maximum limit for cash deposits; (4) the present restriction on the amount of annual investments is to be removed.

There are great possibilities in the Savings Bank and wider facilities still might be given to cultivators and greater facilities might also be given to Co-operative Credit Societies to deposit all their funds, for in a few years in the neighbourhood of each Post Office there will be six, and in some places perhaps twelve, Co-operative Credit Banks.

THE RECENT BANK FAILURES.

Referring to the recent bank failures the lecturer showed how the severe Bank crisis in the Punjab spread with comparative rapidity to the Bombay Presidency.

An examination of the prospectuses and balance sheets of many of these banks, together

with the statistics regarding paid-up capital, reserves, total deposits, and the amount of cash in proportion to the total liabilities, revealed a most disquieting state of affairs and illustrated the necessity of having some regulation concerning their methods. The Banking advertisements in the Indian Press were often of such a nature as to mislead the unwary. A large capital of crores of rupees might be advertised, while little if any of this amount was paid-up capital and attractions such as special marriage deposits at excessively high rates of interest were put before the would-be depositors. Some of these Banks even extended their activities to coach building, the erection of factories, medical attendance, and the manufacture of "certain things" from machinery, etc. One prospectus contained a comprehensive statement as to its objects—"the leasing or hiring or purchasing of all commodities and substances which can form the subject of purchase and sale."

The banks which had been in difficulties recently had not followed the usual safe business undertaken by Joint-stock Banks. A Bank was a corporation, a partnership or an individual carrying on a Banking business, which was strictly speaking, the receipt of money from a customer to be repaid on demand or when drawn on by cheque. The making of advances or the granting of over drafts to customers was also included in the term "Banking business." The central idea of a Bank was a corporation, partnership, or individual attracting deposits, and using part of these deposits as loanable capital. An analysis of the statistics and reports of the Banks which had failed showed that loans were advanced to unsubstantial borrowers, and in such a way that when money was required it would not be possible to realise. The managers were not good judges of men and were the last persons in the world to be the leaders in the financing of Indian industry. The greatest drawback had been that there were no born captains of industry at the head of those Banks. The success of Indian Banking depended on having men who not only possessed

years or over. The course is a two years' one and about half the time is spent in practical work divided up about as follows :—

1. Conducting work on farm and students' plots ... 9 hours per week
2. Experiments in connection with nature ... 3 " " "
3. Mensuration, field and building measurement, levelling. ... 1 hour " "
4. Horticulture, including layering, budding, grafting, etc. ... 1 " " "
5. Milk, care of milk etc.... 1 " " "
6. Subsidiary work, such as care of poultry, etc. ... 1 " " "

The class-work consists of arithmetic, reading and writing, geography including physical geography, nature study, village life and sanitation, citizenship and agriculture. This class room work is given with special reference to agriculture. Thus, the arithmetic has to do chiefly with money, weights and measures, calculating of values, interest and discount, etc.

A second school of a similar character is to be opened at Devi Hosur, Dharwar District.

At the Poona school, where there are about forty students in the two years, no fees are charged and the boys are being fed at Government expense.

In addition to the above, short courses of practical instruction are being given in various provinces and presidencies in connexion with the experimental farms. In some cases, notably in the Central Provinces, these courses appear to be successful and to be filling a real need. In other cases, they have not been successful.

In various parts of India attempts are being made to introduce some form of nature study in the curricula of primary and secondary schools, but, as far as I am aware, this work has been carried on neither for a sufficient length of time nor systematically enough to yield any appreciable results. The same feeling which we find in other parts of the world seems to be growing here in India also that

a decided improvement could be made in the existing primary and secondary education in rural communities.

Scientific and Industrial Education of Indians.

At the Tenth Annual meeting of the Central Council of the Association for the Advancement of Scientific and Industrial Education of Indians recently held at Calcutta, the Hon'ble Rai Sita Nath Roy Bahadur delivered the presidential address. He said that the work of the Association for the last ten years has created a taste among our countrymen for arts and industries, fostered a feeling for regarding the products of our hand-labour with affection and pride. In place of slight and apathy, there is a marked appreciation of the dignity of hand-labour.

Regarding some objections raised in certain quarters about the methods of work of the Association, namely, that only two or three students with a scholarship of Rs. 150 or Rs. 200 a month each should be sent instead of a large number with small allowances; that the student sent should have a previous training in this country; and that there should be an agency in foreign countries for taking care of them, the President replied that for the development of the industrial enterprises of the country, it is necessary and desirable to have a large number of technically trained men, and when it is not made possible to get the training in India we have to send a large number of our youths to foreign countries for technical education. The Association has never been indifferent to the preliminary training of its scholars.

The Association has been working for the last ten years and has sent about 800 boys and its students have returned with the highest scientific degrees and sufficient, if not the most perfect, technical knowledge. He mentioned that the students generally go for two years but as a rule stay in foreign countries for three or four years. As regards the second objection that the students should have a previous training, he answered that there were no factories or industries in India except jute and

cotton where they could get such training. Our students have started 26 new industries. As to the third objection, he said that the Association is not rich enough to have an agency of their own and it has therefore to rely on the Y.M.C. A. to take care of its students.

The Hon. Rai Sita Nath Bahadur regretted that the path of our students is an uphill one, for we have not money enough to start factories to employ them, and, secondly, our attentions are engrossed by the learned professions and services to the neglect of trade and commerce.

He, then, stated that much of the present discontent is due to economic causes. Formerly very large numbers of people used to live by arts and industries, formerly several classes of people from generation to generation followed different branches of trade, different callings and different branches of Art and Industry and acquired a certain degree of efficiency and skill by sticking to a particular art or industry, and thereby earned enough money for their sustenance. But the products of hand-labour having been completely superseded by the machine manufactured cheaper articles of Europe and America and the hand-loom made cloths having failed to compete with the cotton manufactured articles of Lancashire, several classes of people comprising petty traders, artisans of all grades and classes and numerous classes of weavers, Hindu and Mahomedan, whose hand-made products as, for instance, the Decca Muslins which were at one time the admiration of the civilised world, have now been completely thrown out of employment, and it is those classes of men who have swelled the rank of the unemployed.

He, therefore, respectfully prayed that Government should do all it can to promote the industrial development of the country. The first and foremost step in that direction would be the immediate establishment of a large and properly equipped Technological College in a busy centre of commerce and industry and of technical institutions in all provincial capitals.

If there is a revival of arts and industries, if the numerous classes of people who formerly

subsisted by arts and industries can resuscitate their former trades and callings and find markets for their articles and thereby acquire enough money, one would hear less and less of unrest and discontent.

Various resolutions were passed at the meeting to the effect that, in view of the fact that, there is a great and growing demand in the country for the services of Civil Engineers the Government ought not to abolish the Civil Engineering College at Sibpur or remove it from the neighbourhood of Calcutta; that the monied classes of Bengal should start such industries as are suited to the conditions of the province; that the attention of the capitalists of Bengal should be drawn to the fact that the industries of sugar, matches, hosiery, paint and pottery can be profitably started there and the Government should be asked to afford all reasonable help and facilities for starting these industries.

Finally, the Council viewed with alarm that all trade in Bengal is gradually passing into the hands of people of other countries and provinces and considers it extremely desirable that some steps should be taken to divert the attention of the people from the quest of service or employment in the learned and clerical professions.

The Agricultural Colleges.

The Agricultural Colleges in India do not seem to be in high favour with our young men. The number of students on the roll of the Agricultural College at Sabour at the end of June, 1913, was 27, and the yearly admissions are "steadily decreasing." The Province of Assam awards a scholarship of Rs. 20 a month, to a student who will undertake a three years' course at Sabour. A Mahomedan candidate received the scholarship but he left the college soon after joining it because he objected to manual labour in the field. A Sylhet Hindu proved equally unsatisfactory, for he, too, speedily left Sabour, doubtless for the same reason. According to the Assam Director of Agriculture, "the average entrance-passed student has neither aptitude nor liking for agriculture. He strongly objects to any form of manual labour and is not even willing to under-

take the minimum amount of practical work on the farm attached to an agricultural college necessary to enable him to get a grasp of the principles of agriculture." In the United Provinces the number of students who entered the Agricultural College last year was 51, of whom 40 were nominees for the subordinate revenue service and had obviously no intention of devoting themselves to agriculture. At the Lyallpur Agricultural College, in the Punjab, the dearth of students has become farcical. After the scholarship examination in May, 1913, seven out of eleven candidates were awarded scholarships. Five fee-paying candidates were also admitted. But of the twelve thus selected "not one presented himself when the session opened." The report of the Agricultural College of the Central Provinces relates much the same experience. "The year's entry of new students at the Agricultural College," writes the Director, "was numerically disappointing, owing to an unusually large number of candidates who did not appear after permission for admittance, or who, after arrival, soon abandoned the college." The actual number of first year's students was 14, and it is not surprising to find that Sir Benjamin Robertson states that the problem of obtaining boys of the true agricultural castes, with the necessary standard of education, for admission to the Agricultural College, and subsequently to the Department, is still as difficult as ever of solution. Even in Madras the applications for admission to the Agricultural College "show a decline for which it is not easy to account." The one exception to the dismal aspect which agricultural education in India presents is to be found in Bombay. Here also the number of students is not what it should be, for there are only 43 first year students at Poona. But Dr. Mann writes with enthusiasm of the prospects of the College. A larger proportion of the students than ever before have gone to work on their own land. A demand for trained men has arisen, and more are wanted than can be furnished. "Private landowners, local bodies, agricultural associations, and the like, have all applied for men during the past year, and a

number of them cannot be supplied." Dr. Mann does not, however, conceal the fact that many of his graduates do not care to take employment under private owners, and the statistics show that out of 17 who found employment last year ten went into Government service of one kind or other. Thus, as pointed out in the *Statesman*, taken as a whole, the various agricultural colleges, which are maintained at an annual cost of between five and six lakhs, are attended by a quite inadequate number of students, of whom the majority have not the least ambition to become skilled agriculturists.

A Book-mark to Save Eyesight.

The *Literary Digest* notes in its columns the advent of a book-marker whose alleged virtues, it seems, have been given prominence in the *Ophthalmic Record* of Chicago.

Reflection by the reader is supposed to be beneficial; reflection by the page is injurious; so now we have a reflecting book-marker to prevent too much reflection of the wrong sort. That much injury is done by glistening pages that throw the light into the reader's eye is asserted by Dr. John Neely Rhodes, of Philadelphia, who describes in the *Ophthalmic Record* what he calls a "reflecting book-mark," intended to call the reader's attention to the presence of injurious reflection of this kind. When the paper is highly glazed the reflection is noted at once and the angle of the page is altered to avoid it. But when the high glaze is absent the reflection is often unnoticed and gets in its vicious work all unknown to the victim. In such a case a bit of bright material on the page will catch the reader's eye and warn him of his danger. Writes Dr. Rhodes:—

"Book-publishers and binders should be urged to bind their publications with one of these devices attached, or at least with a ribbon, to which a marker might be fastened, in order that every book reader may be educated to see his danger.

"The marker should be stamped out of bright aluminum or tin, and have printed or stamped on it instructions telling how a book may be held to produce the injurious reflec-

tions, and also how it should be held to avoid them.

"I want to emphasize the fact that it is a mistake to hold even dull paper at such an angle as would cause it to reflect vicious light into the eye if the paper were shiny. I firmly believe that all readers' eyes should receive less injury if their books or papers, no matter as to colour or condition, were held at such an angle that reflected rays from the illuminating source could not enter the pupils.

"Persistent use of this contrivance with book or paper will, I hope, soon render the reader as much afraid of glare as some of our patients already are of germs. About a year ago I made a demonstration of this evil to a prominent optician, and he seemed wonderstruck, but when I met him again some months later he told me that he was sorry I had called his attention to the matter, for now he could scarcely get away from the blamed thing.

"It would be well for book-keepers, stenographers, and even mechanics to take one of these devices with them in their labors so that they might avoid working in a glare, by placing the instrument on their account-books, or on any bright object over which they are engaged.

"Rays from glazed paper are injurious, and printing should not be done on such stock. If, however, a reader is educated to hold properly his journal or book, he can read on glazed paper without injury—but the paper must be held flat, not rolled or curved. . . .

"Place the printed side of the marker against the page of your book, then follow the conventional method, take the book in your left hand and turn your back to the light so that the light shines over your left shoulder. Now, shift the position of your book until the reflected light is pouring directly into your eyes. Holding the book in this position for a few minutes will teach you the bad effects of glare. Just till the book the least bit, and notice the relief caused by the disappearance of the reflection—it is a lesson you will never forget.

"Notice that this phenomenon occurs when the book is held in what teachers consider the

best position. The truth is, that for reading it matters not which shoulder the light shines over, nor does it matter which hand holds the book, if the holder is ambidextrous. If one who is writing is not ambidextrous, but, for example, right-handed, then the holding of the book in the left hand leaves the right hand free for writing, and, at the same time, keeps the writing itself out of all shadow.

"I understand that the New York City Board of Education has a rule which directs the student to hold his book at approximately 45 degrees. He who formulated that rule evidently knew nothing about the conditions which cause a glaring reflex. The relative position of the source of illumination with respect to each child governs the angle at which the book must be held."

Technical Education.

The United Provinces Congress Committee have submitted a representation to the local Government on its proposals regarding technical education and the constitution of a board of industries in the United Provinces. The committee in their letter express their grateful appreciation of such progress as has been made and their regret and disappointment that it should not have been found possible to give effect in their entirety to the very useful recommendations of the Nainital Industrial Conference of 1907, particularly to the scheme which was drawn up by it of an institute of chemical technology to be established at Cawnpore. With regard to the proposed board of industries, the Committee expresses the view that the representation of Indian opinion is not at all adequately provided for in the Government's scheme, and that besides two Indians to be nominated by the Government, four elected members should be added to it—one to be elected by the United Provinces Chamber of Commerce, one by the United Provinces Industrial Conference, one by the United Provinces Congress Committee, and one by the British Indian Association of Oudh. If the Government be unwilling for any reason to let the four members be elected by these four representative bodies, it is proposed that three

members may be elected by the non-official members of the Legislative Council and one by the non-official members of the Senate of the University. 'As the function of the proposed board can only be' the committee say, 'to devise measures for advancing the development of manufacturing industries by means of Indian agency and Indian capital, thereby encouraging that diversity of occupations on the importance of which for the economic amelioration of the people every one is agreed, our committee are of opinion that six Indian non-official members on a board of nineteen will not at all be too high a proportion to be conceded by the Government.' As regards technical education itself, the United Provinces Congress Committee are of opinion that the department of technology at the Roorkee College should not be abolished until the technological institute at Cawnpore becomes an accomplished fact, that the latter institution should be started at an early date equipped in the manner proposed by the Lieutenant-Governor, and that there should be at least one technical school in every divisional commissionership in the province. The Congress Committee say in this connection :—

They regret to note that too much time has already been lost in making progress with the scheme and more should not be. They are of opinion that the final word on the relative superiority of one set of proposals over another can only be uttered when actual experience has been gained, and that work should be begun with as little delay as possible on the basis of the proposals put forward in the resolution under notice. As our late Lieutenant-Governor put it, there is probably no subject on which more has been written and for the promotion of which less has been done than this question of technical education. And yet no matter is of greater consequence to the economic future of the country—of these provinces no less than of the rest of India—than that adequate facilities should be provided for technical education which would qualify the youth of the land for various industrial occupations.

Education and the Working Class.

The article entitled "Education and the Working Class" in the *March Round Table* is designed first to suggest what education should be in a modern community, secondly, to describe what has been achieved by the Workers' Educational Association movement in England, and lastly, to inquire what is the national and imperial significance of the experiments which have been undertaken.

In regard to the first subject, the following moral is pointed out :—

"If there is one thing more than another that the history of schools and universities has taught us, it is that education is not an individual but a corporate matter. The individual by himself is powerless. That he is powerless for action has long been obvious; the history of all human institutions—of churches, of nations, of colonies, of trade unions—is merely a commentary on this text. But we are now beginning to realize that he is to a large extent powerless for effective thinking also. In all the great departments of knowledge which concern the thoughts and actions of mankind the thinker needs the stimulus and experience of his fellow men. The modern world, then, with its immense growth of knowledge and of the facilities for communication, is learning to supersede, or rather, to recreate the university."

Proceeding to the development of the Workers' Educational Association, the writer pictures the surprise of Erasmus were he able to re-visit industrial England in the twentieth century. He is represented as inspecting a block of school buildings in a Staffordshire industrial district where one of the Workers' Educational Association Classes is being held.

"When Erasmus visits it at night, one of the rooms is still lighted. Some twenty-five men and women are gathered there, of various ages and trades, but predominantly of the working class. They have come together, he is told, for a university tutorial class in philosophy, which meets from 8 to 10. But they have come early: for it is not merely a class, but a club and a college; several of them are

anxious, too, to have a private word with the tutor. The tutor, he learns, is an Oxford graduate with a good honour's degree in his subject, but, if he talks to him, he will find that he has learnt most of his philosophy in discussions with working people. For of the two hours of a tutorial class, the first only is used for exposition: the second is sacred to discussion. So that a class consists, as has been said, not of twenty-five students and a tutor, but of twenty-six students who learn together. There is also a library in the room of some fifty or sixty volumes bearing on the subject: at least, the box is there, but the books are almost all in use, so that only the list of volumes is available for Erasmus's inspection. But the class, which is a democratic organism, has its own elected librarian and secretary, and from them he can learn all that he wishes to know. He will find that the books are not only diligently read, but form a basis for essays which are a regular part of the class work. He will discover how various and vexatious are the obstacles that industrial life sets in the way of this new type of university student—the ravages of overtime, the anxieties of unemployment, the suspicions of foremen and managers, the difficulties of obtaining quiet for reading and writing. He will hear of one student, nearly blind, who came regularly to class and made pathetic attempts to do his paperwork in large letters on a sheet of wallpaper; of another who found it quietest to go early to bed and rise again after midnight, for an hour or two of study; of another who, joining a class at sixty-nine, attended regularly for six years until the very week of his death. And in the discussion, if he stays for it, he will hear the old problems of philosophy first raised in Plato (who is still used as a text-book) thrashed out anew from the living experience of grown men and women."

Finally, the writer argues that national education must always be in the truest sense democratic :—

"Those who are learning must feel, not that something is being done to them, but that they are achieving it for themselves. The miners and potters of North Staffordshire make sacri-

fices in the cause of education, because they themselves bear the responsibility of management; and the movement with which they are connected is democratic in the further sense that it is for the benefit of the group as a whole, not of isolated individuals. What is true of groups and classes within a nation is true also of nations. Education affords a nation a means of working out its own destiny, of making clear to itself what is the nature of its mission—its distinctive contribution to the common stock of civilization.

Agriculture and Primary Schools.

It is hoped that one way of introducing agricultural improvements in India is by teaching agriculture to the boys in the primary schools. The position of Assam in this respect is thus described in an official report. The Director of Public Instruction in that Province says that "The connection of the Education Department with Agriculture is indirect. The subject is not taught in any of the departmental schools.

"It is a common complaint that the influence of the literary education furnished by the schools and patasalas scattered throughout the country is unfortunate in this that the boy who has stumbled through the elements of a course in reading, writing and arithmetic tends to regard himself, on the immature completion of his studies, as having transcended the stages of society to which labour in the fields is appropriate. This is the natural consequence of centuries of tradition and can only cease altogether to be felt when literacy in the vernacular has become so general that its possession is no longer a differential qualification.

"Meantime the Education Department does what it can. Stress is laid in the syllabus for village schools upon object lessons and on practical work in the school garden. This has been done in the hope that the village boys may so be taught to use their observation, to think for themselves, and to follow their hereditary calling intelligently and without discontent.

"While the extension of the school course on these lines cannot be quite void of effect, it cannot, for the present, do much to reconcile the conflict between literacy and labour. The patasala teacher is a feeble instrument of innovation or reform."

It appears Primary Readers, which contain valuable lessons on nature study and agriculture, are taught in the primary schools: the village school masters are supplied with simple apparatus for the illustration of such lessons. The Education Department also supply seeds for school gardens. It must be remembered, however, observes the report, that little can be done to spread sound ideas in agricultural matters through primary schools. The pupils are children of immature intellect and cannot be expected either to influence the practices of their fathers, which have been handed down from previous generations, or to remember much of what they have been taught by inefficient masters when they themselves undertake the position of head of the family.

The Establishment of Three New Chairs in the Allahabad University.

The University of Allahabad has now decided to establish three new chairs; (i) for Post Vedic Culture, (ii) for Economics, and (iii) for Modern Indian History. The Professors occupying these chairs would each receive a salary of Rs. 1,200 per month, and ample provision has been made for the supply of books, and for readerships and scholarships. Each chair would have one readership and two scholarships attached to it. It is hoped that in course of time these chairs would arouse a spirit of enquiry and research which would mark an era in the progress of education and when the pupils of these classes go forth into the world, and themselves take charge of similar chairs in their colleges, wholesome effect should be produced on the whole system of education. The subject of economics is a very important one, it has been very little studied from the Indian point of view and the new chair would promote such study.

Co-operative Education.

At the Seventh Conference of Co-operative Registrars held in Simla in October, 1913, an important resolution was passed on the subject of co-operative education. The resolution ran thus:—"We must be careful not to emulate too hastily certain advanced forms of co-operation in other countries. It is far better to await the results of education in co-operation than to force the pace and make a mock of self-help by running societies with an excessive measure of Government assistance. If a project be such that there cannot be a fair division of work between officials and non-officials, then clearly it is too advanced and should be postponed until unofficial co-operators are fit to perform their proper share of the task."

Agricultural Training.

The Central Provinces Administration has decided that all junior members of the Indian Civil Service shall go through a short course of training in agriculture, and this course was held for the first time in the autumn of last year. In regard to this, the administration report says: "It lasted for about three weeks, and consisted of a course of lectures at Nagpur, supplemented by practical demonstration on the Nagpur, Telinkheri and Raipur farms. The Junior Civilians, who had just completed their first or second year's service, were put through the course, which was followed by an examination. The course was a success, and it has therefore been decided to adopt the scheme as a permanent measure."

Engineering College, Madras.

The Government of Madras have appointed a committee consisting of the Principal of the Engineering College, as Chairman, the Chief Engineer of the P.W.D., the Hon'ble Sir Francis Spring, Mr. A. B. Strange and Mr. K. T. B. Tressler to make recommendations regarding the accommodation and the courses of study which, having regard to the needs of the Presidency and the public service, should in its opinion be provided at the new College of Engineering at Guindy.

Departmental Notes.

INSURANCE.

Your Business, Your Family, Your Memory.

These three things are about all most men have to leave. The man who dies without enough life insurance leaves one or all of them in a *bad fix*. These three things are what most men struggle and labour their whole lives long to leave in a *good fix*. There is only one way—just one—to accomplish this with absolute certainty. Insure your life for an adequate amount in a sound company.—*Prudential Weekly Record*, U.S.A.

Some Life Assurance Fallacies.

Mr. H. Moir, actuary of the Home Life Assurance Company, New York, in a lecture remarked that there are some very common fallacies in connection with Life Insurance. The most common, is the impression on the part of even intelligent people that under a Life Insurance Policy all the premiums paid should be returned with compound interest. But insurance is very different from banking. If you pay 50 dols. into a bank you expect to get your 50 dols. back with interest, and this is all you get or expect to get, if your bank is solvent. But if you pay 50 dols. to a fire insurance company, and your house burns down you expect and receive perhaps 10,000 dols. If you pay 50 dols. to a Life Insurance Company and you die within a year after the policy is issued, your beneficiary will receive 3,000 dols., more or less, according to your age and the kind of policy taken. Where does the additional amount come from? From the premiums paid by those whose houses did not burn or who did not die. Insurance can only exist if many people combine, and agree to share the losses. In Life Insurance those who live help to pay to the beneficiaries of those who die early the large sums they receive, and this makes it plain that the man who lives cannot get back all of his premiums with interest as he would if the amount were paid to a sound savings bank. If he dies much more is paid; so if he lives, other things being equal, he must get less, since a part of each premium is used to pay the current cost of the insurance protection.

ECONOMIC PRODUCTS.

"Catgut" Really is Sheepgut.

While the strings of violins and other stringed musical instruments are usually designated as "catgut," most of the material employed in their manufacture is taken from the bodies of sheep.

An investigation of the sources of supply of the materials entering into the manufacture of musical instruments in Germany has revealed the fact that nearly 70,000 pounds of sheepgut are used annually.

By-Products of the Bean-Growing Industry.

The value of bean straw as a rough feed is not fully appreciated by most growers. When not allowed to become damp or mouldy, bean straw makes a splendid roughage for either sheep or cattle, and when fed in conjunction with grain it is a very good substitute for hay.

Bean straw is superior in feeding value to wheat hay. Beans will ordinarily yield from one-half to three-fourths of a ton of straw per acre.

New Fibres for Textile Use.

Fabrics known by the general name of vegetable silk are now being made from a number of vegetable fibres. The fibre known as kapok has been in use for some time as a stuffing material for life-belts, mattresses and cushions, and it is now coming into use for making vegetable silk. At Chemnitz, Germany, the manufacture has been going on for several years past, and the kapok fibres are first put through a chemical treatment before spinning into threads. The kapok fibre comes from the plant known as *Ceiba pentandra*, but it is not the only source of vegetable silk, for in fact the same works is making use of the "akon" fibre, this being taken from the plant *Calotropis procera* and the like, which are of common growth in India, the Malay Archipelago and East Africa. Good results are also obtained with the fibres of the *Chlorocodon Whytei*, a vine growing in the region of Amami. Another source of fibre is the material which surrounds the seeds of the *kickxia elastica* and others, and by a proper treatment, these can be made up into threads which have somewhat the same lustre as silk.

MACHINERY AND APPLIANCES.**An Interest-Calculator.**

An interest computing machine has been invented by a Hungarian, according to a consular report from Budapest. The instrument is said to be comparatively simple and inexpensive. It is about the size of a watch. On setting the hands at the proper positions on the dial, the amount of interest in each case is indicated on the face of the instrument.

Cement Tiles.

The manufacture of cement tiles in Germany has, it is stated, considerably increased in the last few years, and now reaches 200 million yearly. The presses employed usually involve the mixing of the concrete in one operation and the pressing of the tile in another; but an effort is being made to introduce a new machine which measures and mixes the necessary quantity of sand and cement, delivers the mixture into the press, colours it and passes it to the metal mould, all these operations being carried out with the assistance of two men. The machine mentioned above is said to be capable of producing 6,000 tiles, measuring 9 in. by 12 in. in ten hours, at a cost of about 35s. 9d. per 1,000.

A Cane-Planting Machine.

It consists of a box to hold the plants. The axle is made so that the box is fairly high from the ground, and attached to the axle is another V-shaped axle, on the apex of which is hung an ordinary swing plow, without the handles. The plants are dropped through a leather conduit and fall immediately behind the plough, through a space formed by placing another plate parallel to the plough's original side plate. During the operation of planting, each cutting was placed perfectly in line, and as the machine passed on, the earth fell in and covered them. This work was done with two horses, but with three it enabled a 10-inch furrow to be opened out in one operation, and planting could be carried out on both journeys, without the necessity of marking out. The machine weighs about 2 cwt. without the plough, and it is estimated that it can plant 2 acres a day as against 1 acre by the old method.

SCIENCE AND INVENTION.**Convenient Ink Tablets.**

Serviceable at all times, but of special convenience to travellers and users of fountain pens, is a brand of ink tablets that, when mixed with water, make an excellent writing fluid. The tablets are to be dissolved in water, only when and where needed. Each tablet will make one-half ounce of chemical ink. Points of excellence claimed are quality standard, flow perfect, colours permanent, will make a good copy, non-corrosive, distribution economical, keep dry until ink is needed, unaffected by climate, will not mould, will not gum the pens, will not freeze, storage space small; made in black, blue-black, red, green, violet, blue; packed in sizes to make gallon, quart, pint and half-pint.

Artificial Diamonds.

There can be very little doubt, says the *Literary Digest*, that diamonds have been produced artificially. Now, comes Frenchman, E. duBoismenu, of Paris, with a pamphlet on "The Synthetic Manufacture of the Diamond," in which he asserts that he has made diamonds—that is, crystallized carbon—simply by decomposing calcium carbide, the substance used widely for generating acetylene. The electrical furnace was used, but apparently no high pressures were found necessary.

Circular Saws of Paper.

Paper is at present used for all possible purposes in the industries and in all possible forms. It has even been possible by means of compression to give it a degree of hardness comparable with stone, so that it can be used as building material. The latest use for paper however is perhaps the most peculiar. According to a European journal a factory is said to exist in England which is manufacturing circular saws from paper. These paper saws are used for the manufacturing of fine furniture, veneer and other thin plates of wood, which must be treated especially carefully.

The veneers made in this way are so smooth that the cabinet makers can use them without further planing.

HEALTH AND HYGIENE.**Egg-shells as Diet.**

Two Professors of Munich have come forward to declare that egg-shells, taken in proper form, lengthens human vitality, increases the power of resistance against the effects of time, adds weight to the body, activity to the brain, and amongst many other useful effects, lends courage and energy to the human being. It is pointed out that the egg-shell food is prepared in the form of a chloride.

Water Required by Infants.

In experiments planned to determine the amount of water required by nursing infants, young infants were fed with concentrated milk to which albumin and sugar had been added and which had a fuel value of 1,200 calories per liter.

In many cases the body weight remained constant, while it decreased in a few. One hundred fifty gm. of water per kilogram of body weight was found necessary to bring an increase in weight.

Stomach Coughs.

The stomach cough is caused by the fermentation of the food and drink which are put into the stomach. A knowledge of this fact ought to lead persons so affected to ponder a little on the nature of their ailment and of their digestive powers. Many stomach coughs arise from an undue love of sweets—sweet tea, sweet drinks, sweet cake, sweet custard, and all kinds of confectionery. Manufactured sugar in all forms tends to fermentation, and gives rise to headaches.

Fool Proof Poison Bottle.

Inventors have been giving attention to developing a bottle which will give warning in the dark that its contents are poison. A bottle with two bells suspended on chains is designed to give a sufficient warning to the man who steps to the medicine cabinet at night and takes a dose without turning on the light to read the label.

Another idea to prevent mistakes of this sort is to fill the cork full of needles so that the stopper cannot be removed in the dark without pricking the fingers.

HINTS AND RECIPES.**Laundry Hint.**

When making blue-water for clothes, add a little salt to it. This distributes the colour evenly and prevents "patches."

To Prevent Corns.

Separate compartments, or stalls, for each toe is the latest Parisian style for stockings. It is said these prevent those corns which are caused by the rubbing of the skin against the next toe.

To Remove Stopper.

A glass stopper many a time does not easily part company with a bottle. Put a few drops of Methylated spirit. Remove the recalcitrant stopper after a few minutes. This will act in some cases, but the method will not always succeed.

To Hang a Hammock.

To get perfect ease in a hammock, hang it thus:—

The head end should be $6\frac{1}{4}$ feet from the ground and the foot end $3\frac{3}{4}$ ft. The rope fastening the head end should be less than 12 inches long, while that of the foot end, should not exceed $4\frac{1}{2}$ inches.

Thus the head will practically remain at rest and the lower part of the body will get a free swing which is pleasant.

Space for Each Bird.

The best way to find out how many fowls a house will hold is to multiply its length by its breadth, and its mean height, and divide by eight. This will give you the maximum number of birds. If not pressed for room, divide by ten. Here is an example: Take a house 6 ft. high, 6 long, and 4 ft. wide, i.e., 6 by 6 by 4 = $144 \div 8 = 18$. Thus, such a house will hold eighteen birds.

To Fold a Coat.

A man's coat should be laid perfectly flat with the wrong side down. The sleeves should be spread out smoothly, and then folded back to the elbow until each end of the sleeve is even with the collar. Fold the reverse back and then double the coat over, folding it directly in the centre seam and smoothing it out carefully.

MISCELLANEA.

Plants and their Role in Nature.

Mr. Percival J. Ashton in a lecture before the Selborne Society emphasised the interrelationship between animal, and vegetable life, and pointed out that plants had an important bearing on the formations of the soil, their roots breaking up stones, while the ground was made fertile with a stop layer derived from dead matter. A cod of earth was not an inanimate mass, but contained a multitude of bacteria on the borderland of plant life, and these, by extracting nitrates, sulphates, and phosphates from dead matter, enabled growing plants to absorb what was vital to the existence of all life. These bacteria were fanciful little beings, and it was necessary to humour them. He believed that cultivators of the soil would come to recognise the necessity of giving them special attention.

Agricultural Machinery

The rice experiment station (Stazione Sperimentale di Riscoltura) of Vercelli, Italy, announces an international competition for special thrashers, polishers, separators, and classifiers for the preparation and mechanical selection of rice seed. Applications for entry must be made by June 30th, 1914, and the competition will be held during September and October, 1914.

Road Mirrors.

Bombay is becoming very up to-date and, among other street improvements, is establishing road mirrors at places where traffic is unusually heavy and dangerous. These mirrors are V shaped and placed at a corner where two roads cross. They are extremely useful when the drivers get used to them and consult them for they enable them to see whether the otherwise "blind" streets are free from traffic or not and regulate their pace accordingly.

Free Salt for Bleaching.

A press note states that the Bombay Government have decided to allow industries to obtain salt for bleaching and dyeing purposes, duty-free, from an approved firm of importers of

Liverpool salt, or from one of the salt works in Thanna or Uran Range, from Khan Gotea or one of the agencies established for sale of Bargara salt.

Electrifying Indian Railways.

The Railways in India are now turning their attention to the question of electrifying their system and the well known firm of Messrs. Merz and McLellen have been investigating the question of electrifying the suburban lines of the Great Indian Peninsular and the Bombay-Baroda and Central India Railways, and of the Eastern Bengal State Railway at Calcutta.

Cable Letters.

The week end cable letter system has been extended to Australia and New Zealand. Rates for messages from India for the first 20 words to Australia are Rs. 9-6 0 with 8 annas for each additional word and to New Zealand Rs. 10-9 0 for the first 20 words with 9 annas per word thereafter.

A Match Factory in Travancore.

A match factory on an elaborate scale is to be started, at Tenmalai in Travancore State. Mr. Rajagopalachari, C.I.E., Dewan of Travancore, laid the foundation stone of the Factory buildings.

German Financial Transaction.

The biggest financial transaction ever effected in Germany has recently just been completed by the amalgamation of the Disconto-Gesellschaft and the Schaffhausen Bankverein. The whole capital has been transferred to the Disconto Gesellschaft which has increased its capital by 75 million marks to 300 million.

International Institute of Agriculture.

Sir James Wilson, K. C. S. I., has been appointed de'legate for great Britain and Ireland and some of the Dominions and Colonies on the permanent committee of the International Institute of Agriculture at Rome.

The P. and O. and B. I. Companies.

The amalgamation of the Peninsular and Oriental and the British India Steamship Companies is officially announced.

The agreement provides for the exchange of Stock between the two Companies. The Board will be fused, and the interests of both will be identical, though the Companies will continue to work as separate entities.



THE WEALTH OF INDIA

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The Wealth of India.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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Current Topics

BY ECONOMICUS.

Native States in India, in spite of their peculiar limitations, are in a position of distinct advantage over the neighbouring British territories, in certain important respects. Not only is there an extensive field for the exercise of Indian talent and a free scope for indigenous enterprise, but if the State Durbars follow a foresighted and enlightened policy, they are in a position to undertake measures of reform which are not regarded as feasible elsewhere in the country. No wide gulf yawns in the Native States between the rulers and the ruled as in British territory and the State administrators understand the difficulties of their subjects better. Many of the conditions favourable to economic and industrial progress which obtain in other countries and which do not exist in British India owing to the peculiar position of the Government, are present in the Native States. Of course, their resources are not large, but such as they are, they are sufficient to enable the State Durbars to take in hand beneficent schemes of progress. This, however, presupposes a broad outlook, enlightened views and strong sense of responsibility in the rulers of the States and their advisers and it is gratifying to find that in some of our larger States these requisites are now to be found. The inspiration for reform has undoubtedly come from the example of the Government in British India, but the lesson

has been seriously taken to heart and is being improved upon. Among such Native States Mysore occupies an important place and the Durbar there has set an admirable example of benevolent State activity in an all-round development which may, with advantage, be imitated elsewhere. We have here to confine our attention to the excellent work which is being done in Mysore in the direction of economic development of the people of the State. The economic problem dominates the present situation all over India, British and non-British. The poverty of the mass of the people, the indebtedness of the rayats, the squalor and misery which are the lot of millions—these are aspects of national life which demand earnest and immediate attention. We are living in times of keen competition when India is no longer isolated. Its people and their industries have to struggle hard to keep their heads above water which is overwhelming them from all sides. This is a tremendous task in which the people want all guidance and direct assistance which a Government is capable of giving them. Circumstanced as they are, the British Government feel themselves unable to adopt heroic measures and they are only tinkering at the great problems. By the inauguration of the Economic Conference, the Mysore Durbar took the question of the economic development of the State seriously in hand and during the last three years it has been able to turn out much good work. In such matters no immediate and tangible results are, of course, to be expected, but from the lines on which the Conference is proceeding, one has no hesitation in saying that its efforts are bound to bear good fruit. A wide diffusion of education among the people is an essential of economic progress and Mysore has taken big strides in that direction. From the account of last year's work done by the Conference, one cannot fail to observe that the economic problem is being tackled in Mysore in the proper spirit and that the activities have been many-sided. We thus learn that 'two experts have been appointed, a central silk farm has been started and a silk

association formed to develop sericulture. Young students are being trained in sericulture and horticulture and arrangements are being made to distribute disease free-eggs to cultivators engaged in the silk industry. The question of educating the adult population in the rural areas in the three R's and of spreading correct ideas of business among them, is receiving attention.' Similar progress is recorded in the matter of the development of various industries and the possibilities of several new industries are being investigated. What is worthy of notice in all this is the thoroughness, enthusiasm and earnestness with which the problems are being attacked and the Mysore Durbar deserves to be congratulated upon its enlightened and progressive policy.

Much of the credit of this progress belongs, by common consent, to **Mr. Visvesvarayya on Economic Development.** Mr. Visvesvarayya, the Dewan of Mysore, who has acquired a rare insight into the needs, the possibilities and limitations of the state, the helm of whose affairs he directs with such distinguished success. He has the good fortune to enjoy the unstinted support of the Maharaja and the willing co-operation of the people and it is no small advantage to him that the traditions of the State are most favourable to the cause. The speech the Dewan made in inaugurating the fifth session of the Economic Conference was a remarkable utterance which evinced a thorough grasp of the peculiarities of the economic position of the people of Mysore—which are also more or less the peculiar features of the situation in British India—and a keen and sincere desire to ameliorate the condition of the mass of the subjects of the State. The chief reason why efforts should be made to strengthen the economic position in Mysore, he said, 'were the poverty of our people, their low standard of living, their low level of earning and achievement, the sufferings they endure in times of drought and the risk of loss of life to which they are exposed in a severe famine.' The comparative figures he quoted illustrating the

condition of Mysore, Canada and Australia with regard to education, revenue, expenditure, trade and health were most instructive and were calculated to create a consciousness of the backwardness of this country and of the immensity of the task that has to be done here before we can hope to make even a distant approach to those nations. Two striking points which Mr. Visvesvarayya made had reference to the contrast between the economic bases of society in the West and the East and the avoidable waste—both of resources and of opportunities that is going on in this country in many ways in the business life of our people. Economic progress in this twentieth century bespeaks a certain outlook on life that it is the fashion in this country to condemn as materialism. 'The nationality of our people,' remarked Mr. Visvesvarayya, 'rests on a religious and fatalistic basis, not on an economic basis as in the West.' The Hindu ideal of life, according to him, is that this world is a preparation for the next and not a place to stay in and make ourselves comfortable. The Dewan went on to observe that if we are to follow in the wake of other countries in the pursuit of material prosperity, we must give up aimless activities and bring our ideals into line with the standards of the West, viz., spread education in all grades, multiply occupations and increase production and wealth. The second important point in his speech was his exhortation against the enormous waste that is at present going on in the lives of our people and he described the work of the Mysore Economic Conference as intended to induce people to think ahead and work ahead and economise human energy, as a war against that waste. The all-pervading waste he spoke of was the dissipation of energy, the non-utilization of resources, the neglect of opportunities, the loss of health and life and the lack of capacity for co-operation and unity. We have referred to a few points only but the whole speech of Mr. Visvesvarayya was full of inspiration and abounded in practical wisdom.

Cheapness of Indian labour has now been

proved to be a myth and employers know to their cost how dear and inefficient the bulk of the labourers in this

country are. Even in agriculture where custom prevails to a greater extent than in other industries, land-owners are experiencing great difficulties in securing a sufficient supply of labour. A higher level of general prices and particularly of food stuffs is mainly responsible for the dearth of labour as it has pushed up the cost of living of all classes in society. Customary wages are steadily giving place to contractual rates and the workers are becoming more independent in spirit and conscious of their position and importance. Higher wages, not accompanied by greater efficiency, curtail profits and work as a handicap upon industry. The Bombay mill-owners have been complaining, for some years past, of the short age of workers in their factories which has been estimated at one hundred thousand operatives. Though this figure may be an overestimate, the insufficiency of the present supply of labour in Bombay, is undisputed. With the love of inquiry and indefatigable activity which are his own, Mr. D. E. Wacha has studied this question and recently published the results in the Bombay dailies. One of the principal causes to which the insufficiency of mill hands in Bombay is attributed, is the very large demand for unskilled labour of considerable magnitude which exists in that city and its vicinity and which diverts a volume of the working population to railway, dock and other works. The unskilled workmen also regard conditions of out-door employment as more congenial to them than the stuffy atmosphere and restraints of the factories. The system of daily or weekly cash wages is also a factor that must have some influence. While labour outside factories in Bombay is generally paid by the day, in the mills wages are usually paid fully three if not four weeks after they are due. Is the present shortage of labour, to whatever causes it may be due, a temporary phenomenon or is it going to be a permanent feature of our industrial economy? That is

the question which is causing anxiety to employers. It is an interesting conundrum that, while an insufficiency of workmen is being seriously felt in large industrial and commercial centres, coolies should be migrating to foreign countries in search of work and people should be starving in parts away from places of business in India itself. We are told that recent experience in districts exposed to drought and famine, leads to the conclusion that higher wages and demand for work on public buildings and in factories are rendering direct famine relief unnecessary and that the recuperating power of the people is growing. Periodical and permanent migrations to more favoured spots are also stated to be more common, though love of land and homestead

is yet too strong. In any case, we are now having the 'labour problem' in our midst, though in a form slightly different from that which is familiar in the West. It behoves them, therefore, who are directly concerned, to be prepared betimes to face it. There has already been too much talk about organization, co-operation and concerted efforts among mill owners to ensure a steady supply of efficient workmen, but hardly any action seems to have been taken. This policy of drift is certainly suicidal and ought to be immediately given up in favour of serious and systematic work. It is high time that the employers were roused to a sense of their duty to themselves and their country.

Special Articles.

FAILURE OF GERMAN CREDIT.

By HENRY W. WOLFF.

Your notice * of the great failure among co-operative banks in Germany appears likely to produce so false an impression of what had actually happened that, in the interest of the co-operative cause in India, I feel called upon to ask you kindly to allow me space for a brief explanation.

Those failures have occurred only in one of the several credit movements in Germany; and so little were they calculated to cause surprise that I have expected something of the sort ever since I inspected the first credit societies of this type known to me, as long ago as in 1895, owing to the looseness in their organization, management and, above all things, inspection, which I noticed. Other unions have had their trials as well, it is quite true. And not without fault of their own. However the cause was a different one.

In the union quite recently affected—on whose behalf a very insufficient explanation has been given by one of its own officers in the inter-

national *Bulletin* from which you quote—strictness, upon which in matters of credit everything depends, and uniformity which is a great help to good management as facilitating inspection, have been deliberately sacrificed to bulk. The object aimed at was to gather the largest possible number of societies together and do the largest amount of business. To humour incomers, principles were made light of. One instance in point is this. In societies of this union, based nominally on the Raiffeisen principle, it is common to disregard the Raiffeisen cardinal rule of inquiring into the object of each loan and holding the borrower to it, in order to lessen the trouble put upon the Committee. That has been frankly stated to be the reason. Credit is allowed, without control, in current account. There is terrible danger in this. But there is an even more serious point. These banks were the first to avail themselves of the credit out of public funds by the State-endowed Central Bank. And they have frittered on such credit freely given. But that means

that necessarily purely mechanical rules have had to be adopted to appraise a bank's title to credit. And, on the amount so ascertained, and not wholly reliable, a tremendous mass of unsecured liability has been filed up, members paying in infinitesimal dribblets and making themselves recklessly liable for a hundred and five hundred fold the amount.

The consequences of all this was, quite naturally, a general looseness and happy go lucky management. The immediate cause of the giant failures reported has been found to have been this, that inspections were held in a slipshod, perfunctory manner, and even where they were held with greater

care, the inspector's observations were left unheeded.

The money lost in these German failures will not be thrown away to India, if Indian Co operators will take warning by it and be careful to observe the sound and necessary, though it be at times a little irksome, safeguards prescribed, by the Raiffeisen system. Make sure of the trustworthiness of your members, inquire into the object of their loan, hold to such object and make the periodical inspection a reality, enforcing execution of the inspector's precepts, and you will keep your bank safe. Such catastrophes as have recently occurred in Hesse will be an impossibility.

SOME ASPECTS OF INDIAN AGRICULTURE.

By R. V. DHULEKAR, B.A.

The population of India is preponderantly agricultural, and so every effort made in the way of improving the lot of the poor cultivator brings into prominence the problem of agricultural industry in its entirety. The question deserves the highest amount of serious attention and forethought, because on the right solution of this problem hangs the salvation of the teeming millions in the land. More so, when the country has been brought into direct communication with the world's markets. The agricultural products no longer supply only the home market, but are demanded in greater and greater quantities in foreign markets too. The easy means of transport and communication have enabled the high prices prevalent in the European markets to attract the Indian products, to the detriment of consumers in India. The result is, as can be reasonably expected, a marked rise in the price-level of agricultural products. One would say that the producers must have prospered at the expense of the consumers. But it is not so. There has been a rapid increase in the number of wants, and the productivity of the soil has also decreased to a marked extent. The latter point is disputed by some, but the correctness of the

statement will be clear by a reference to facts that have taken place in recent years. The first and foremost cause of deterioration in the productivity of the Indian soil is the nature of the land tenures which either existed at the time when land came into the hands of the government or have existed since. Even a superficial student of history would bear testimony to the fact that when land came into the hands of the English, the revenue farmers, as Zamindars of those days can more properly be described, and the cultivators as well, had no permanent interest in the soil, and, therefore, made no efforts to improve it. Then the landholders whom the British placed in the former Zamindars' position, followed the same policy of indifference and cared only for revenue. Later the competition for land consequent on an increase in the population of India led to the creation of a body of tenants, who were prepared to stick to the soil at any cost. The British Government at last conserved the rights of the tenants by passing the Land Acts. At this stage, we find land in the hands of small men with small holdings. Now this body of cultivators cannot be expected to have employed any large amount of capital and labor

* Vide page 240 of April issue of *Wealth of India*.

on land improvements. Crops are being raised every year, and the law of diminishing returns must have come into operation. There are other causes of deterioration, some of which will be treated at some length in the course of the paper.

We may properly begin our discussion of the agricultural problem with the question whether the system of small holdings prevalent in India has not outgrown the needs of the time, and whether large and compact holdings would not be a better substitute for small ones. India, as stated before, is passing out of the stage of subsistence production when every village cared to provide its own locality. She has already entered the stage of market production. A farmer's calculations are more and more influenced by the cost of production and its relation to market prices. He has to keep himself informed of the economics that are effected by his neighbours. Unlike English farms, holdings in India are scattered in different directions. Like them, they are not compact pieces of land, with well marked boundaries. There are no roads leading to different holdings. Carts can have access to the fields only when the crops have been reaped. As the different fields of a peasant's holding are situated in different directions, much time is lost in taking his implements and bullocks to and from his house in the village. His family must be on the watch for trespass or other injury in half a dozen directions. The time, so wasted, might have been more usefully employed in tending the crops or ploughing the fields. The result of all this is that the same amount of energy produces less than it would in England, and the cost of production is raised unnecessarily. In the case of compact holdings, a farmer could have been very easily persuaded by his self-interest to make some permanent improvements on the land, e.g., a pucca well but now he cannot, as the improvements made will benefit only one field. Other economies would also have been possible in the way of animal labour, ploughs, etc. In view of these facts, it will be a move in the right direction if large and compact holdings are substituted for small and scattered ones.

At this stage, we may properly make a little digression in considering the bearing on our subject of the changes that are being advocated in England by Llyod George and his followers. Serious fault has been found with the existing land system and the land campaign is pushed on vigorously. It will be interesting to give a short resume of the history of the land system in England. After 1760, the enclosure policy, as it is called, superseded the old small holding system, mainly on the ground of inefficiency of the small man and the waste of capital and labour, which the old system entailed. But the change was not an unmixed evil. With improved agriculture, came greater misery among the cultivators. The small man was uprooted, big farms came into existence, improvements were made on the land, there came better houses, better manure, better machinery, still the nation ailed. Large numbers of cultivators were reduced to the status of resourceless day labourers. Further, even those who were given compact holdings could not stick to their posts for want of sufficient capital. The compensation money that they received for the advantages enjoyed by them in common was soon spent. The labourers, who formerly received small plots of land in addition to their wages, were also deprived of these, and thus the gulf between the rich and the poor was made wider. It is these evils which the Liberal leaders in England are trying to remove. And thus, India should find an object lesson in the history of the land system in England. In the interest of better agriculture, a policy of big and compact holdings is advocated with the necessary modifications to avoid the evils pointed out above. Reforms must not come too swiftly. In India, law has conferred rights on the tenant and so it is not suggested that they should be taken away. But if conciliatory measures are adopted, and efforts are made in co-operation with the Zamindars and the tenants as well, to form compact masses of holdings by means of mutual exchange, money compensation, etc. Indian agriculture will have a bright future before it, specially as the co-operative movement is gaining ground among the villagers.

Now we come to some of the crying needs of Indian agriculture. The first and foremost of them is an improvement in the quality of land. It has already been pointed out that the fields of the small tenants are hardly well-manured. Fertility is being exhausted year by year and high authorities hold that Indian agriculture is now subject to the law of diminishing returns. The farmer is also conscious of this fact, but he knows only one remedy to effectively face the problem, and that remedy is water. In the course of some informal talks with the villagers, I always noticed that they invariably complained of want of water for purposes of irrigation. This one thing was always foremost in their mind. I do not blame them for describing water as the greatest necessity, but I beg to draw the attention of the people to one important fact which this attitude of a farmer's mind points to,—the fact that on account of his poverty, and also owing to his limited interest in the soil in a smaller measure, he has almost forgotten all other methods of improving the quality of land except applying water. The continuous failures of rains and want of other effective means of irrigation have ingrained in him the idea that water is the only salvation! On my telling them that the establishment of Co-operative Societies will help them in many ways,—with more manure, better cattle, better ploughs,—they were not satisfied so much as when they were told they would have more water. One farmer actually put the question, why does not the Government supply water for the fields just as it does in towns? He further complained that some villages had canals running by them, while theirs had none. He said he also paid taxes, and was prepared to pay more if water were supplied. The distress of the farmers becomes more acute when with their old methods of farming they lose more moisture of the soil than they should. A professor of agriculture pointed out that on examining the soil of adjoining fields he found the moisture in it varying from 2 to 4 per cent while with the same amount of rain, his soil had about 18 percent. This fact and other wasteful methods of the Indian peasant, all clearly show that the hardship caused by a failure of rains would be

less acute if improved methods of agriculture are adopted. The problem of agriculture is not a problem of water. In parts where the soil is damp and water is more than is needed, the system of drainage is of greater importance. The weeding out of the luxuriant growth of vegetable in the fields becomes a source of expenditure and trouble. In such tracts, crops seldom fail.

We will now direct our attention to another crying need of our agriculture. Even superficial observers of Indian conditions will bear testimony to the fact that Indian fields in general are rarely manured every year, or even once in two or three years. A system under which fields are left untilled for a period to regain fertility is usually taken recourse to by the poor cultivator. One cause i.e., poverty, has already been pointed out why the Indian cultivator does not use costly manures to fertilise his soil. Among the others, the wasteful habit of using manure material unproductively finds an important place. The leaves of trees, small shrubs, etc., which are among the best kinds of manure, are generally burnt for unproductive uses. They are not collected in one place but are allowed to lie where they are, and so run to waste. What might have manured one field serves no purpose at all. Cattle manure is also not utilised for agricultural purposes but is generally used as fuel and for other domestic purposes. India has not yet begun to utilize all the refuse matter from her towns in manuring fields. Cart loads of valuable manure collected by her Municipalities are used in filling pits for building sites. Nearly every large town has now a sewage system, but the sewers are either allowed to run into the rivers or to rot in some pond outside the locality. The waste so committed is enormous. It is simply robbing land of its fertility. These valuable sources of wealth ought to be conserved. But these sources can supply only a limited number of fields and so the question of supplying manure for the country as a whole can only be solved by introducing artificial manure. It should be made clear to the cultivator that the profits arising from manured fields will far outweigh the expenditure incurred in manur-

ing them. When this is done, the cultivator will gladly seek the help of Co-operative Societies for securing funds. He should also be told that a manured field requires less of water than an unmanured one, and so could save something from his irrigation budget.

We shall now deal with the problem of labor supply with regard to agriculture. We know there are two sources of labor supply in India (1) human labor and (2) animal labour. We shall deal with them in order.

Human Labour—Judging from the quality and quantity of work put forth by an Indian peasant, we may unhesitatingly remark that his efficiency is of a very low character. The leisurely manner in which he drives his bullocks to the fields far away from his homestead, the number of hours he spends on his hukka; the disorderly way in which he scatters his seed, the philosophic tone in which he tries to explain the poor produce of his field, etc., all point to one conclusion, that he does not put forth all his energies in doing his work of which he is potentially capable. All his movements have assumed an air of routine work. He has lost all initiative. The result is that his implements are as simple as they might have been. It is believed, in the time of Rama No improvement appears to have been made in making them more labor-saving. The deplorable condition of our peasant's efficiency necessitates a radical reform in the man himself. A system of good mental education can only work this change.

Animal Labor—We have no data to believe that the quality of animal labor has also undergone a change for the worse. But a study of statistical information clearly proves the fact that the quantity of animal labor *i.e.*, the number of agricultural cattle, has decreased in recent years. There is a smaller number of plough cattle than is necessary to meet the demands of agriculture. The causes of the decrease are (1) the increasing death-rate in the cattle owing to shortage of food caused by recurring periods of famine, (2) the increasing demand for animal food and for hides owing to the rapid development of the leather industry, (3) the decreasing number of good and strong bulls for serving

cows, (4) the absence of any organization for increasing the supply of cattle and (5) the inability of the poor cultivator to keep cows or bring up calves.

Now as regards the increasing death-rate the fact is too obvious to need any explanation. Any failure of crops over a wide area kills the cattle by hundreds. The overwhelming increase in the export of hides during recent years clearly points to the conclusion that the number of cattle is very rapidly decreasing. But if famine years be regarded as an abnormal state of affairs, we may expect a decreasing death rate with better season. The increasing demand for animal food and also for hides requires deep consideration and thought. Beef is consumed by only a small percentage of the population, but a rise in the prices of hides has made it cheaper and thus accelerated its demand. Old and weak animals are no longer the subject of slaughter. The females, being only valuable as milch cows, are killed in greater numbers than the males. And as the Indian prices are rising towards the European level, it is becoming more and more profitable to kill the animals than to prepare them for the plough or the cart. A young animal may not be strong enough for the plough, it may be big enough for the knife. Its hide determines its value.

Lastly, the poverty of the peasant is also an important determinant of the supply of animal labor. The scarcity of fodder causes great hardship to him in maintaining his plough-cattle. He is generally too poor to keep any extra calves. It is only big Zamindars who can keep a large number of cattle, and therefore, the supply of good cattle is very meagre. Under these conditions it is eminently necessary that the supply of cattle be increased by rearing them on a large scale. The problem should be faced in a business like manner. Some persons should make the supply of good cattle their business, just as sheep-breeders in Australia have done.

A second suggestion which was recently made in the columns of the "*Pioneer*" by a correspondent was to economise the supply of fodder

by taking some work from cows also. It might be suggested further that this would also effect an increase in the supply of labour indirectly. This suggestion, so far as it goes, does not seem to be unreasonable. An increase in the utility of cows will work in the way of increasing their value to their owner and so he will care a good deal more for them. But it is for experienced men to decide whether the suggestion is practicable. No reasonable reply has been given to the question as to why cows have not been worked as yet. Why has not the same immunity from work been extended to females of the human world? Let these questions be answered by those who know.

A third suggestion refers to the use of other animals, *e.g.*, mules, horses, etc., as plough cattle. Their scanty supply may stand in the way of their use.

The last suggestion is the introduction of motive power. At this stage of Indian agriculture, it is too much to expect the use of motive power to be adopted by the peasants. With better implements, economy in human as well as animal labor may be easily effected.

In conclusion, a few brief remarks may be made on some topics connected with the subject under discussion. No exhaustive treatment of the agricultural problem has been attempted. Some of the more important aspects of the question have been handled, and a few suggestions been made. A little injustice might seem to have been done to those of the peasants who are vigorous and painstaking, and whose well-kept farms have sometimes excited the admiration of agricultural experts. Some of them have been found to be decidedly superior to the average European farmer, but these are only to be regarded as exceptions. A word might also be added regarding the progress of agricultural training in India. It has been more of an academical character than it ought to have been. The Government should be urged to open agricultural schools in villages where the sons of the Indian peasant should be taught in their own mother tongue. A system of primary education for the masses is absolutely necessary if the peasant is to be re-generated.

BUSINESS: ITS SCIENCE AND ART.

By T. M. SATCHI.

Every business that is worthy of the name has two departments; its *science*, to be understood by study, and its *art*, to be acquired by practice. A knowledge of both is especially necessary to the complete education of the merchant. The number of business concerns that have failed during the last few years is sufficient to show that the science of business has not received the attention it deserves at the hands of our businessmen. It is undergoing a rapid growth, and therefore a great portion of it is continually new. The principles, however, of trade are the same at all times, and hence the vast importance in the present rapid development of society, of a knowledge of the science or principles of trade. Such a knowledge gives stability to character, a disposition

to act within known laws, checks the temptation to sacrifice principle for a temporary end, and throws around the dull details of practice an air of intellectuality that is exceedingly attractive, and invests business with many of the characteristics of the brightest genius. It does more. It gives wisdom in practice, and traces out consequences by the light of experience. It helps us to know, while one thing is taking place, what *must* follow; in other words, to know the necessary consequence of what is going on at the present moment. It helps us again to know, when anything has occurred, what *must* have preceded; in other words, to know the necessary antecedents of what has taken place. It is the extracted essence of facts—the logical results of all human experience.

Observation, conversation, and reading are the sources from which a knowledge of the theory of a profession is to be derived. They furnish facts and principles. The science of business has not been entirely yet collected into writing, though much has been done in late years—and the student of mercantile science is compelled in a degree to depend upon his own sagacity. He must be continually on the watch for ideas which may give him a clue to that labyrinth in which few have travelled safely, and thousands have been lost. Books on general or special business should be his vademecum. They should be owned, read and re-read. They contain the experience of men who have gone over the same or a similar road; or the thoughts of others as to its places of safety and of danger, based on the united experience of many. Books of history, facts, and principles, are always valuable. They deserve to be held in higher estimation by practical men than they are. They stimulate the mind to think, and suggest safe expedients in doubtful circumstances. There is unquestionably an analogy between all the various pursuits of mankind—between war and speculation—between statesmanship and the management of public bodies; and those who have been distinguished for success in business are of the same mint as those who are eminent in the walks of literature and science.

Every businessman should have a library of select practical works. But many books are not desirable. It is the man of few books and much thought who wields power. Those books should be selected which have a tendency to arouse the mental energies into action, and which afford clear views of life and of the business of life. From books the student should draw his first knowledge of his profession; and he should continue to draw from this fountain for ever and ever. But the knowledge of the science of his profession will not constitute him *master of the art*. He must know not only how his trade should be performed, but how to perform it. He has a *habit* to acquire—a practical power and facility in the application of principles. But the habit once acquired, it

facilitates success in almost every branch of business. This is a work of time, and the result of progressive drilling and repeated effort.

During this period of apprenticeship, one of the most important objects to be acquired by the student is *judgment of the value of goods*. A man must possess this knowledge to do justice to his customers and to himself; to avoid cheating and being cheated. The want of it will blast his reputation, and defeat the best laid plans for success. It is a defect that cannot be concealed.

The object of apprenticeship is to learn a special business thoroughly. A man cannot be said to understand it thoroughly, unless he be acquainted with its remote as well as its immediate connections. He must not only be a good judge of the articles he deals in, but he should know where they are manufactured, of what, and the manufacturer's prices, the best markets to buy and to sell in, the rate of carriage, freight, insurance, duties, etc. This information it is sometimes difficult to acquire, but "where there is a will there is a way". It is necessary in order to buy right. A merchant should take all business to be his province. He should have a familiar acquaintance with one or more kinds of business akin to his own, and a general acquaintance with all trades and business. In the course of his career as a merchant, he will be called upon to deal frequently with men out of his line, and without this acquaintance he cannot deal advantageously or satisfactorily.

Having learnt a business, the next subject for the student to consider is the *amount of his capital*. It is this aspect of the question that in a majority of cases, has been ignored by Indian businessmen. In a commercial sense, capital means the stock of merchandise, or money which an individual or a company originally puts into a business, or contributes to the trading stock of a partnership when first formed. Mercantile transactions are so varied in nature and extent that no certain amount can be suggested as the sum an individual should possess. The only rule that can be given is, *that the*

capital should be adequate to the business—that it should be increased in proportion to the business, or the business be kept down to a level with the capital.

The Indian trader starts a business without the moderate capital usually required to carry it on. He raises loans from the money-lenders on high rates of interest and in course of time turns a bankrupt. Of course, there may be a few who succeed on borrowed capital, but no one who has tried to do business without a suitable capital, even if he has succeeded, will advise another to attempt it. It involves an amount of anxiety, a degree of labour, embarrassment, and hazard, painful to reflect upon. To carry on a business successfully, altogether on credit, requires a fortunate combination of circumstances which no prudent man would predict.

One very important question for every merchant to consider is, what proportion should capital bear to liabilities in business? In other words, how far is it prudent for a man to extend his purchases beyond his actual capital? I have taken considerable pains to learn something on this subject, but cannot boast of my success. In banking, the safe rule has been laid down to be, the proportion of three to one. Although the proportion which the capital of a bank should bear to its liabilities may vary with different banks, perhaps one would not go far astray in saying that it should never be less, than a third of its liabilities. I would exclude, however, from this comparison, all liabilities, except those arising from notes and deposits.

If the notes and deposits together amount to more than three times the amount of the paid up capital, the bank should call up more capital. A man should not extend his business to more than *three* times the amount of his capital, and if it be a large business, to not more than twice his capital. The rule, however, must vary with different kinds of business; but there is a limit in each particular business beyond which it is not prudent to go. A man has a right to risk his own capital, but he has no right to risk the property of others without their consent; and he can only honestly extend his business so far that if his property should suddenly depreciate in value to the ordinary level of low prices, and he should meet with the average percentage of losses by bad debts and other risks incidental to the business, he will still be able to pay his debts. A man whose liabilities are already three times the amount of his capital, should be extremely cautious in extending his purchases, however inviting the speculation may appear; and in the taking and giving of credit he cannot calculate with any degree of certainty in being able to meet his payments promptly, except by giving one-third less credit than he takes. These rules are often neglected and it is not strange that a few of our businessmen should have occasion to become bankrupts. Men who trade in any degree on the capital of others, are bound to be doubly cautious, though it may be apprehended that the circumstance that others who have trusted them may lose, will tend to make weak and dishonourable men careless, and even reckless.

Book of the Month.

ECONOMICS FOR INDIAN STUDENTS.*

It is the common experience of those who have to teach the subject of Economics in Indian colleges that the text books usually used, though excellent in themselves, are very

unsuitable in the case of students of this country. Many of the text books on Economics recently published are indeed found to treat each part of the subject from the histori-

* By W. H. Moreland, C.S.I., C.I.E., Macmillan & Co., Ltd., London.

cal point of view and unlike the old authors, the writers take proper care to trace economic development from stage to stage. But each book is coloured by the environments of the writer who usually takes his illustrations from his own country or generally from Western countries. Thus the ordinary English text books used in our schools have been found unsuitable because they are often times unintelligible to Indian pupils and special books have now been written for them. Similarly Western civilization being sharply distinguished from the civilization of the East, principles of Economics explained with reference to strange social conditions cannot be easily grasped in India. Though the main Economic laws are generally applicable to all countries and communities, they require to be qualified, it is well known, in the light of varying conditions. Thus the caste system in India is a unique institution and the influence it has had on the methods and organization of the production of wealth is a very interesting problem. What the Indian student, however meets with in the ordinary text book on Economics is the description of the system in vogue in England and America. The institutions dealt with are such as he is not familiar with and his study of the subject becomes lifeless and uninteresting. This defect was particularly serious in the works of the older Economists who employed the abstract method. As we have remarked above, recent writers are considerably free from this drawback, though even they cannot help being influenced by their surroundings. They write for a certain class of readers who must feel an interest in what they read and must be enabled to apply their knowledge to local or national problems.

As every one knows, the progress of instruction has to be from the known to the unknown, from the concrete to the abstract. Students in Indian colleges who are called upon to master the principles of Economics, are no doubt much advanced in their power of understanding things and they are also familiar, to a considerable extent, with western institutions.

But even they will welcome a book which expounds economic principles in a familiar way, appealing to their experience and inducing in them a living interest in the social and industrial phenomena they see around them. It will therefore be agreed that a text book on Economics written specially for the use of Indian students, deriving its illustrations from Indian life and evolving Economic laws out of Indian institutions and conditions is a great desideratum. We are glad that such a book has been written and on going through it, we have been convinced of its extreme usefulness. In his *Introduction to Economics for Indian students*, the book we are referring to, Mr. W. H. Moreland, C.S.I., C.I.E., has successfully attained the aim he has placed before himself, viz., 'to provide a statement of the leading ideas of Modern Economic Science in terms, that will be easily understood by Indian students.' The book is not designed to take the place of the larger text books and the classical writers: it is rather an introduction to them. Open any chapter of the book and you find it has a distinct Indian colouring about it. It may be capital, labour or rent, the author first speaks of conditions Indian and through them leads the reader to the principal Economic laws. He never fails to point out the distinction between Western institutions and those peculiar to India and the bearing of the latter upon the economic condition and prospects of this country. The Indian illustrations are not attached like pendants as might be supposed but the whole book is saturated with them. It is difficult to make typical extracts as Mr. Moreland writes every page or paragraph from the Indian point of view and the best way to appreciate the merits of the book is to read it for oneself. Professors and teachers also will derive great benefit from it, especially from the interesting method followed by the writer. We congratulate the author on the production of such a useful and stimulating book. It is bound to provoke thought and make one pursue for oneself a further study of Indian economic conditions.

The Agricultural World.

Effect of Smoke on Stock Farming.

In connection with the investigations carried on at Leeds University on the effect of atmospheric impurities on vegetation, an enquiry was (raise a little) addressed to the farmers of the district with regard to the effect of town smoke on stock farming. The results show that a polluted atmosphere is deleterious to both cattle and horses; young stock do not thrive, and adult stock require more food and greater care than similar animals in a less contaminated atmosphere, the ill effects being due partly to the direct respiration of the smoke-laden air, and partly to the effects of the smoke on the grass. Sheep are rarely seen in these districts, as, in addition to the difficulties of rearing and fattening stock, the depreciation in the market value of the animals as a result of the blackening of the wool by smoke has to be taken into account. The harmful effect of a smoky atmosphere seems to be cumulative from generation to generation—The *Journal of the Board of Agriculture*.

The Effect of Sugar Cane Crops on Other Crops.

Some interesting experiments have recently been conducted in Java on the effect of sugar cane crops on other crops grown on the same soil. Thirty-two plots were laid out in the same series, one series being planted with sugar cane and the other with earth nuts. The next year the whole of the plots were planted with maize. The result was that on the plots which had been planted with sugar cane the yield of maize was about 81 lbs., while on the series which had been planted with ground nuts the yield was only 54 lbs.

The next year the whole was planted with rice, the results being again in favour of the plots which had been planted in the first instance with sugar cane. It would appear from these experiments that the sugar cane takes less out of the soil than ground nuts. The constant growing of cane on the same soil without rota-

tion, is in itself evidence of the very small call which the sugar cane makes upon the soil. In some cane lands there have been uninterrupted crops for scores of years.

Tobacco Stalks as Fertiliser.

The following note appearing in the *Twenty-fifth Annual Report of the Massachusetts Agricultural Experiment Station* may be found interesting:—

As the tobacco plant is a heavy feeder and is cut before the plant has a chance of developing its seed, it is obvious that a large quantity of fertilizing elements must remain in the stalks. Analysis of the latter yielded the following results:—

Per cent. of dry matter.

	Stalks from which the leaves were stripped.	
	I. after curing.	II. in a green condition**
Nitrogen	3.25	1.10
Potash	4.95	1.00
Phosphoric acid	0.78	0.26

From statistics collected for Havana Seed Leaf: 8,666 plants are usually grown per acre, and the average weight of 10 stalks (stripped) is 6.58 lbs., that is 5702 lbs. per acre. Assuming that the stalks contain 52.94 per cent. of water, the residue of dry matter produced would be 2,684 lbs. per acre, containing the following amount of fertilizing material:—

	lbs. per acre
Nitrogen	87.23
Potash	132.85
Phosphoric acid	20.94

Rotation of Crops.

The main reason for growing a series of crops is, briefly, an economic one. It is well known,

*Havana Seed Leaf variety.—*Another variety.

writes the *Journal of the Board of Agriculture, London*, that crops differ both in their food requirements and in their capacity to extract and utilise the various materials that make plant food. Leguminous crops, as beans, are largely independent of soil nitrogen, being capable of utilising the nitrogen of the air. Turnips depend largely on a ready supply of phosphates. Again, some crops (e.g., barley) are shallow rooted, and are consequently dependent on an available supply of food near the surface. Others, again (e.g., all tap-rooted plants), send their roots deep into the soil and draw their food supply from a comparatively extended area. Furthermore, some (e.g., wheat) occupy the ground for a longer period than others, and consequently have more time in which to enlarge their root system and reach the reserves of plant food in the soil. The potato crop, on the other hand, is comparatively short-lived; it is, moreover, a shallow but gross feeder, thus necessitating an ample store of food material near the surface. It will be readily understood, therefore, that a suitable alternation of crops is necessary to the economic utilisation of the resources of the soil.

Transplantation of Paddy.

The annual report on the Sabour Farm in Bihar and Orissa for the season of 1912-13 contains some useful remarks on the experiment made to ascertain the least number of seedlings necessary to transplant in irrigated plots. In certain parts of India it is found that single seedlings or two seedlings per hole give a better outturn than the local system of six to eight seedlings per hole, irrespective of the time when the transplanting is made. The Bihar cultivator on the other hand holds that a maximum outturn is obtained by transplanting four seedlings per hole if the transplanting is made early in the season, and from six to eight seedlings per hole if the transplanting is made late; the reason given by the cultivator is that four seedlings transplanted in June or early July will tiller to the same extent as six or eight seedlings transplanted in August. The cultivator's opinion appears to be correct from experiments carried out on the Sabour Farm this sea-

son, as four seedlings gave the best results when the transplanting was made early in the season, while two seedlings gave a larger outturn than eight under these circumstances. But as the season progressed the greater number of seedlings per hole answered best. The same experiment was carried out in Village Sardho and the result agrees with that obtained on the Farm; but as the result of the experiment disagrees so definitely with that of other farms it will be repeated in coming season on land which has not been manured within the last three years.

Rice Growers' Congress.

The next Congress of Rice Growers will be held in Spain this year. The locality in which the Congress will meet, Valence, is the principal rice-producing region of that country. It will comprehend six sections which will discuss the following subjects:—

- (1) Study of the varieties of rice: their importation; means of preserving characters by selection.
- (2) Process of assimilation of fertilisers by rice: modern methods of manuring rice fields.
- (3) Cultivation, harvesting, and threshing: the most suitable machinery for these operations, especially for use on small holdings.
- (4) Influence of the improvement in methods of rice cultivation in Valence as a cause of the change in the number of draught animals in the province.
- (5) The most recent studies on the principal diseases of rice.
- (6) The rice trade: need of international regulations to guarantee the authenticity of description and origin.
- (7) Co-operation in production and consumption as applied to rice growing.

The holding of the Congress outside Italy is a departure from the rule which has hitherto prevailed and one which it is expected will result in the acquisition of new information and ideas.

Drainage and Green Manuring.

In the April number of the *Agricultural Journal of India*, Mr. Albert Howard, Imperial, Economic Botanist, and Mr. G. Z. C. Howard,

Personal Assistant to the Imperial Economic Botanist, contribute some interesting notes on drainage and green-manuring so far as the soils of Bihar are concerned. The authors summarise their conclusions thus:—

DRAINAGE.

The first condition of progress in any scheme of improvement in the crop-producing power of the soils of Bihar is a system of surface drainage by which each field deals with its own rainfall only. In this way all lands are benefited. On high lands, green manuring with *sanai* can be carried out with safety while the cultivation and crop-producing power of lower lands are materially increased. The Pusa system of drainage also prevents the denudation of the soil by rain-wash and the loss of fine particles which are now carried away every year from the high to the low-lying areas. The cost of this system is small and is well within the means of any Indigo estate or *Zamindar*.

GREEN MANURING.

The experiments with *sanai* as a green manure for tobacco in the Botanical Area at Pusa have led to very definite conclusion. Drainage is essential for success with green manure on the high lands. The *sanai* should be sown on the early rains in May and ploughed in as near July 15th as possible. Where large areas have to be dealt with the period from July 7th to 21st would be suitable. Any crop left on July 21st should be cut at once, left on the surface and ploughed in as soon as possible. To get the maximum benefit of the green crop the interval between the ploughing in of the *Sanai* and transplanting of the tobacco should be eight weeks. A longer or shorter time leads to loss.

Improvements in Indian Agriculture.

At the recent meeting of the Board of Agriculture at Coimbatore in December 1913, the subject of the introduction of improvements into Indian Agriculture by the various Agricultural Departments was referred to a Committee and the report of the committee as approved by the Board is now available. The present report is the fourth of its kind and brings up to date the

information contained in the former reports and indicates the new methods introduced during the last two years, which have been successful or which promise success. The most striking advance which has taken place during this period is that connected with the development of the co-operative movement. In this connection the Committee emphasises the fact that it is desirable that an Agricultural Department should work, if possible, through organised bodies of cultivators, and that one of the most suitable methods of organisation for its purposes is that of Co-operative Societies.

But, at the same time, it should not be forgotten that a Co-operative Society is a business concern, and cannot undertake agricultural propaganda for its own sake and the needed caution is expressed by the Committee that careful consultation with the Local Registrar of Co-operative Societies should precede any recommendation or even approval of action by a society which does not lead to profit to itself as a Co-operative body. Then after briefly reviewing the work of Agricultural associations, local demonstrations, and the influence exerted by agricultural journals published in the vernacular, the utility of educational courses, etc., the Committee feels exultant and concludes in these words:—

"Much progress has been made during the last two years in the adaptation of methods to local conditions, and in the introduction of co-operative organisations as means of doing the work of bringing improvements into the practice of cultivators. The Committee insist on the necessity of concentration, both with regard to areas and subjects, to what can be well covered with the available staff and the equal need of the close correlation between farm and research work and the practice of the cultivators.

Market Gardening and Pure Seeds.

Market Gardening in India is still in its infancy chiefly owing to the fact that such an industry can exist only by the side of towns and towns in India are yet few and far between. With the growth of population congregated in large centres, truck farming is soon bound to become a source of considerable profit. There

are certain conditions that must be complied with if market gardening is to be made to pay and one of these is the realisation of the fact that complete success in vegetable gardening is not possible without good seed. Expert gardeners have always exercised great care in procuring good seed, and attention is drawn to this subject in an article in the April issue of the *Queensland Agricultural Journal*. "If," as Henderson states in "Gardening for Profit," "there is one thing of paramount importance in vegetable gardening, it is—purity of seed." And he spoke from his experience of a long and active life as a commercial grower.

Good seed must meet five requirements:—(1) It must be true to name and not mixed. (2) The seed must produce the best type of the variety in question. The strain is by far the most important factor for consideration in obtaining seeds, although it has received comparatively little attention. (3) The seeds must be viable. That is, a high percentage should be able to grow under favourable conditions. (4) They must be free from weed seeds. (5) They must be free from impurities such as grit, sticks, or other foreign materials.

The life of seeds depends upon: (1) The kind of vegetables. (2) The conditions under which they are grown. (3) Thoroughness of curing. (4) Storage conditions. In some years seeds lose their vitality more rapidly than in others. The figures in the following table relative to the longevity of vegetable seeds are conservative, for it is not best to place too much reliance upon tables of this character; the only certain means of determining the vitality of seeds is to make germination tests.

Professor Watts supplies the following table showing the maximum ages of properly cured and stored vegetable seeds when they will be likely to germinate satisfactorily:—

	Years.		Years.
Bean	... 3	Egg plant	... 5
Beet	... 4	Lettuce	... 4
Cabbage	... 3	Onion	... 1
Carrot	... 1	Pea	... 3
Cauliflower	... 4	Radish	... 2
Celery	... 2	Tomato	... 5
Cucumber	... 5	Watermelon	... 5

The following table, showing the average percentages of germination of one year-old seed when planted under proper conditions, is given by Ralph L. Watts, Professor of Horticulture in the Pennsylvania State College, in his book on "Vegetable Gardening," 1912:—

	Per cent.		Per cent.
Bean	... 90	Egg Plant	... 75
Beet	... 140	Lettuce	... 85
Cabbage	... 90	Onion	... 80
Carrot	... 80	Pea	... 90
Cauliflower	... 80	Radish	... 90
Celery	... 60	Tomato	... 85
Cucumber	... 85	Watermelon	... 85

Pomegranate Cultivation.

The following description of pomegranate cultivation at Sangmuer in the Ahmednagar district is given by Mirza Niazbey in the March number of the *Poona Agricultural College Magazine*:—

Pomegranates require a porous soil containing much lime and generally farmers choose such soil for this purpose.

Sound and big pomegranates are selected for seeds. These fruits are kept longer on the plants than usual, and when they begin to rot they are plucked and allowed to rot still further. Afterwards the seeds are taken out, well mixed with ashes and dried in shade.

A plot, about two or three gunthas in area, near a well is ploughed deeply and then the plot is dug out deeply up to 1 foot. The soil is made fine by breaking clods and about a cartload of farmyard manure and household ashes is mixed with the soil. The seeds are then thinly broadcasted in *wafas* about one hundred feet square. The seed is covered and the plot is watered on the same day. The second watering is given on the sixth day and then further waterings are given once in ten or twelve days as required. No weeds are allowed to grow in the plot. When the seedlings become one year old they are transplanted to their permanent places. Some farmers transplant when the seedlings are one year and five or six months old while some when the seedlings are only six months old. Generally the seedlings are transplanted in the early part of the monsoon. The method is as follows:—

The field into which the seedlings are to be transplanted is twice ploughed and harrowed. Farmyard manure about ten to twelve cartloads is mixed with the soil. Ploughing and manuring is done to grow some crops subordinate to pomegranate. By a subordinate crop, the writer means, such a crop as can be grown without any harm to the pomegranate plants.

Then pits, about eighteen inches square and two feet deep are dug out. The distance between two pits cross wise as well as length-wise varies from twelve to fifteen feet. In one acre about two to three hundred plants can be grown in this way. Now-a-days some farmers plant at ten feet apart only.

The earth that is excavated from the pits is separated into two parts. The earth of the upper layer is kept aside from that of the lower one. The reason for doing so is that the upper layer is weathered well and the plant food is ready in it. This layer is put first in the pits at the time of planting. A basketful of farmyard manure is put over this layer and then the plant is fixed in the pit and the remaining earth of the lower layer, being mixed with household ashes is put over it. About a cartload of the ash is sufficient for one acre of land.

. Value of Manures.

Mr. J. C. Rushton, F. H. A. S., lecturing on manures at the Staffordshire Council Schools, at Seighford, England, said it was every good farmer's laudable ambition to get as much as possible out of the land without decreasing the fertility of the soil. A farmer should be quite as much a business man as was an ironmaster or potter. His raw materials were the soil and the atmosphere, and from these he turned out beef, mutton, etc., for the markets. The lecturer pointed out that manures were used to put back into the soil what had been taken out by the crops. The man who kept most stock got the best results. Plants required food in a soluble form, and those foods were nitrogen, phosphates and potash. He would not call lime a food, but it was indispensable to a farmer. He advocated trying it on mossy, or sour, land, and one soon saw the result in the change

and quality of the herbage. Lime acted in three ways—mechanically, chemically, and bacterially. It opened out the soil, admitted air, and drained and made the soil easier to work. Chemically it acted on nitrogenous matter, setting free the nitrogen; also on phosphates and potash. Bacterially it hastened the action of the bacteria in the soil, which live on organic matter, and change it to plant food. Speaking of farmyard manure, he said many people regarded it as a waste product. Well, so was basic slag a waste product in the manufacture of steel, which the late Sir J. B. Lawes found to act as a useful fertiliser. Sulphate of ammonia was once a waste product in the manufacture of gas, but now had to play a useful part as a manure.

Farmyard manure depended on three chief conditions:—(1) The class of animals, (2) food, and (3) preservation. The manure of a calf was less valuable than that of a five-year old cow. The calf used carbonate of lime to form bone and muscle, and hair made demands on nitrogen, etc. As regards the preservation of farmyard manure, he urged the erection of sheds, to protect manure from the rain, which washed away the best part. (Also the plentiful use of straw litter, to soak up the valuable liquid manure.) He advocated the carting at once of farmyard manure to pasture land. Then there would be no waste.

Factors Influencing Mango Crops.

Mr. A. C. Hartless, F. R. H. S., Superintendent of the Government Botanical Gardens at Saharanpur, contributes to the current number of the *Agricultural Journal of India* a useful article on the subject of mango crops, and some factors influencing them. The importance of the crop to India is, he says, such as to warrant investigation into its periodicity. Unfortunately no reliable statistics for the whole of India are available to illustrate this point. The records maintained in the Government gardens at Lucknow, Nagpur and Saharanpur, which are summarised in the article, go to show that the malignant influences which affect the mango crop are:—(1) blight (due to insects), (2) frost, (3) heat and dry hot winds at the time of

flowering, (4) Cloudy weather, excessive humidity, rain, and storms during the flowering period and (5) exhaustion following a heavy crop. Of the five causes of failure, four are external and one may be called internal or inherent to the plant. Of the four external agencies three are climatic, and therefore practically beyond control, but the last is open to be controlled. The observations of Mr. Hartless on this last factor permit of quotation:—

EXHAUSTION FOLLOWING A HEAVY CROP.

The above is one of the causes given by more than one recorder. We may really call it the law of alternating fruit years. This is so well recognized amongst the cultivators, that it is always taken into consideration when selling the crop, which is usually done before the mango flowers. If this law was the only factor influencing the mango crop, we would no doubt have good years and fair years, in regular alternative succession. This law of alternation is recognized in fruit culture generally, especially in apples and pears.

Bailey, in his book, "The Principles of Pruning," lays down a law that—"Fruit-bearing is determined more by the habitual performance and condition of the plant than by the kind or extent of pruning. It is associated with a quiescent rather than with a stimulated or fitful state, and the habit is more amenable to treatment when the plant is young than when it is old." Under normal conditions it is natural that plants should fruit equally every year. Anything however that disturbs the ordinary equilibrium of the plant's life, would react on the fruit-bearing habit.

One important factor in this direction is overbearing. Bailey says:—"Overbearing is itself a disturbance of equilibrium, and is almost necessarily followed by a reaction of underbearing. This corollary has such an important bearing on practice that it should receive careful attention. One extreme follows another, and the oftener these extremes occur the greater is the likelihood that they will become an unremediable or fixed habit of the plant. It is interesting to note that the habit of alternate bearing is most pronounced in plants of long life, sug-

gesting that the habit is largely, if not wholly, the result of the frequent occurrences of overbearing while the plant was young.

Goff, in an article in *American Gardening* on the "Origin and Development of the Apple Blossom," gives some interesting suggestions which may equally be applied to mangoes. He says that leaf and flower buds are in a measure interchangeable. By proper pruning a flower bud may be converted into a leaf bud, and by ringing, a leaf bud may become a flower bud. Flower buds may be many years old before they form flowers. Any restriction of the movement of prepared food in the branches, such as is caused by ringing, or by a wrinkling of the bark formed by the union of the fruit spur with the branch which supports it, tends to the formation of flower buds. Dry weather is also conducive to the formation of flower buds, since during such a period evaporation through the leaves is rapid and the sap becomes concentrated and rich in prepared food. Flower buds are then formed in portions of the tree where there may be no restrictions of the movement of the sap, as at the end of young shoots, etc. Whenever the water-supply is increased the tendency is to wood growth, and the formation of leaf buds. A decrease in water-supply tends to make flower buds. A normal growth is accompanied by a normal formation of flowers. When the fruit spurs of healthy trees push into growth or sap-sprouts start freely from the old wood, growth is abnormal and fruit production is postponed. Investigations show that as active wood and leaf growth ceases, the formation of flower buds begins and may continue until cold weather sets in. During very favourable seasons for the formation of flowers all the 1-year, 2-year 3-year old buds, many older buds, and some buds formed during the year, may form embryo flowers. This explains why an excessive fruit crop is always followed by a scanty one.

The above conclusions drawn from investigations on the apple apply equally to the mango. The mango shows great irregularity in the differentiation of flower and leaf buds. In some cases, foliage leaves were intermingled

with the flower branches of the inflorescence; in others, foliage leaves had developed at the end or apex of the inflorescence. In the latter case although fruit may set, yet it usually does not develop. It would appear that weather conditions have a predominating influence, especially at about the end of the monsoon. The finest year for mangoes followed an early closing of the monsoon. There is therefore some reason in the saying that what is good for a bountiful mango crop is not good for agriculture generally. In the case of trees that are amenable to pruning, the alternating effect of an exceptional year can be controlled to some degree, by this practice, but in the case of an evergreen like the mango, this is not feasible. The only alternative therefore is the thinning of the crop. What takes place in the mango is similar to that of the apple only that a terminal shoot takes the place of the spur of the apple. It is simply a question of conservation of the energies of the tree. The demands upon a shoot when bearing a fruit are so great that another fruit bud cannot develop the same year. What follows is, that, immediately after fruiting, some short shoots start from below the fruiting stalk. These are generally in a cluster around the end of the fruiting shoot. They develop more or less, according to the season, during the same year as the shoot flowered. The succeeding year, these shoots, or some of them, develop further and continue growing until checked by the closing of the rains. If dry warm weather follows, these shoots ripen or mature, and flower buds form. If, however, moist weather continues until the cold weather arrives, these shoots still continue to grow, and produce no flower buds; and it is this latter contingency that is to blame for some conspicuous "failure" years. This particular contingency is probably beyond our control, but the effects of the law of alternative fruiting years, which no doubt influences all the disturbing factors discussed, can be modified.

1. Thinning the crop is the most obvious method. But to be effective all the fruit—or better, the blossoms from selected shoots—must be removed. This would induce such shoots

to start at once into growth with a possible chance of being developed and matured that year.

2. Thinning out the shoots of the growing ear would throw more strength into those left.

3. Some branches remain non-fruiting for some years. It is possible that a judicious heading in of some of these yearly, would induce stronger growth to take place, followed by fruiting the following year. The mango is, as we know, not amenable to much cutting, but can stand a little, and this may be taken advantage of in the way suggested.

4. In the case of large orchards, some trees may be altogether deprived of their flowers. This would induce them to alter their fruiting year; so as to have some trees bearing every year.

5. Lastly, as the whole question is chiefly that of food supply, every endeavour should be made to keep the trees in as healthy a condition as possible. As a rule the mango, after it once begins to bear, gets little or no attention beyond watering. Much has yet to be learnt about providing additional food materials. There is no doubt that good tillage and some judicious manuring would contribute largely towards enabling the exhausted trees to recoup themselves annually instead of biennially, as is now the case. But it should be remembered that although such means as above suggested may change or help to change the alternating fruiting year, yet it is also true that the trees tend to revert to their accustomed habit, and it is probable that this reversion is the more rapid and the more complete the older the tree, and the more indifferent the general treatment of it.

Necessity of Artificial Manure.

In South Travancore the ryots have begun to interest themselves in manures other than their time-honoured cattle manure and green leaves, probably on account of the scarcity of these manures and also as a result of the demonstrations and experiments carried out by the Agricultural Department. We learn that several applications were received by the Department during the year 1912-13 for the supply of bone

meal, saltpetre, nitrolin and other artificial manures, and though there was no provision for stocking these manures and selling them to the ryots a move was made in this direction by ordering the manures on credit and supplying them to the applicants. In this manner 2,800 lbs. of bone-meal and 750 lbs. of saltpetre were supplied to the ryots of South Travancore during the year.

As a larger demand for these manures are anticipated in the near future Government have sanctioned the establishment of a manure depot at Nagercoil.

Preserving eggs in China.

Three ways of preserving ducks' eggs common in the provinces of Tschekiang and Kiangssu are described :—

One form (Pidan) is prepared by coating the eggs with a mixture of red clay, lime, salt, and water, and allowing them to stand 5 or 6 months. The whites are then coagulated into a brown, transparent, gelatinous mass containing tyrosin-like crystals. The yolks are dark green and have the consistency of thick soup. The eggs are eaten with or without soy and sugar. The second form (Hueidan) is obtained by leaving the eggs for 3 weeks in a mixture of red clay, salt, and water. The yolks become reddish yellow and the eggs are eaten cooked with soy and sugar. The third form (Dsaudan) is simply left for 5 or 6 months in a tightly closed dish.

The changes in the first 2 forms are popularly ascribed to salt, but in the opinion of some they are due to micro-organisms.

Ant Repellents.

The *Gardener's Chronicle* reports that dry corrosive sublimate may be used to prevent ants from making their way on to the tables, chairs, shelves, and other furniture of dwelling-houses. The method of use is to soak cotton tape an inch wide in a saturated solution of corrosive sublimate, allow it to dry, and then fasten it around a table-leg or on the edge of a bookshelf, etc. If the tape remains dry, it serves for months as a repellent to ant invasions.

An Inch of Rainfall.

An inch of rainfall is the equivalent of 603

barrels of 45 gallons each, to the acre. This amount of water weighs over one hundred and thirteen tons. Think of hauling it to the farms in wagons holding a ton each. That seemingly light air and clouds are capable of handling this enormous amount of water is one of the marvels of meteorology. One inch of rain is not such a heavy rainfall either.—*Farm and Fireside.*

Cambodia Cotton.

(1) Do not grow Cambodia cotton on land which you cannot irrigate.

(2) Do not keep the crop in the land after the ordinary picking season is over. It does not pay and it harbours insect-pests which spoil your cotton crops the next year.

(3) It pays to grow Cambodia cotton as an absolutely pure crop, even though the dealers may themselves mix it after they have ginned it.

Use of Soil Analysis.

A soil analysis shows whether or not the soil contains a sufficiency of plant food to satisfy the requirements of the crops grown on it. The analyst is thus enabled to give advice as to the most efficient and most economical method of manuring that soil. He is also able to detect the presence of harmful substances in a soil.

Paddy.

Manurial experiments with paddy, with bone meal added to green manure have given the Mysore Agricultural Department very satisfactory results. On the other hand, the addition of small quantities of lime or castor cake to the green manure have yielded no appreciable results. In fact, the addition of lime has led to a decrease in yield.

An Agricultural Car in the Philippines.

The Bureau of Agriculture in the Philippines has adopted the plan of sending a car from place to place over a railway system, specially fitted out for exhibitions, demonstrations and lectures on agricultural subjects.

The Potato.

The potato requires a complete plant food containing phosphoric acid, potash, and nitrogen. The mixture may be spread on the surface and dug in or applied in the drills at the time of planting.

The Co-operative World.

Co-operative Credit in West Indies.

No. 1 of Vol. XIV of the *West India Bulletin* describes the efforts made in the West Indian Islands to afford assistance to peasant enterprises and to encourage self-help and thrift. The conclusion reads :—

We have now sketched in outline, the chief efforts that have been made in the West Indies and British Guiana to provide credit facilities for the peasant proprietor from 1899 to the end of 1913. We have seen that the agitation began with appeals for Raiffeisen banks, first in Trinidad, then in British Guiana and Jamaica. But the agitation was ineffective as regards the Raiffeisen system of co-operative credit. In fact, little has been done to introduce a credit system of any kind for the benefit of the small holder except in Jamaica, and here it was only in the face of natural disasters and with copious financial fostering on the part of the Government that anything has been actually done. It must be admitted, however, that in regard to St. Vincent, prospects of development at the present time are favourable. In Trinidad, the records merely show a rotation of motions, committees and reports, and one can only conclude that the social and economic conditions obtaining in this Colony present almost insuperable difficulties. Yet the fact remains that in Trinidad, the Windward Islands, and British Guiana to-day, the need for co-operative banks is greater than ever it was. A big economic problem, therefore, urgently awaits solution.

Co-operation in Oxford.

A new co-operative stores has just been opened in Oxford which are being "run" by members of the Oxford University only. The Oxford tradesmen are naturally opposing them. At present the stores are doing a brisk trade, but that is only to be expected—novelties always attract. Whether the stores will, as it is hoped, induce a spirit of co-operation into the colleges,

time alone will show. Captain A. K. Slessor, Steward of Christ Church, who is all against this new scheme, expresses himself satisfied with the Oxford tradesmen and remarks :—"Men do not come to Oxford to learn to be shopkeepers." Very varied opinions obtain among the undergraduates. Some think that the bulk of undergraduates would not desert their regular tradesmen; if they paid cash, they could get articles from them for the same price as from the stores. There is much virtue in an "if," and this is perhaps the chief hope of the Oxford tradesmen. Others, however, are hopeful of the co-operative system, and dream dreams of what they will get back at the end of term. Whatever be the result of this new venture, it is a significant fact, says the *Commonweal*, that in possibly the most conservative University in the world, such a modern movement should have gained a footing.

Scavengers' and Sweepers' Society.

An instance of what self-help and Co-operation can achieve even among the poorest and most despised was mentioned at the second session of the Madras Co-operative Conference held recently. Among the reports read of some typical co-operative societies started last year was one regarding the Scavengers' and Sweepers' Society of Salem. The scavengers and sweepers, lamplighters and drainflushers of the Salem Municipality exceed 300 in number and belong to what are called the 'untouchable' classes of Pariahs, Pallans and so on. Their material condition is wretched beyond degree. It appears from the report that there were two Mohamedan money-lenders who had these unfortunate people hopelessly in their clutches and their methods were such as to make it absolutely impossible for these people ever to extricate themselves from their hands. The rate of interest was as high as 150 per cent. and the accounts were not always honestly kept. The aggregate indebtedness of these people came up to Rs. 4,500 whereas the borrowers

asserted that only Rs. 1,450 was owing to the lenders. But, by tact and argument, these lenders were induced to accept Rs. 1,450 only in full discharge of their dues and the society was registered and enabled to start work in January 1913. There were, to begin with, only 260 members but the number increased in the matter of recovery as proved by the fact that almost the whole amount lent by the Salem District Urban Bank was repaid within the single year of its working. More than this, the accumulated compulsory saving, i.e., share capital of the Society, already amounts to Rs. 750.

Agricultural Co-operation.

In the April number of the *Indian Agricultural World*, the Hon'ble Dewan Bahadur L. D. Swamikannu Pillai, Registrar of Co-operative Societies, Madras, writing on the above subject emphasises the need of co-operation in agriculture. He remarks :—

"To the agriculturist with slender means and small capital, co-operation alone can provide, as far as human foresight can provide the same, insurance against all manner of losses. To combine with his brother agriculturists, to take counsel and concert measures with them against common risks and common uncertainties is the best means for him to minimise loss. On the side of gain, it might seem at first sight that each man knows best his own strength in resources and the means of turning them to the best account: yet, it is a matter of experience that the combination of small capital, employed in common and yielding returns to be shared by all the partners, in proportion to the capital or labour contributed by each, is more likely to ensure the profit of the community than the individual effort of each struggling against the competition of all the others."

He notes with deep concern the self-satisfaction that seems to have come over the existing societies sapping their vitality for work in further direction. For, he says :—

"The members of existing societies, as well as the public, have not yet acquired sufficient confidence in the co-operative investment to deposit in such societies all or any considerable

part of their savings; much less have they learnt to divert into this channel either hoarded wealth or capital, less securely invested elsewhere. Unless the members' own capital flows freely into the societies, the results of co-operative combination under production, distribution and industry, all of which require the employment of the members' own resources, cannot be looked for in the near future. The lessons of co-operation are much more stern and difficult to acquire than is imagined by our self-satisfied societies."

He points out the 'stern duty' that lies before co-operators and urges that it is "the duty of every one interested in the movement to inculcate upon all agriculturists, whether members of societies or strangers thereto, the really useful and imperative lesson of co-operation, without which neither co-operative progress nor agricultural progress can be achieved."

Grain Depots.

The following Press note issued by the Bombay Government will be found of interest :—

For ten years past Government have been experimenting with a species of grain-banks or depots in the Thana District. The immediate object of the depots was to help cultivators (1) to sell their grain for fair prices in January, and (2) to get advances of grain in June in order to provide themselves with a store of food for the rains. This help was to be given near the people's homes, in places where savkars were few and rapacious, and it was hoped that the competition of the grain stores might ultimately make the savkars less exacting in their demands. A very simple procedure was devised for the receipt and distribution of grain under the personal supervision of the mamlatdar. The buying and selling rates were to be a little more favourable to the rayat than the current market rates, but it was believed that the depots could be run at a small profit because they would take some advantage of the normal hot-weather rise in prices, though not to such an extent as savkars. The ultimate object of the experiment

was to hand over the stores as working concerns to co-operative management.

Accordingly a number of grain-depots were opened in various parts of the district with the aid of a special advance of Rs. 2,400 made by Government. The results of the experiment have recently been reviewed, and disclose the following facts.

In the first place, the high prices ruling during the past few years have rendered the depots of less utility than they might have been under other circumstances. The rayat has had to sell less grain than formerly to obtain funds and in consequence has more grain for his own needs, and less necessity to resort to the stores.

Secondly, the stores suffer from a certain unpopularity because the relief they afford has often been only partial, and because savkars will satisfy their demands in full all the year round, whereas the stores advance grain only once a year.

Practical difficulties were also met with in the management of the stores. The smaller amounts of grain offered for sale at harvest time, and the ability of the rayats to hold up their surplus stock while waiting for a rise in prices, forced the stores in some places to purchase grain from merchants instead of from cultivators. Then again in the absence of any accommodation for grain stores, and of reliable men to place in charge of them, the idea of establishing depots at places far from a savkar's head-quarters had in some cases to be abandoned.

Government have decided that although the depots have hitherto failed in their object in the majority of cases, it is yet desirable to continue the experiment in areas where it has been most successful, if only because its sudden discontinuance might prove a blow to such rayats as have participated in it. Depots are accordingly to be retained or opened at suitable places in the Shahapur and Dahanu Talukas and the Mokhada and Umbargaon mahals. At the same time Government would like to point out to gentlemen in the Thana district who are interested in the co-operative movement, that their energies might most profitably be devoted to

aiding in the management of these depots and in their ultimate conversion into grain societies or grain-banks of the approved co-operative model. To obtain this end the education of the thriftless classes in the value of co-operation is of primary importance.

Agricultural Co-operation and Credit.

Sir Sydney Oliver contributes an interesting and illuminating article on "Agricultural Co-operation and Credit" to a recent number of the *Contemporary Review*. The Agricultural Co-operative Society, generally begins with arrangements for procuring supplies of new articles of utility. It may then go on to arrangements for procuring all kinds of supplies, including tools and machines, which are required day by day in agriculture, and ultimately it may concern itself with arrangements for procuring the domestic requisites of the ordinary co-operative store. If well managed, the Agricultural Co-operative Society confers great benefits on its members, but even in its simplest form it demands a great amount of loyalty between the members. It is a valuable moral solvent of the individualism and conservatism of the small agriculturist. It is advantageous to him in the capacity of producer and seller no less than in that of purchaser. Dealing with that branch of co-operation which concerns itself with agricultural credit, Sir Sydney Oliver calls attention to the fact that while in Germany and other countries on the continent of Europe there has been a great development of Co-operative Banking there has been very little in England. This, he says, is due to the fact that in comparison with the general body of agriculturists the number of those to whom co-operative banking is helpful is much smaller in England than in these other countries. He makes reference to the development of Co-operative credit banking which has recently taken place in India and in Ireland, and gives a short account of recent efforts to establish Co-operative Banking in Jamaica. Although Jamaica is a land of peasant-proprietors, it has been very slow to appreciate the advantages of Co-operative Banking; but a considerable impetus to the introduction of the system has been given by

the destruction of property caused by the hurricanes of 1903 and 1912.

Sir Sydney Oliver emphasises the fact that Co-operative Banking must always be dependent for its success on the unpaid or partly unpaid work of those who take it up. Its foundation is the fact that the security of the cultivator is good security. In conclusion he hails Co-operation as a good civil and social education.

Co-operation in Burma.

The report on the working of the Co-operative Societies Act in Burma for the year ended the 30th June is the record of another successful year of substantial progress on sound lines. The number of Societies of all kinds rose by 44 per cent. from 804 to 1,155 a similar increase brought the total of their members up to 31,097, their working capital advanced 45 per cent. to 53 lakhs of rupees, while their expenditure just fell short of half a lakh, or less than 1 per cent. of the working capital. The increase was not the result of vigorous propaganda on the part of the Registrar and his Assistants: on the contrary their efforts were rightly devoted to the improvement of existing Societies and the new Societies of the year were the offspring of the Unions. The growth of Unions in numbers and efficiency is the most gratifying feature of the report. The Registrar remarks that "we have deliberately gone as slowly as possible in the formation of new Credit Societies so as to have time to 'polish' existing Societies, to inculcate the true principles of repayment of loans, and to develop other desirable forms of Co-operation. I say "as slowly as possible" because it no longer rests entirely with the Registrars to call the pace, Unions have been established as propagandist bodies and where they act up to their responsibilities it is unreasonable and unsound not to accept their proposals for new Societies. We have therefore extended where they have cleared the way: we have, however, refrained from suggestion in new areas."

This cautious step is extremely well advised. In this connection the Burma Registrar notes:—

The enemies of Co-operation are many, and

now that, contrary to their expectations, it is establishing itself, they will not fail by suggestion and falsehood to foster ill-will against it.

Economic revolutions are not effected without some one being made to suffer. In this case the sufferers will be such parasites of trade and finance as are not contributing to the economic advantage of the province, and who in many cases are enjoying influence and position to which they have no rightful claim.

On the other hand there should exist a reasonable balance between the towns and traders on the one side and agriculturists on the other and accordingly it is sound and fair policy to develop Co-operation in the town no less than in the country. It is with this view that the problem of town banks is taken up in Burma. The traders, when a proper balance has been established will, of course, benefit by the growing prosperity of agriculturists.

Co-operation can do a great deal when the people concerned have come to look upon it as their friend. We read in the report that in Burma understanding and appreciation of Co-operative methods are undoubtedly spreading among the artisans and agriculturists of the province for whom they are meant. Of the other classes who stand to feel its effects the money lenders are, where they come in contact with it, adapting themselves to new conditions and the remainder have hardly realized the possibility of change in the existing state of affairs. It is often evident that the uneducated cultivator has a better idea of economic requirements and potentialities than his well wisher who declaims his jejune views to all and sundry. The public at large is sympathetic or apathetic: it cannot be said to be antagonistic.

Co-operative Dairies.

In its special Co-operative and Agricultural Supplement, the *Commonweal* writes that the advantages of Co-operative dairies are not well known in this country and points out the following technical and economic advantages of Co-operation among milkmen or the farmers.

First, the cost of purchase and of working dairy machinery and the inadequate employ-

ment that a single farmer is in a position to give it, prevents him from procuring it; and he is not therefore in a position to obtain the best results from his raw material. By combination, there is a saving in all these means of production. The relative cost of buildings, of necessary room to handle the dairy produce, of machinery and implements, of fuel and other requisite materials is less when a hundred or two hundred farmers co-operate with each other.

Secondly, there is the saving of enormous time, which is of no little importance to a poor milkman or farmer. As soon as the milk is sent to the dairy, the farmer or his wife is perfectly free from any further trouble. The rest of the work is done by the dairy officials. In this way time is saved not only in the making of the products of milk, but even in selling it. The journey to the market-place, with the attendant expenses, is no small factor in the economic life of a farmer.

Thirdly, the farmer gets better returns for his milk by being a member of the dairy. The dairy with a large production and with officials aware of the latest fluctuations in the different markets is placed in an immeasurably stronger position than the farmer in disposing of his products. The higher returns thus secured are generally further augmented by small economies. The milk available from any farmer is not lost, however small the quantity, and the knowledge that it has an immediate money value at the dairy saves not a little of waste.

Fourthly, dairy-made milk products are generally superior to those made in the farmer's house. This is a gain both to the farmer and the consumer. To the farmer, it is an advantage, because his products are more easily sold and fetch a better price. One can easily understand why dairy-made milk products should be superior. They are always produced under better conditions. The staff of a dairy is composed of skilled hands with all necessary appliances and materials and the proper environment, i.e., cleanliness, good air, and measures for preservation, are secured. Small farmers have a score of other things to look to and

have often to preserve their small store of milk for days so that there might be a sufficient quantity for any emergency.

Fifthly, the advantages from a dairy are unique to a small farmer inasmuch as it is a constant source of income all the year round. Other branches of his business, whether it be crop-raising, poultry-breeding and market-gardening, bring him money only during certain periods of the year, but the supply of milk is more or less constant to him.

Lastly, there is the salutary influence which dairies wield on the breeding and maintenance of live stock. The *Commonweal* remarks that considering the scarcity of cattle in India, this advantage alone is enough to induce a co-operator to organise dairies.

The Co-Operative Store.

The Montclair Co-operative Store, at Montclair, N. J. U. S. A. has issued a little folder entitled, "Why a Co-operative Store?" which gives briefly the *raison d'être* of the enterprise.

Answering the question in the title, "Why a Co-operative store?" the folder says:—

To get best obtainable goods, with purity, cleanliness and quality assured, being bought wholly in the interest of the consumer.

To get exact measure, with frank information as to grade and quality.

To get lowest cost in any way possible, savings being turned back to members in the form of dividends on purchases.

To get control of sanitary handling and healthful quality.

To get equity in all dealings in the spirit of co-operation.

Proceeding, the folder tells what a Co-operative store can do when developed. For example: "It can insure pure foods, high quality and correct measure. How? Being owned and run by consumers to supply their own tables with the best, the Co-operative store offers no incentive to degrade quality or shorten measure. Its buyer is the salaried purchasing agent of the consumer member."

"Members buy at lowest possible cost. How? The members of the Co-operative store buy through the manager at lowest cost wholesale

prices, and pay in addition to this wholesale price only the cost of handling, which in itself is minimized as far as is compatible with the convenience of members. All retail profits and superfluous expense are avoided."

"It can simplify marketing and make buying more satisfactory. How? Quality, purity, cleanliness and price need not worry the housewife when the Co-operative plan is so developed that the store manager and staff know how to serve her interests. The Co-operative store eliminates the necessity of shopping and haggling."

THE PEOPLE'S STORE.

"The Co-operative store represents the *right idea*, in that it is a store of, for and by the people, to solve the people's problems and insure absolute justice. It makes for manhood and the better distribution of wealth. And it works."

Here are the rules of the Montclair Co-operative Store :-

"Goods sold only for cash, at actual retail prices."

"Profits, i.e., all savings, turned back to members as a dividend on purchases."

"Delivery by discount system. All members get 5 per cent. discount at end of each quarter, less cost of their delivery figured by the call, at cost."

"Deliveries on limited schedule to reduce the cost to members."

"Goods in which harmful coloring matter and preservatives are used are not sold."

"Inspection of bakeries and food establishments as far as practicable."

The above indicates what a Co-operative Store can do when developed.

Indebtedness of Members of Co-operative Societies.

We give below the full text of a letter which has been circulated by the Government of India among the Local Governments calling for their opinion on the suggestions contained therein :-

I am directed to invite your attention to the recommendations made by the Seventh Conference of Registrars in regard to the necessity for a simple procedure for ascertaining the debt

of members or prospective members of co-operative societies (Subject No. VII).

2. It will be observed that the Conference was of opinion that some procedure corresponding to the Bundelkhand Encumbered Estates' Act for ascertaining outstanding debts seemed to be worthy of consideration by the Government of India, it being understood that the society in advertising for a list of the debts of its members did not commit itself to the payment of any or all of them.

The Government of India have given their careful consideration to the recommendations of the Conference but do not consider that the information at present before them is such as would justify any definite conclusion as to the necessity for legislation in the direction contemplated by the Conference. Whilst they recognise the advantages of placing societies in a position to ascertain the outstanding debts of their members and prospective members, they are not certain if the object in view could not be secured without legislation. There appears to be nothing to prevent societies from making steps to advertise the fact that they are about to investigate claims of their members or prospective members. The Government of India have no information as to whether this procedure is at present carried out to any extent if at all, or as to the reasons why it is considered insufficient. I am accordingly to ask that, with the

permission of the ^{Governor in Council} ~~Lieutenant-Governor in Council~~ ^{Lieutenant-Governor}

this aspect of the question may be carefully examined and that the Government of India may be favoured with the views of the Local Government on the subject.

3. If the desirability of legislation is eventually established, the Government of India consider that it should be on as simple lines as possible and would suggest that societies should only be given legal powers to ascertain the outstanding debts of their members and prospective members and not the further powers, which are enjoyed by Government itself through its officials under the various Encumbered Estates and Court of Wards Acts,

such as the power to call for the production of books and papers, to adjudicate on claims, to invalidate debts incurred subsequent to the publication of the notice calling for claims; to stay proceedings in Court or by way of execution, and so on. Nor, as at present advised, do the Government of India consider that societies should be given any legislative assistance in their investigations into the validity of claims or in their attempts to effect a composition of debts. Legislation of the character indicated would therefore follow the provisions of the United Provinces and Madras Court of Wards Acts rather than those of the Bundelkhand Encumbered Estates' Act as recommended by the Conference. Its general outlines may be sketched briefly as follows :-

(a) Powers to ascertain debts should be confined to societies of which the object is the creation of funds to be lent to their members, and no society should be given such powers unless it was authorised in writing to exercise them by the Registrar of Co-operative Societies.

(b) A society should be authorised to issue a notice under the signature of not less than two members of its committee (cf. section 48 (2) (g) of the Co-operative Societies, Act, II of 1912) to the effect that a member or an applicant for membership is believed to be in debt to persons other than the society and that all persons having pecuniary claims against him should produce those claims within a period of three months by notice in writing to a specified member or members of the committee, giving particulars regarding the amount of the claim, the causes for which it is due and the date on which it was incurred. A copy of the notice should at the same time be forwarded to the Registrar for record with a report that it has been duly published.

(c) The notice should be published for public information in such a manner as the Registrar may by special or general order direct. Publication in the village in which the society has its head-quarters and in the

neighbouring villages would probably be sufficient. Publication in the District or Provincial Gazettes does not appear suitable.

(d) In case of any claim not presented by the due date, no interest may be awarded by any Court for the period subsequent to the expiry of the date prescribed in the notice. Provided that :-

The Court shall have power to allow interest in such cases if sufficient cause is shown for failure to present the claim by the due date. The fact of the claimant having been at the time a minor or insane would be considered sufficient cause.

4. In this connexion I am to point out that proposals for preferential treatment must be supported by strong administrative reasons, and I am therefore to ask that the question may receive very careful consideration from this point of view and that the Government of India may be informed whether the Local Government considers that the circumstances justify action on the lines proposed and if so, whether it is in favour of the proposals above made as they stand or have any modifications to suggest.

Savings Boxes.

The Upper Burma Central Co-operative Bank in Mandalay has introduced a novel feature in its savings department. It would appear that the Bank is issuing, for the benefit of its depositors, boxes sealed with the Bank's seal, in which to place their savings. The boxes are brought into the Bank periodically, once a month at least, and five per cent. interest is allowed on minimum balances at the end of a month, exceeding one Rupee. This experiment is no doubt a novel venture aiming at encouraging thrift among the Burmans. It is to be hoped that the experiment will prove successful. The rate of five per cent. which the Mandalay Bank allots must be considered a generous one. So also, the provision that

depositors can withdraw sums of Rs. 20 and under without notice.

Agricultural Finance.

The financing of agriculture is altogether different from relieving agricultural indebtedness, or to be more correct, in relieving the indebtedness of agriculturists, says the *Wednesday Review*. The influence of the one is positive, while that of the other is merely negative. An agriculturist who obtains a loan from a neighbouring co-operative credit society and discharges his petty liabilities, may go to his work of cultivation with a light heart; but the co-operative society has not helped in stimulating agriculture and made the land yield more. It is only when syndicates are formed to bring more land under cultivation and enable individual farmers to go in for more up to date methods of cultivation, that the co-operative movement can be said to enter upon the constructive stage of its work.

Co-operative Housing.

The prospectus has been issued of the Bombay Co-operative Housing Association. Briefly stated, the objects of the Association are to collect information about co-operative housing; to promote its application in practice; to engage in propaganda work by means of lectures; conferences; to move Government and other public bodies to agree to give to the housing societies such facilities as are given in other parts of the world; and to draw up schemes for establishing housing societies; to start or assist others in starting such societies under the auspices of the Association and to supply advice and render help to any other societies that may be formed independently of the Association. It is proposed to arrange a series of public lectures on co-operative housing and kindred subjects.

Co-operation in India.

In an article written to the *Commonweal*, Mr. D. E. Wacha expresses the opinion that Co-operative Societies are a sickly exotic, unsuited to India and must ultimately perish. He tells us that he has taken this pessimistic turn "having regard to the economic condition of our poor

agriculturists, their almost hopeless indebtedness, the vexatious and burdensome system of land revenue assessments and settlements, the precious little effort made hitherto by the Government in face of many influential representations and of practical projects to ameliorate the miserable condition of the ryot."

Co-operative Success in India.

In a brief review of the co-operative credit system in India appearing in the latest number of the *West India Bulletin*, the success of the movement is ascribed to:—

- (1) The existence of a Central Government to lay down the general principles, and local Governments to carry them into effect in detail,
- (2) The individual organization and missionary work of the Registrars.
- (3) Government advances.
- (4) The regard shown for human nature, for customs and local circumstances.
- (5) 'Honorary' assistance both in regard to organization and semi-philanthropy.

Co-operative Societies in Ireland.

There are now in Ireland close on 1,000 co-operative societies, with an aggregate turnover of £3,300,000, and more than 100,000 farmers are united in this great network of organization.

Grain Banks.

The Government of Madras note with interest the existence of three grain banks, a class of institution which would prove of great use and it is possible that a combination of the ordinary credit society with a grain bank would be well adapted to the needs of this Presidency.

Co-operation for the Army.

The *Pioneer* learns that the co-operative credit system is spreading among regiments of the Indian Army, and especially among the cavalry. The men find in many instances that they save two or three rupees monthly by the operations of this system and that they can avoid running into debt which may cripple them for years. The time, then, would seem to have arrived for full official recognition of the movement at Army Head-quarters.

The Industrial World.

Commercial Uses of Hydrogen.

At a recent meeting of the Pharmaceutical Society, held in London, Professor A. W. Crossley read a paper on the preparation and commercial uses of hydrogen. He referred especially to the synthetic production of ammonia and the hardening of oils. Synthetic ammonia is chiefly valuable because it opens up a new source of supply of artificial manure, namely, ammonium sulphate. As the nitrogen is made directly from the hydrogen and atmospheric nitrogen, this is another method added to those already in operation for the utilisation of the free nitrogen of the atmosphere. The hydrogenation of oils is performed by passing hydrogen through the heated oils in the presence of a catalytic agent, usually a metallic substance. By this means the oils are converted into hard, white, practically odourless substances. Owing mainly to its unpleasant odour, whale oil, unless treated in this way, cannot be used either in soap-making or in the manufacture of foods, and consequently this process has made possible the utilisation of a raw product which was formerly used only in small quantities in the tanning industry and for lubricating purposes. So much of the natural supply of hard fats is now used in the making of margarine and other food stuffs that the amount of such fats available for soap-boiling has been considerably encroached upon, and the new method has therefore brought relief to the soap-boiling industry, and thus tended to prevent a rise in the price of soap, which would have been otherwise inevitable. It appears likely that whale oil will be largely used as a food stuff, and for such culinary purposes as the frying of fish, as a great number of physiological experiments carried out on the edible properties of hardened whale oil have proved it to be easily digested. Professor Crossley also drew attention to the use of hardened cotton seed oil, which resembles lard, and is used for similar purposes. The utilisation of hydrogen in these

processes is only rendered possible by the introduction of methods by which the gas can be produced in enormous quantities at low rates.

Agricultural Industries in the U.P.

According to the report on the Administration of the United Provinces of Agra and Oudh for the year 1912-13, there was a period of renewed activity in the cotton industry following on the slight depression of the preceding year. The number of sugar factories decreased from nine to six, and the number of workmen employed also declined. Government is endeavouring to stimulate the sugar industry by the provision of a consulting expert, and a Government loan has been granted for the construction of a large private factory in the Gorakhpur district. The number of tanneries declined, and also the number of lac factories in the Mirzapur district. Some activity was displayed in the manufacture of indigo; but this industry has declined so far from its former position that this revival cannot be regarded as other than a temporary phase. The employment of small oil engines for industrial purposes is becoming increasingly popular. The eight weaving schools continued working during the year, and the school at Almora which closed has since been re-opened. The external trade of the provinces showed remarkable prosperity, and the goods traffic on the railways was the largest on record. The increase in imports was in coal and coke, cotton goods, metals, and sugar. The rise in exports was due to raw cotton, grain, oil seeds, and unrefined sugar. Cawnpore, which is the industrial capital of the provinces, enjoyed its full share of this increased prosperity. The internal rail-borne traffic showed a rise in agricultural produce, especially in grain, pulse, oilseeds, and unrefined sugar, also in railway plant and rolling stocks. There was a decline in the total value of trade with Nepal and Tibet by nearly sixteen lakhs of rupees. This decline was due to several causes.

The import of borax decreased as a result of a fall in the price of that commodity, and it is probable that its import from Tibet will soon cease. The import of gram and oil seeds from Nepal fell very largely as may be expected when the neighbouring districts of these provinces enjoy a succession of favourable agricultural seasons. Sickness in Nepal and the accumulation of stocks account for the decrease in other commodities.

Combination of Agriculture with Manufacturing Industry.

In his Presidential address delivered at the Eighth Session of the Provincial Industrial Conference held at Meerut, Mr. Brahmananda Sinha said :—

"Combination of agriculture with manufacturing industry seems to offer a solution in many cases where it can be made feasible. In a thoughtful paper read by the well-known publicist, Mr. K. P. Bose, at the Second Conference at Lucknow, he enthusiastically advocated this combination. 'I advocate,' said he, 'the establishment of factories right in the midst of the fields and villages which produce wheat or cotton or oil-seed or sugar cane which the factory is to manufacture,' and appealed to our rich landowners to start and work such combination as it would be easier for them to do than for the poor ignorant ryots. For instance, a vast quantity of raw cotton is at present exported out of the country. A landholder possessing, say, a number of villages growing cotton would be able to easily command enough produce for a profitable ginning, spinning and weaving mill planted right in the midst of the producing fields.

Similarly, a rich landholder who has the command both of tenantry and the capital to start profitable sugar factories in areas where sugar cane is grown, can take to sugar manufacture. So with wheat, oil seeds and other agricultural produce. The idea, however, did not seem to take on at the time. But the success which has recently attended Raja Lalta Prasad's sugar factory at Pillbhit, which I believe is the first of its kind in these provinces, ought to direct our attention to the immense

possibilities of such combination. The area under cane is steadily going up. It reached well over 1½ millions of acres last year. A rapid extension in the number of properly equipped central factories would appear to be the need of the hour. The faulty erection of machinery and lack of experience of the staff had hitherto been standing in the way of the success of Raja Lalta Prasad's venture until the defect was removed and omission supplied by the Government Expert Sugar Engineer. This fact proves the imperative necessity of honest expert advice at the early stages and thorough investigation by such experts of the possibilities of success of an industry before it is started, and the expense of such preliminary investigation should not be grudged. Failure to satisfy this very necessary condition has spelled the ruin of many an industry started as the result of mere uninformed enthusiasm. The Government has been pleased to make a grant to this factory on condition of its taking up a certain number of Indian apprentices. Other land holders might do worse than take advantage of this facility."

Carriage of Fruits.

THE *Englishman* writes :—The question of the carriage of fruit in refrigerator cars on Indian railways is again being discussed, but it is considered that there is not likely to be much demand for these cars at present. The conditions of the fruit industry in places like the United States and California are quite different to those in India. In California, Georgia and other places, fruit is grown to perfection in large quantities, and it is possible to fill whole vans and whole trains in or near the orchards and to erect all the cooling plant necessary. In the Eastern States large cities exist where there are many wealthy families who do not mind paying high prices for the fruit if it is delivered in an attractive manner. In India the conditions are regarded as altogether different. In the first place, the quality of the fruit produced is relatively poor. The methods of packing are primitive and large merchants do not exist who are capable of handling the fruit in large quantities. There

are also no markets for fruit in India comparable with those of the United States, as the number of Europeans in the plains in the monsoon period is reduced to a minimum and they are quite unable to pay high prices for fruit, although they are willing to buy it if it is good and fairly cheap. During two years some first hand experience was obtained as to the prices likely to be obtained in India for good fruit properly packed, and the result of the enquiries made went to show that there is a considerable demand for good, well packed fruit at moderate prices, but there is hardly any demand for fruit, however excellent, at what may be described as really high prices. A consideration of all the circumstances of the present fruit industry in India discloses the fact that there is no immediate prospect of success for refrigerator cars on the Indian Railways. It is possible that the demand may be developed in the future, but this will depend mainly on the needs of the Indian section of the population. If a great demand for the fruit of the North-West Provinces arises from the people themselves and if they prove willing to give prices that would pay for cool transport, then it would be easily possible to meet these demands and to follow the lead of California. At present the demand does not exist, and the Indian population seems satisfied with the semi tropical fruit, like bananas, mangoes and guavas, which may be transported by the present methods, if it is picked sufficiently unripe.

Preservation of Hides and Skins.

In view of the large exports of hides and skins to meet the requirements of the markets of the United Kingdom and the unsatisfactory condition in which they are reported to arrive at their destination, a recent number of the *Bulletin of the Imperial Institute* gives a number of methods in use for the preservation of hides. Many of these, it says, are unsatisfactory, the hide itself being sometimes damaged by the careless treatment it receives. And the method recommended as the most satisfactory is that known as the "wet-salted method." The skin while being flayed should be prevented from coming in contact with dirt or blood and should

be allowed to fall into a basket or other receptacle, where it is left to cool. It is then washed thoroughly and afterwards drained to remove the excess of water. The skin should then be laid out flat on a clean floor or a suitable low table, flesh-side uppermost, care being taken that every part of the flesh-side is exposed. Salt is spread evenly over the whole area of the flesh-side and another hide, similarly treated, placed on top, and the process repeated until a pile about 4 feet high has been raised. Each skin should be given a quantity of salt equal to 25 per cent. of its weight, and it should be seen that the top skin is well covered over. Where large numbers of hides are being treated, the piles may be built differently, but in whatever way it is done the hides should have plenty of salt. The skins are left in these piles until all the salt has been absorbed, which generally takes about a week, and should they not be "salt firm," that is, free from excessive moisture, at the end of this period they are again salted. As soon as the skins are salt-firm they may be baled for transport.

In the case of wool skins, particular care should be taken to prevent moisture coming in contact with the wool during the flaying process. In this case the salting is performed by laying the skins out flat after cooling and rubbing the salt into the flesh-side, then folding the skins from belly to belly and baling them for shipment in this state.

The salt used should be fresh, clean, common salt, free from material deleterious to the raw hide or likely to cause trouble in subsequent treatment, while in no case should old or previously used salt be employed. Anhydrous sodium sulphate may be substituted for the common salt and applied in half the quantity, that is, at the rate of 10 to 15 per cent. of the green weight of the skins. In countries where there is a Government royalty or tax on salt, this commodity is denatured before it is put to any industrial use, in order to avoid the payment of this impost. Many materials have from time to time been employed for denaturing salt, e.g., alum, soda, tar products, petroleum, etc., but all have been a source of difficulty to the

tanner, as they form undesirable combinations with the hide substance or cause stains. Recently elaborate experiments undertaken at Turin to discover a suitable denaturant showed that, provided the salt was pure, the addition of 10 per cent. of borax and 1 per cent. of naphthalene was successful, as was also the addition of 1 per cent. of naphthalene, 10 per cent. of sodium sulphate, and 0.017 per cent. of bichromate of potash. The value of the latter mixture for curing could be improved by the addition of 5 per cent. of borax.

Under certain circumstances, when it is desired to economise weight, and therefore cost of transport, it is more convenient to ship the hides in the dry state, and, should this be the case, they should be "dry-salted," if possible. The skins, after flaying, should be well washed, as in the previous method, and should then be hung up in a cool room or shed until partially dry. In this state they are spread on the floor and salted in piles, after which they are re-hung until they have acquired a soft but elastic condition, when they are re-salted. This method should only be followed if it is not possible to keep the skins in the wet-salted state, since dry-salted skins are much more difficult to wash and soften for tanning. Probably, also, the crystallisation of the salt has a weakening effect on the fibre of the hide.

In some countries, where salt is dear, the distance of land transit great, and the means of transport primitive, it is only practicable to dry the hides, without salting them. In this case they should be well washed free from blood and dirt, and in the final washing some aromatic material, such as naphthalene, tobacco juice, or some similar product obtainable locally, should be added to the bath. The skins should then be hung up by the hide flanks or over poles, with the flesh side on-wards, in the shade, with a current of air circulating freely round each hide, and on no account should drying be done on the ground or in the sun. This drying ought to take place evenly and gradually, yet rapidly. If it is carried out too slowly, putrefaction sets in, while, if too rapidly, the hide cakes on the outside,

and the inside is left moist and putrescible and there is a strong probability that, in some parts, the fibrous structure will be destroyed and "blistering" will result. The sheds used for drying should be so constructed as to prevent the ingress of flies.

During the washing the skins may be treated with arsenic as a preventive of insect attack. Hides cured by this method, sometimes known as "flint hides," are always more difficult to soften than those preserved by the other methods described, and they command a lower price in the market.

An Industrial Development Commission.

The *Capital* pleads for the creation of an Industrial Development Commission for the following reasons:—

(1) The number of educated Indians unable to find suitable employment runs into thousands, and the discovery of some outlet for the energies of these men is urgent. The *Capital* believes that the only possible outlet is in the field of industry. Again, it says,

(2) Rapidly as Indian industry is developing, it evidently is not developing rapidly enough to keep pace with the demand for employment. On the one hand, we have a country rich in natural resources but undeveloped; and, on the other, unemployed men. We do not underestimate the extent to which Government and private enterprise are attempting to bring these unutilised forces into fruitful combination, but the complaint put forward is that the programme is lacking in the vital element of co-ordination.

With regard to the point often hinted at that the education given at the Universities is not of much value, the *Capital* says:—

Education and employment are problems which must be considered together. Education is not sought after in these days for education's sake; it is used, and regarded, as an avenue to employment. Now the amount of employment is not a fixed quantity; it may either exceed or fall short of the available quantity of labour. Sometimes there is a surplus in one occupation; sometimes a surplus in another; sometimes there is a surplus

in all occupations at the same time. It is the fate of some industries to be constantly short of labour; others find themselves confronted with a larger quantity than can be conveniently absorbed. There are casual jobs and there are permanent jobs. Unemployment is rare; the real problem is under-employment. It is quite easy to advise the under-employed to try some new industry, but the trouble as a rule is lack of training. Sometimes it is training that is lacking; at other times, employment. The factors are constantly changing and for the ordinary parent or guardian to decide which avenue of employment would best repay the training given their young men is absolutely impossible. A Commission appointed to investigate the question of Indian industrial development would not confine itself to discussing so temporary a problem as is presented by the unfortunate surplusage of the Universities: it would take into consideration the whole question of India's commercial progress, and provide remedies for flagrant deficiencies. There are directions in which India's backwardness, though patent, is of obscure origin. A Commission would illuminate the dark places and show us how to keep pace with the other Dominions, whose affairs are being investigated by the British Dominions Commission, appointed at the instance of the Imperial Conference. In the view of such a Commission, the scope for employment offered by Government service would seem small; and alternatives would be recommended.

An Industrial Development Commission would probably have a good deal to say about Railways; it might touch on banking; it would certainly touch on the possibility of doing for industry what is being done for agriculture, viz., research, demonstration work, model factories, etc. The Department of Commerce has not lived up to expectation in this respect. Imitating the British Board of Trade, in circumstances entirely different, it has set itself to become a purely administrative body, content to leave experiment and enterprise to private effort.

But probably the industry to which a

National Development Commission would devote most attention would be agriculture. It would argue that agriculture is the industry which maintains the majority of the population; that it is the land which makes the largest single contribution to the Treasury; that it is agriculture which has received least attention from Government in the past; and that it is accordingly agriculture to which Government should direct closest attention in the future.

Chemistry and Industry.

In an interesting lecture delivered at Calcutta, Prof. Panchanan Neogi premised by saying that it required three men to start an industry, viz., the expert, the man of business, and the capitalist. His lecture was devoted to the "expert" in relation to chemical industries. There are many industries which may be called "Chemical" as they are almost entirely dependent on the development of pure chemistry. The more important of these chemical industries are the following:—

CHEMICAL INDUSTRIES.

- (1) Manufacture of metals like gold, silver, copper, aluminium, tin, lead, mercury etc., and alloys such as brass, bronze, galvanised iron, etc.
- (2) Manufacture of acids such as sulphuric, nitric, hydrochloric, boric, carbolic, etc.
- (3) Manufacture of alkalis such as ammonia, caustic soda and potash, sodium carbonate, cements, lime, etc.
- (4) Manufacture of manures such as superphosphates, ammonium salts, etc.
- (5) Manufacture of glass.
- (6) Manufacture of soaps.
- (7) Tanning.
- (8) Manufacture of paints, colours, dyes—organic and inorganic.
- (9) Bleaching and dyeing paper, cloth, silk, wool, jute, etc.
- (10) Manufacture of coal-gas.
- (11) Coal-tar industry.
- (12) Manufacture of medicines and chemicals.
- (13) Manufacture of explosive substances for the Army and Navy.

- (14) Manufacture of refined sugar and salt.
- (15) Manufacture of alcohol, spirits and wine.
- (16) Manufacture of matches.
- (17) Manufacture of artificial chemicals such as camphor, India-rubber, indigo, alizarin, flower and fruit scents, celluloid, and other substances.

COMMERCIAL VALUE.

The commercial value of those chemical industries, many of which may be started in India, provided we have the necessary expert knowledge and capital, is very great to India as she has to import annually from other countries more than one hundred crore rupees worth of the products of these industries. The following is the value in rupees of the more important products of chemical industries imported into India in 1911-12 :—Gold, 41 crores; silver, 20 crores; copper, 2 crores 68 lakhs; lead, 16 lakhs; tin 53 lakhs; sugar, 14 crores 30 lakhs; glass and earthenware, 1 crore 75 lakhs, chemicals and medicine, 2 crores 19 lakhs; alcohol and spirits, 1 crore 82 lakhs; paints and colours, 2 crores 30 lakhs; aniline and alizarin dyes, 1 crore 52 lakhs; iron and steel (including machinery and cutlery), 22 crores; soap, 14 lakhs; caustic soda, 8 lakhs; washing soda, 11 lakhs; bleaching powder, 4.6 lakhs; calcium carbide, 1.5 lakhs; disinfectants, 3.8 lakhs; and sulphuric acid, 3.7 lakhs.

PURE CHEMISTRY.

Prof. Neogi proceeded to refute the popular fallacy that it is useless to study hydrogen, oxygen and other substances belonging to pure chemistry and pointed out that the development of chemical industries is absolutely dependent on the development of the pure science and that the chemist's modest laboratory is the home in which every experiment relating to the development of any branch of industry should first see the light. At the same time it must be remembered that minute and infinite details have been worked out in every industry and thus, he pointed out, the necessity of a study of pure chemistry.

PLEA FOR TECHNOLOGICAL COLLEGES.

The principal reason why chemical industries are wanting in India is that hitherto our Universities have sadly neglected technological studies and every effort should be made, and in fact is being made, to establish at least one fully-equipped technological college teaching a number of the more important chemical industries. Prof. Neogi concluded by saying that the technological chemist in order to be really an expert should also have factory experience.

The Dairying Industry.

An interesting Note on this subject has been prepared by Messrs. Milligan and Hutchinson of the Agricultural Research Institute, Pusa. It is the result of tours made by the authors in the course of which typical dairies, both under European and Indian management, were visited. The general conclusion arrived at is that the present condition of dairying in India is "thoroughly bad." The Note was submitted to the last meeting of the Board of Agriculture with the following recommendations :—(1) The necessity of early steps being taken by Government to secure the best milking animals in the country. (2) That the investigation of the inheritance of the important dairy characters of cow by crossing with imported bulls be undertaken by the Agricultural Department. (3) We recognise that the improvement of the Dairy products of the country will be mainly achieved through the agency of Municipal bodies and Co-operative Societies and that steps should be taken to study the Bacteriological aspects of Dairying under Indian conditions at Pusa."

DAIRY ANIMALS.

In spite of cheap fodder and food grains, cheap labour, and the absence of sanitary regulations, the prices of Dairy Produce are, the authors explain, at least as high in India as they are within a few miles of London. This fact can be wholly accounted for by the poor milking qualities of the Indian Dairy animals, and the Dairy Industry, if it may be so called, suffers more from the insufficiency of its milk-

producing machinery than from any other cause. There is little authenticated information on actual milk yields in this country, but all authorities are agreed that the average of even the best breeds of cows does not exceed 2,400 lbs. per lactation period, and that of buffaloes 3,600. What the general average of the sum total of the cows and buffaloes in the country is, may be left to the imagination. It is sufficiently apparent that Dairying in India is in an unhealthy state, and that there is little hope of its improvement until something has been done to improve the milking capacity of the cattle.

IMPROVEMENT OF MILKING QUALITIES.

It is fairly obvious that an increase in the milk yield of a dairy animal represents approximately a similar increase of revenue, the additional feeding necessary to support the increased yield being a small percentage of the total. Where butter making is the main objective a high percentage of butter fat is desirable and Indian dairy animals are in general strong on this point. For milk supplies the principal consideration is quantity, provided the percentage of butter fat does not fall below a reasonable amount. According to the experience of people who are in the habit of buying large numbers of dairy cows and buffaloes it is becoming increasingly difficult to obtain good milking animals. Although it is unlikely that within recent years the general milking capacity of cows has deteriorated from natural causes, there is little doubt but that the town dairies are producing a serious drain on the best cattle in the country. The percentage of good milkers amongst Indian cattle is so small that this may in the end bring about serious results. The question of the preservation by Government agency of the best milking cows in the country is therefore an urgent one. In addition, it is important that steps should be taken at an early date to improve the milking capacity of at least the cows and if possible the buffaloes, by selection or crossing.

MILK SUPPLIES OF THE CITIES.

This subject has received considerable atten-

tion from the Municipalities of some of the large towns in India. Owing to the perishable character of milk and the absence of sterilizing plant, the cities draw their supplies from cows kept inside and a few miles outside Municipal boundaries. This fact, added to the comparative inefficiency of the dairy animals as milk producers, has the effect of keeping prices for pure milk at a high level. It is doubtful whether pure cow's milk is ever obtained at a lower rate than 5 seers to the rupee in the large cities: milk sold at lower rates is almost invariably watered. It is also doubtful, owing to the economic conditions under which it is produced, whether pure milk can be sold at an appreciably cheaper rate.

The views of Messrs. Milligan and Hutchinson on the question of the control of the milk supply in the towns, etc., will be published in the next issue.

To Make Banana Vinegar.

Peel the ripe bananas and place them in a jar or large vessel. Pour the juice each day as it accumulates until there is only the coarse spongy debris left. Strain the juice through a thick bit of brown calico (the calico must be washed first), and let it stand until turned to vinegar. The vessel that holds the juice should not be corked, but have a piece of thin muslin tied over its mouth, to let the air in and to keep insects out, etc. The time for the juice to become good vinegar depends on the condition of the bananas used. Indifferent fruit makes poor vinegar. A common way to make banana or mango vinegar is to fill a corn bag with ripe fruit and hang it over a wooden tub to collect the juice but the flavour of the vinegar is not so good as if a jar or enamelled vessel were used—*Jamaica Agricultural Society Journal*.

Paint for Steelwork.

Mr. H. A. Gardner, of the Institute of Industrial Research, Washington, U.S.A., recommends a pigment of 82 to 88 per cent. of red lead and the remainder litharge, as being highly inhibitive of corrosion, and more acceptable than any other for general painting purposes.

The components should be free from nitrate salts and contain less than 0.5 per cent. of total impurities such as copper, silica or iron. The red lead should be bright in colour, and 99.5 per cent. of a lot should pass a 200-mesh screen. Paints made from this mixture will be practically free from hardening in a package for a considerable length of time and less expensive than 100 per cent. pure red lead paints. Excellent results have been obtained in painting directly over metals surfaced with mill scale, especially on large structures, but for smaller work it is believed that the expense of removing it will be justified by the good results obtained.

Profit Sharing.

A report on 'Profit-sharing and Labour Co. partnership profit' has recently been furnished by the British Board of Trade. It appears that in June 1913, the latest date for which information is available, there were 141 firms practising profit sharing in the United Kingdom. In no other country is the system so widespread, though owing to the size of certain American undertakings, as, for example, the Steel Corporation, more work-people may be concerned in profit-sharing schemes in the United States than in the United Kingdom, where the number is a little over 100,000. The evidence practically goes to show that profit-sharing and co-partnership are far from widespread in any country, and that the system excites little interest except in France.

A Paper Factory.

There appears to be every probability of a factory being shortly established on the north bank of the river at Feroke in Calicut for the manufacture of paper from bamboo pulp, says the *Englishman*. A favourable site has already been selected, and good water is said to have been found. In the same neighbourhood, a well-known firm has recently opened a manure factory, chiefly for the preparation of fish guano. Other enterprises are contemplated by other firms and individuals, so that Feroke, already a place of fair industrial importance, would seem to have a big future before it.

Substitute for Cement.

According to the *Cuba Review*, a substitute for cement can be made from slaked lime, linseed oil, and cotton fibre. The process is started by pouring the oil on a handful of cotton, after which the lime is dusted in. It is then kneaded until the whole is thoroughly mixed and about the consistency of dough. The more it is kneaded the better it becomes. In Turkey, where ordinary cement is not used, a United States Consular report tells us, the above substitute is used with good results.

Aluminium Industry for India.

Commercial Intelligence advises India to develop its aluminium industry in order to keep pace with the growing demand for aluminium wares. This light metal has many advantages over the more expensive brass and copper, and is especially appropriate for India, where the custom of carrying large vessels on the head makes the question of weight of no small importance.

The Preparation of Turpentine.

As a result of the study by Mr. Gibson, a Punjab Forest Officer, of turpentine manufacture in Europe, the Forest Department have installed improved French machinery at Bhawali, in the United Provinces, for the preparation of this product. A similar installation is to be set up at Lahore.

Agriculture and Subsidiary Industries.

According to the *Leader* much could be done for small holders in the way of subsidiary industries, such as agriculture, eri silk-worm rearing, etc. Subsidiary industries would make for a higher standard of living among our peasants. At present they could pay but little for most of the modern necessary luxuries of life. It is a mistake to think that the stupendous progress of machinery in the west has dealt a death-blow to cottage industries. It may be the case in England, but is certainly not true of the continent. Indeed, observers say that there is a distinct movement towards more cottage industries in Germany and Austria-Hungary. Therefore those who say that in the wholesale adoption of machinery alone lies the salvation of India, have not a correct idea of the problem. This retrogression, if retrogression it be called, towards cottage industries, on the continent, is largely due to the enormous expansion of co-operative credit. We feel sure that in India, too, the salvation lies there, and there are signs in plenty to show that the long arm of co-operative production will one day take the Indian countryside by storm.

The Commercial World.

Business Enterprise in India.

The business enterprise of India during the month of March 1914 is shown by the following statement of Joint Stock Companies registered in that month :—

	Rs. (thousands.)
10 Banking and Loan Companies ...	24,70,
5 Insurance Companies ...	1,00,
1 Navigation Company ...	20,
1 Railways and Tramways Company ...	35,00,
1 Printing, Publishing and Stationery ...	20,
20 Trading Companies (other than specified above) ...	26,69,
2 Cotton Mills Companies ...	18,00,
1 Rice Mill Company ...	1,00,
1 Mills and Presses Company (other than specified above) ...	1,00,
5 Tea Companies ...	13,50,
2 Coal Mining Companies ...	4,75,
1 Gold Mining Company ...	6,00,
1 Ice Manufacturing Company ...	2,00,
2 Companies (other than specified above) ...	2,20,
58	Grand Total ... 1,36,15,

Adulteration of Oil of Lemon.

Mr. E. J. Parry, a well known authority on essential oils, mentions as "an interesting fact," says the *Mineral Water Trade Journal*, that commercial travellers call frequently on lemon pressers in Sicily, offering artificial citral for sale for the purpose of "fortifying" lemon oil adulterants. Mr. Parry adds :—"It is obvious that lemon oil should only be bought from firms of good reputation, and not below current market rates."

Mr. Parry states that terpenes are the material commonly used as adulterant. But to-day terpenes are very scarce and dear, so that other adulterants are looked for. One at least that is being used in Italy is oil of turpentine ; but, as

the optical rotation of this is low, a percentage of orange terpenes are pressed into the service. Another adulterant is lime terpenes, and lemon grass citral is also freely used.

Goodwill.

The result of some Judicial decisions arrived at in the English and Scottish Courts of Law on matters pertaining to the good-will of a business tends to show that when a man has voluntarily sold his business with the good-will, he may, unless he has come under some special obligation to the contrary, set up a new business as a rival to the one he has sold. He may advertise the new business publicly, but he must not canvass his old customers. He may deal with them if they come to him, but he must not ask them to come back. On the other hand, if the sale has been carried through by a trustee in bankruptcy or a trustee for creditors, the man may start again without any restrictions upon his freedom in the way of obtaining customers. The trustee can only sell property, the voluntary seller can sell his rights as well as his property.

Complaints.

Satisfied customers—that is the basis of success, and the finest asset and best advertisement any firm can have. So writes Mr. W. Geo. Grey in a recent issue of the *Sales Promotion*. Talking of complaints received from unsatisfied customers, Mr. Grey says :—

There are some firms who openly state that they never make mistakes. But it is humanly impossible to go on year after year with never a slip, and the larger a concern grows the more frequent are its mistakes—even though proportionally to its size they may be very few. In all very large firms there should be a complaints office, whose whole time would be devoted to settling all matters of dissatisfaction. When a letter or complaint arrived, it should be handed to this department, with all relative correspondence and documents. They would trace the

error or discover the misapprehension under which the customer was labouring, and deal with it in the manner already indicated.

This should prove a profitable scheme, for the full and tactful treatment given to their complaints would make the customers realise that their orders were valued and their custom recognised as important. They would feel that the house was honestly trying to give good service and always willing to acknowledge and remedy slips and errors, and they would never have that feeling of doubt and antagonism which some firms always raise by their off-hand treatment of grumbles.

Business Building.

The first of a series of lectures on "The Science of Business Building" was given recently in the Y.M.C.A. Lectures Hall, Calcutta, by Mr. J. Arthur Engleman.

Mr. Engleman, at the outset, intimated that he would approach the subject from an advertising point of view, though he had agreed to a request to deal briefly with salesmanship. The only justification for advertising, he said, was to have a first class article to sell. Advertising would secure customers for inferior quality goods, but if the goods were not a little better than the advertiser described them, the buyer would not become a permanent customer and, it must be borne in mind, repeat orders for goods were essential to sound business building. From this he argued that the advertising of goods of a lower quality than described was so much waste of effort and money. Advertising was a necessity of modern commerce, and the better the goods, the greater the necessity to advertise. "And it is the man who does not advertise who pays for the man who does."

Turning to the question of salesmanship, the speaker said that salesmen often did not know nearly so much as they should of the goods they sold. He found fault also with the methods of salesmanship. For instance, too many salesmen approached customers in an apologetic manner and used such phrases as, "Is there anything I can do for you?" or "Nothing in my line, I suppose?" Such approaches invited negative results.

Reverting to the question of advertising, Mr. Engleman emphasised the importance of Press advertising. Whereas one person was attracted by a window display, hundreds of persons would be attracted by a Press advertisement.

Partnership Assurance.

The importance of mutual assurance for the benefit of partners in a business cannot be over-estimated. Each partner hopes to obtain some advantage from the continued life and attention to the partnership business of the other, and the premature death of one member of a firm is very likely to cause loss or injury to the other. Consequently each has what is commonly known as an insurable interest on the other's life.

Though the law of partnership is an intricate one, provisions against the sudden withdrawal of any member of a firm are made now-a-days usually without difficulty. But strange to say the injury to a business, not to stay embarrassment, created by the sudden death of a partner is frequently overlooked. This cannot be prevented, and the responsibility must therefore be undertaken by those interested in the firm as principals. It is here that life assurance steps in, and by a perfectly simple arrangement all possibility of disaster can be avoided, according to a writer in the *Insurance Chronicle*. The process is to have ordinary policies on the separate lives of those interested, and for those policies to be made payable to the firm. The sum assured in each case corresponds with the amount of insurable interest. The premiums are to be drawn from the firm's accounts, and if it is convenient to pay a slightly increased cost, the system of whole life assurance by limited payments is undoubtedly the best plan to choose. When policies of this kind are taken, they may also be regarded as an absolutely gilt-edged investment for the firm. Under the with-profit plan, bonuses continue to accrue even after the payments cease, and the first annual premium purchases a proportionate amount of the sum assured, which can never be held in dispute. Take a simple illustration. Suppose a business cannot be worked with a capital of less than say £10,000. Of this amount

two partners supply equal shares of £5,000. In the event of the death of one of the two, consider the position of the surviving partner if he is unexpectedly called upon to pay out one-half of the capital, and afterwards continue the business with less than half the original amount. To find another partner who can introduce the requisite capital is an awkward and even hazardous transaction. The difficulty is met by each partner insuring himself for £5,000, and both premiums being paid out of the common fund of the firm. The security against premature death is then beyond dispute. The survivor would become the sole owner of the business, with his income consequently doubled. In the event of dissolution of partnership the insurable interest ceases automatically. The policy need not be surrendered in the ordinary way. Each member would retain his own policy, and the insurance is left perfectly intact.

Formation of New Companies.

In the course of an article in the May number of the *Indian Review*, Dewan Bahadur K. Krishnaswami Rao C.I.E., draws prominent attention to a feature of the New Indian Companies Act, namely, that the formation of new companies is not as easy as it had been upto 31st March 1914. Under the new Act, every application for a share must be accompanied with five per cent. of the value of such share. No share can be allotted until the *whole amount* of the share capital has been *subscribed*. Within 120 days from the date of the issue of the prospectus, the Directors should make the allotment of shares and if they fail to do so, they must return to the applicants, the amounts received from them, with interest at 7 per cent. *per annum, calculated from the 180th day*. (See section 101 of Act VII of 1913). The keeping of register of applications for shares open for any length of time and the making of allotments without waiting for the subscription of the whole capital (which were the ordinary features of Indian Companies hitherto) are invalid under the new law. The promoters of the new companies have, however the option of mentioning in their prospectus a minimum amount of capital or (*to use the words of the Act*), "minimum subscription," and on

this amount being fully subscribed, they may proceed to the allotment of shares. It may be possible for a small trading or banking company to start with a minimum subscription, but in the case of a manufacturing company which requires a large outlay, minimum subscription will be of no practical use. In Southern India, there is very little chance of a large capital (say a lakh and more) being subscribed within the three months allowed by law. Past experience has shown that manufacturing companies which began with small capital in the hope of increasing it, failed completely in securing public support and had to be wound up. There can be no greater blunder than to start a manufacturing company with a minimum subscription. The provisions of the new Act may act as a deterrent to the formation of companies in this Presidency which require large capital.

No company can begin business until the whole or the minimum capital as the case may be, is subscribed and allotted, and also a certificate is obtained from the Registrar of the Joint Stock Companies to the effect that it has satisfied the conditions laid down in the Act for the commencement of business (see section 103).

There is also another fact to be specially borne in mind by the promoters of new companies, *viz.*, that if the business for which a company is started, does not begin its work within one year from its registration, it may be wound up by order of Court (section 162). In the case of manufacturing companies, the construction of buildings and the fitting up of machinery which have to be commenced after a large portion of the capital is *collected*, may take much longer time than one year. The use of the verb "may" in this section indicates that it is optional with the Court, to order the winding up in such cases. The District Court or the High Court which is to exercise this power, may be trusted to use their discretion in favour of the continuance of the company where it shows that it has been doing all that could reasonably be expected to be done. But the promoters cannot always be sure of the Courts being with them, and they must therefore try to be on the safe side by issuing their prospectus after informally

securing reliable promises of adequate support from a large number of intending share-holders.

Trademark Pitfalls.

In order that a trade mark may act as a constructive and protective force, it must be, among other things :—Appropriate, attractive, pleasing, readily understood, simple, distinctive, easily remembered, easily pronounced, not too temporary and a stimulus to mental imagery.

The purpose of a trademark is not only to attract business by making the goods memorable and identifiable. It must also be a protection against unfair competition. The advertiser may be called upon to defend his trademark title even while he is asserting it. Unguided, he may have chosen a word which infringes the rights of some tiny local manufacturer who will seize the opportunity to "bleed" a prosperous non-competitor. He may have a fanciful word which is deceptive, a word which in a foreign language is unpleasantly descriptive, or unintelligible.

A TRADEMARK ANALYZED.

In passing on the word and symbol "Peacock" for a many colored dress silk of fine quality, Clowry Chapman, an American trademark lawyer and advertising-law specialist, analyzed it in this way :—

1. It suggests "fine feathers," good clothes if you please ; in other words, is appropriate.
2. It stimulates admiration. The vanity and attractiveness of the peacock are proverbial.
3. It suggests various colors.
4. It creates a mental picture which lives in one's thoughts.
5. It recalls pleasant associations, as in rambles over an estate, where the peacock was one of the things of beauty.
6. It suggests superiority and exclusiveness.
7. It is not obviously descriptive.
8. It is distinctive.
9. It is readily understood.
10. It is universally understood.
11. It is easily designated, referred to, or pronounced.
12. It conforms to every canon of good taste.
13. It is in the favour of all nationalities.

14. The symbol "Peacock" is simple.
15. It can be reproduced large or small.
16. It can be reproduced in colors or in black and white.
17. It is strong in line or in half-tone.
18. It is attractive alike in advertisements and on labels.
19. It lends itself to window display and secondary use.
20. It conforms to various legal requirements.
21. There yet remains the question : "Has the trademark been adopted and used by any one else ?" To determine this point it would be necessary to search the records of marks registered not only in the Patent Office, but among the individual States, which protect marks in much the same way as does the Patent Office, sometimes giving even broader protection. Besides this, it would be necessary to make a search of the records so far as they exist, of those thousands (perhaps well into the million) of unregistered marks which are just as binding and just as much to be taken into account as those which are registered.—*Tea and Coffee Trade Journal*.

The "Farm-products" Post.

A standing grievance with Indians about the Railway development in this country is that Railways as they are do not cater for the movement of products grown inland from place to place, but directly foster the foreign trade of India by the imposition of discriminative tariff rates. Though this may be true in a great measure in other countries too, they are not slow to devise ameliorative measures for the quick transport of their internal trade and thus palliate the harm done. One such measure is the extension of the parcel-post service in the United States of America, which permits the shipment of farm products in lots of twenty to fifty pounds in ordinary crates and boxes and will in operation relieve both producer and consumer from the tender mercies of "an unscrupulous middleman." Another new ruling, it might be noted here, allows the attaching of duly stamped letters to parcels to insure their simultaneous delivery. The "farm-products post" is limited, in extent and its purpose, to establish direct

traffic relations between the truck-gardener or farmer and the city purchaser, will, it is believed, reduce the cost of living for the one and add to the margin of profit for the other. As sales are managed now, a writer in the *Louisville Courier-Journal* says, "food-products for which the farmer receives \$3.24 on his farm are retailed in the city for \$5.55." The new idea is attributed by this writer to co-operation between the Post-Office and the Agricultural Department which calculate that the figuring of this sum under the parcel-post system will work out somewhat as follows :—The farmer will prepay postage and accept \$4.25 for the articles of food for which the commission merchants now give him approximately \$3.24 and which they sell to the consumer for \$5.55. Thus the farmer will pocket an increase of \$1.01, and the city consumer will save \$1.30 on each such purchase. The *Courier-Journal* correspondent goes on to say :—

"The Post-Office Department, in the statement, declares that the new regulations should prove a "boon to farmers and truckers." Under the old regulations the crates and boxes of farm products had to be securely packed and were limited in size so that they could be placed in mail-bags. Under the new regulations the ordinary crates used for the shipment of butter, eggs, fruits, berries, vegetables, dressed poultry, and other articles by express will be accepted, provided that the maximum weight of these crates is not fifty pounds. Packages under twenty pounds must be securely packed so that they can be handled in mail-sacks with ordinary mail."

Groundnut Bran.

India must sooner or later take to oil industries on a large scale, instead of suffering her oil-seeds to be exported annually to Marseilles and other foreign centres. Our Presidency offers most suitable conditions for the extraction of vegetable oil, especially from ground nuts. And there seems to be an extensive market in Germany for the sale of the groundnut bran ; for it appears from a report sent by the American Consul-General at Hamburg to the Department of Commerce at

Washington that there is a certain demand in Germany for both groundnut shells and the red skin which envelops groundnut kernels for stock feeding. In commerce both groundnut shells and skins are denominated "peanut bran." The shells contain 57.8 per cent. of cellulose and have scarcely any nutritive value. Bran of this kind has been on the German market for over twenty years. The finer grades only are in steady demand, the coarser grades being marketable with difficulty. The material is mixed with other feeds of higher value, and notably is used in the composition of molasses feeds to give them body.

A more genuine peanut bran is composed of the red inner skin of the kernels to which attach fragments of the kernels. According to information obtained by the Consul General this material averages from 14 to 18 per cent. of fat. In the trade these skins include a percentage of shells also amounting to from 20 to 30 per cent. The shell material comes from the inside of the envelope and is believed to contain some fat. All grades of peanut bran are ground and have the appearance of ordinary bran.

No statistics of any value are obtainable relative to this article, as it is included with other brans in the official figures. It is presumed that a large part of the bran imported into Germany from France consist of ground peanut hulls and skins. The total importations amounted to 16,032 tons in 1912 and 13,376 tons in 1911. No peanut bran is being imported from the United States at present.

In the Handbook of the Union of Agriculture Experiment Stations in Germany, attention is called to the fact that the finer grades of peanut bran are by no means composed principally of the red inner skin, but consist chiefly of shell. According to one authority, the fine meal of commerce contains a maximum of 15.65 per cent. of fat, instead of 14 to 18 per cent. as claimed above. It is added that true peanut bran, consisting of ground red skins, contains from 9.3 to 19.2 per cent. of fat and an average fatty content of 12.9 per cent. "True peanut bran," says the authority quoted, "is a serviceable secondary stock food."

The Economic Soundness of Advertising.

Mr. Thomas Russell, formerly Advertisement Manager of the *London Times*, writing to a recent number of the *International Review of Commerce and Industry*, discusses what he characterises as the 'economic soundness' of commercial advertising. He distinguishes as "sound" all advertising which is paid for without increasing the cost of goods to the consumer. In this connection, he remarks :—

A paradox not infrequently offered for solution is the curious one that in the case of soundly conducted advertising it is not easy to answer the question. "Who pays the advertising bill?" The manufacturer (we are told) does not bear the expense, for he makes much larger profits than he could possibly make if he did not advertise. The wholesaler does not pay for the advertising, for the larger market brings him larger profits. The shopkeeper does not pay, for the same reason; or if his profits are not larger it is because he gleefully employs the increased public demand for a given article as an aid to business by cutting prices and thus defeating his competitors. And the consumer does not appear to pay, because he gets the goods cheaper!

Of course, an exactly similar paradox might be proposed, with the cost of labour-saving machinery as its subject; and in both the fallacy lies in failing to observe that expenditure, in the one case to reduce marketing expense and in the other to reduce manufacturing expense, is none the less paid by the consumer of the goods, because, in spite of all that it costs, he still saves. If by a miracle the same economies could be effected without any expenditure at all, the consumer would buy his goods cheaper still.

A specific instance of consumer-cost reduced through the use of advertising is that of the bicycle.

With regard to the economic effects of such reduction, he writes remarks :—

"The reduction of manufacturing and marketing expenses by efficient selling methods is not attended by even the temporary dislocations

which follow labour saving inventions. On the contrary, the direct effect is to enlarge the market by bringing goods within the means of a greater number of buyers. And it will be observed that in the case of bicycles, in which the element of patentable monopoly had little permanent importance, the advertised product was staple. Nothing is more remarkable, and no fact more conclusively proves the economic soundness of advertising, than this: that the products most freely and expensively advertised are those sold at the lowest prices and at the smallest margin of profit. Cocoa, laundry-soaps, beef-extracts and other conveniences which bestow the greatest boons upon the poorest of the people are the things most widely advertised. Critics of advertising as a commercial method are fond of pointing to patent medicines and similar articles, as instances of the abuse of publicity. But—apart from the fact that the patent medicine industries are not by any means always incapable of defence—the total appropriation of money to advertising these things (which are, moreover, chiefly consumed by the poor, who may be supposed to be the most cautious with their money) is trifling, compared with the appropriation for advertising foods and domestic commodities of unquestioned desirability and usefulness. Retail shop advertising is practically all done by shops which sell the cheapest, and the largest sums of all in this department are spent by drapers in advertising their clearance sales, when the goods are sold at the lowest prices of the year. Only on one ground can these facts be explained and rationalized. It is this: that advertising is commercially sound because it reduces marketing expense as nothing else can reduce it, and economically sound because it makes commodities easier and cheaper to buy."

Consumption of Paper.

There were in 1911 about four thousand six hundred persons engaged in the above industry. This relatively large number is due to the hearty support accorded by the Indian Government, which buys in the country its requirements of foolscap, blotting, writing and wrapping papers. The annual consumption of paper in India

has been estimated at 60,000 to 70,000 tons, this figure constantly growing with the spread of popular education. Of this quantity the Indian mills cannot supply more than 25,000 tons. This fact is attributed to the dearness of the raw material.

Indian mills chiefly use Bhabar grass (also called Baib grass), which only yields 40 per cent. of paper. The useless carriage on 60 per cent. of raw material almost precludes the Indian paper industry from competition with imports.

A Question of Copyright.

An interesting case affecting the copyright of advertising matter was recently decided at the Redhill Country Court, England. Messrs. Martin Bros., cigar firm of Cheapside, issued a circular on cigar and cigarettes. A Redhill chemist "lifted" a good deal of the matter for a perfume circular, and Messrs. Martin brought an action against the chemist. Mr. Thomas Henry Bull, a Director of Martins gave evidence as to the amount of care which they took to produce original advertising matter, and as to the value of that matter when produced. Martins, in their circular, said: "You are the best judge as to whether a cigar is good or bad." The defendant's circular opened with "You are the best judge as to whether a perfume is good or bad," and it was shown that many other phrases had been taken word for word from the cigar copy and used by the chemist. Martins won their action. We give publicity to this matter in the hope that it may discourage those advertisers who make a regular practice of copying phrases and ideas that are produced at great trouble and expense by their more ingenious brethren.

A "Free Day" Scheme.

An enterprising merchant in America has hit on an idea which he calls a "Free Day." On a certain day each month he redeems for cash any ticket for purchases made on the day he names for that month. He gives out a cash register ticket to every customer. At the end of the month he places a sign in his window announcing the date of the free day. Anyone having tickets for that day can get them cashed

at any time—this encourages cash purchases and advertises the merchant.

The Merchant Tonnage of the World.

The latest figures showing the tonnage of the merchant fleets of the principal maritime powers prove that Great Britain still holds her commanding lead, with a tonnage nearly one-third greater than that of all the other maritime Powers combined. Thus Great Britain possesses 20,275,791 tons; Germany, 4,998,746; United States, 3,489,736 tons, the greater part of which is domestic shipping; Norway, 2,475,823 tons; France, 2,246,504 tons; Japan, 1,700,062 tons; and Italy, 1,571,761 tons.

Advertisement Evolution.

The world is slowly beginning to realise the value of advertisement in spheres of national progress other than commercial. The British War Office quite recently gave full page advertisements to the daily newspapers describing the advantages and comforts of life in the Army. But in America, says a contemporary, they have gone too far; they have begun to utilise advertisements to attract congregations to the churches!

The Indian Customer.

The well-to-do man in India buys what he sees rather than what he wants. In England it is generally the reverse. It is useless to say to an Indian customer, "Tell us what you want and we can supply you."

This is the opinion of a writer in *Saddlery and Harness*. If this is true, it does not speak well for the economic habits of our rich folk.

A Profitable Study.

Scientific management, the detection and elimination of false effort, is a profitable study for employer and employee, says the *Co-operative News*. Efficiency means less labour and higher wages, and provides the soundest solution for the difficulties and differences existing between masters and men.

Auditors and Auditing.

It is proposed to form in Bombay an Indian Institute of Accountants similar to those in existence in the United Kingdom.

Openings for Business.

[For particulars, address the Director-General of Commercial Intelligence, New Imperial Secretariat I, Council Street, Calcutta, mentioning the *Wealth of India*. Firms that may like to follow up any enquiry should give proper references and restrict themselves to those enquiries only which they are fully and seriously qualified to handle.]

KAPOK.

A London firm is desirous of communicating with sellers of kapok. (C. 357).

METAL ARTICLES.

A firm in Brescia, Italy, is desirous of appointing agents for the sale of iron, steel, brass, bronze and aluminium articles and utensils. (C. 359).

MUSTARD SEEDS.

A firm in Lahore, Punjab, is desirous of communicating with importers in Dunkirk (France) and Odessa (Russia) of mustard seed. (C. 361).

NAHOR SEED AND OIL.

A merchant in Assam is desirous of communicating with buyers of nahor seed and oil (*Mesua ferrea* or the iron wood tree). (C. 362).

PINEY TALLOW.

A firm in New York, U. S. A., is desirous of communicating with shippers of "piney tallow," viz., the vegetable fat extracted from the kernels of *Vateria Indica* (the White Dammer of South India), or of the kernels. (C. 363.)

SAFFRON.

A firm in Almora, United Provinces, is desirous of communicating with buyers of Kashmir saffron. (C. 364).

STEAM LOCOMOTIVES AND OIL TRACTORS.

A New York firm is desirous of appointing agents for the sale of special steam locomotives and cars and gasoline oil tractors. (C. 365.)

ANISEED, ASSAFOETIDA, ETC.

A firm in Calcutta is desirous of being put into touch with growers or collectors of aniseed, assafoetida, gambia, foenugreek seeds, mowa seed oil, nuxvomica seeds, ginger and myrabolans. (C. 367.)

ANTIMONY.

A merchant in Meerut, United Provinces, is

desirous of communicating with sellers of antimony. (C. 368.)

ESSENTIAL OILS.

A firm in Hamburg, Germany, is desirous of appointing an agent in Calcutta for the sale of essential oils. (C. 370.)

OILSEEDS, GUMS, SALTED SHEEP, AND SAUSAGE CASINGS.

A firm in Trieste, Austria, is desirous of communicating with exporters of oilseeds, gums and salted sheep, goat and beef casings for sausage making. (C. 371.)

RICE STARCH AND CORN FLOUR.

A London firm is desirous of appointing agents in Calcutta, Bombay, Rangoon, Karachi and Madras for the sale of rice starch and corn flour. (C. 372.)

SAXONY LACE.

A firm in Falkenstein, Saxony, is desirous of appointing an agent in Calcutta for the sale of Saxony lace. (C. 373.)

SEMI-PRECIOUS STONES.

A merchant in Calcutta is desirous of communicating with sellers of semi-precious stones such as rock-crystals, jasper, etc. (C. 374.)

ZINC ORES AND CONCENTRATES.

A firm in Cleveland, U.S.A., is desirous of communicating with shippers of zinc ores and zinc concentrates. (C. 377.)

AGRICULTURAL TOOLS.

A firm in Iowa, U.S.A., is desirous of appointing agents for the sale of hoists and agricultural tools including such articles as wire stretchers, galvanised baskets, garden ploughs, stake irons, post hole augers, post hole diggers, litter carriers, spades and trowels and lawn weeder. (C. 378.)

OILS.

A merchant in Bareilly, United Provinces, is desirous of communicating with sellers of mohwa oil and palm oil (*Elias guineensis*). (C. 385.)

PUMP.

A firm in Texas, U.S.A., is desirous of appointing agents for the sale of an automatic air suction and force pump. (C. 386.)

The Economic World.

The High Cost of Living.

In a paper entitled "what an International Conference on the high cost of living will do" contributed to the Economic Science Section of the British Association at Birmingham, Professor Irving Fisher pointed out that a movement for an International Conference on the high cost of living had been active for the last two years. It had received the support of the President and ex-President of the United States, the President of France and many high officials of other countries, such as England, Canada, Germany, Austria, Italy, &c. If such a Conference were called, it would discuss and formulate the problems which needed solution and refer them to committees appointed for the purpose of investigating them and reporting later to the Conference. These problems fell under five heads: problems of fact, of causes, of past evils, of future prospects, of remedies. The great conflict of opinion at the Conference would doubtless be as to whether the rise of prices meant an inflation of money and credit or a scarcity of goods. If the result of its investigation should indicate that the rise of prices was chiefly a monetary phenomenon, that would indicate the importance of a monetary remedy, such as some plan for "standardising" monetary units, i.e., "stabilising" the general level of prices. But whether or not any such far-reaching remedy could be applied or even recommended, there were other and less ambitious remedies in the way of saving waste which ought to be carefully considered. Such, for instance, were the conservation of natural resources, the elimination of unnecessary middlemen, the introduction of co-operation where economics could thereby be effected, the improvement of banking systems, the removal of high tariff walls, &c.

Tariff Reform in England.

The March number of *Our Flag*, published

by the National Unionist Association, contains the following summary by Mr. Bonar Law of the Unionists policy on Tariff Reform:—

Food.—If, as a result of the next election, the Unionists are returned to power, we shall impose no new duties on the food of the people, but, on the contrary, we hope to take off some of the food duties which they now have to pay.

Manufactures.—We shall impose a moderate tariff on foreign manufactured goods—a tariff not exceeding an average of 10 per cent.

Colonial Preference.—We shall at the same time establish at once the principle of Imperial Preference.

True Free Trade.—In my belief, duties such as these, apart from any other consideration, can be justified on the strictest Free Trade principles by the needs of revenue.

Need for Revenue.—They can be justified on precisely the same ground on which revenue tariffs have been imposed by Free Trade Governments in India and in Egypt.

Colonial Desires.—We shall give to our self-governing Dominions what at every Conference for more than 25 years they have unanimously asked from us, and that is all that they have formally asked. We shall give them immediately a preference on all duties imposed in the United Kingdom.

Agricultural Question.—That policy does not stand alone. Apart altogether from the re-adjustment on general lines of local taxation, which is urgently required, apart from that re-adjustment, at the same time that we impose a tariff we shall take part of the revenue of that tariff and use it in reducing the burdens of agriculture, in order to make sure that the farmer will at least be compensated, and more than compensated, for any additional price which, as the result of the tariff, he may by any possibility be called upon to pay.

Revenue from Luxuries.—Among imports at present come articles to the annual value of something like £30,000,000, which are absolutely luxuries, and I can imagine no form of taxation which would be fairer and would make it more certain that the burden would fall upon those best able to bear it than a duty on luxuries imported from abroad."

The Sex Struggle.

Remarkable figures are given in an official publication bearing on the working life of every man, woman, and child in England and Wales who has to earn his or her living.

This striking analysis of the nation's great industrial army shows, among other things, how acute present-day competition is between the sexes.

First, there is a set of figures indicating the people who do the work, and the number of the workless. Above ten years of age there are 13,662,200 males and 14,857,113 females. Of these 2,208,535 males and 10,026,379 females are unoccupied. Subtracting from those the boys and girls under 18 years of age, we get the following totals :—

MEN.			
Under 45 years of age	...	...	146,897
45 to 55 years of age	...	...	55,665
55 to 65 years of age	...	...	113,355
65 and over	...	...	356,052
WOMEN.			
Married	...	...	5,950,093
Widows	...	...	953,793
Unmarried	...	...	2,204,702

These constitute what Socialist orators are pleased to call the "idle rich," and as they include all the insane, the old age pensioners, the inmates of workhouses, and Military, Naval and Civil Service pensioners, the numbers, especially of men, does not appear to be inordinately large.

Everyone else in the country engages in some occupation. The workers include individuals as young as ten years of age and as old as 65 and upwards. Here is a glimpse of the great amount of child labour still employed in

England and Wales despite legislative restrictions :—

	10 to 14 years.	15 to 17 years.
Boy workers	... 319,995	890,457
Girl workers	... 182,493	660,550

The total number of women workers, including the girls noted above, is 4,830,734, of whom 2,895,489 are unmarried women over 17 years of age. The workers also include 680,191 married women and 411,011 widows. The classification includes several hundred separate industries, and it is noteworthy that in only twenty-eight classes are the occupations followed exclusively by men.

So far as women are concerned, they have only two occupations exclusively to themselves. These are day women 24,001 and charwomen 126,061. These are occupations in which they possess a predominance however, while in many others there are keen competitors with the male army. Here are some illustrations :—

	MEN.	WOMEN
Painters, sculptors, artists.	7,417	4,202
Musicians, music masters, singers	...	22,844
Actors	...	9,076
Domestic service (in door)	54,260	1,335,358
Milliners	...	984
Drapers	...	101,321
Dressmakers	...	2,815
Pawnbrokers	...	12,611

Among the curious occupations in which women are engaged are included 3 ministers, 1 cabman, 3 horsekeepers, 605 pilots and boatmen, 42 coal heavers, 6 shepherds, 2 woodmen, 4 carpenters, 14 bricklayers, 166 masons, 86 plumbers, and 11,881 butchers and meat salesmen.

Land Revenue Settlement.

In his presidential speech at the last Chingleput District Conference, Mr. S. SrinivasaIyengar made some intelligent suggestions in respect of the land revenue policy of the Government of India. Many crucial changes which threaten to become a permanent feature of Indian conditions, have come over the land, since the Government first declared the policy under-

lying agrarian legislation in India, over half a century ago. Legislative amendments have not gone *pari passu* with the changes that have altered the conditions which first dictated the agrarian policy. The enhanced cost of living and the urgent needs of urban development in India have conjointly tended to draw away labour from the land and heighten the price of any available labour in the villages. Emigration is another vital factor tending to the depopulation of the labour-force in the rural parts. Coupled with all these is the periodically increasing tax levied on the land by the Government in many parts of India. The last mentioned is the only factor that is susceptible of immediate modification so as to relax the rigour placed upon the yield of land. Portions of Mr. Iyengar's presidential address throw illuminating light on the part played by the Government on the welfare of the Indian population and we quote below a few extracts :—

All are agreed that the welfare of India depends mainly upon the welfare of her agricultural classes. Of a total population of 41,870,160, in this Presidency, 28,621,449, or about 68 per cent. are dependent upon agriculture and the percentage of the land revenue is about 40 per cent. for the Presidency. The Government of India have in their elaborate resolution on their land revenue policy admitted that the question of land assessment is one of the highest national importance, transcending the sphere of party or sectional controversy and demanding at once the most exhaustive scrutiny and the most liberal treatment. Official opinion, however, is sharply opposed to the preponderance of non-official opinion when the discussion descends to practical details—the bases, the methods and the conditions and limitations of the land assessment. There can be no doubt that a system of permanent settlement ought to continue to be as much the ideal for Congress and Conference as admittedly it was for the British Administration till the sixties of the last century. It is an economic common place that the prosperity of the

agricultural classes can be fostered and maintained only by a fixed moderate tax under statutory safeguards and by allowing an increasing margin of profit to the ryots who will thereby be enabled to accumulate capital which, if in half the cases is likely to be spent thriftlessly is in the other half certain to be devoted to effecting improvements or making experiments in agricultural methods or products. If the Government is of opinion that the time is not yet ripe for the permanent settlement of the larger holdings, there can be no objection whatever to the permanent settlement of small holdings throughout the Presidency.

The real questions that have to be faced by the Government are very different from the issues raised in the resolution of the Government of India. One simple question is—Is it desirable, is it necessary, that the Government should raise between a third and a half of the total revenue, not varying with and adjusted to the needs of the day, nor subject to reductions as a tax should be with expanding sources, but as an absolute claim by a landlord or co-owner for a share of the profits derived from land? Another question is—Is not the permanent settlement an indispensable condition of a rise in the level of prosperity of the agricultural classes which is an article of faith with the Government? The third question is—In the case of small holdings bearing an assessment of ten rupees and less, is a ryot family able to maintain itself according to the lowest reasonable standard of living? In the first place we must not overlook that if assessment is rent, it cannot ordinarily be taken to represent economic rent. Where there is ignorance, lack of opportunity or of occupation, lack of capital or of mobility on the part of the tenant, actual rent must be higher than economic rent. The average ryot is influenced by a strong sentiment in favour of clinging to the land whether it pays him or not. He seldom attempts to look beyond it and has usually no other industry to depend upon. In the case of the vast majority of small holdings the ryot is therefore only a labourer upon the land—he

owns and the wages of his labour are all that he gets.

In the second place, there is a great difference between a bargain by private landlord and the Government demanding a rent with hardly any competing landlord. In the ryotwari tracts ordinarily there is no land except Government land for one to take up. And the rates of assessment, however much they vary, are claimed to be uniform as regards their relative incidence. In the third place, the gross produce of the land is ascertained not by taking an account of what was in fact the outturn, but by estimates based upon crop-cutting experiments made in a selected field in one or more villages out of a whole group of villages. Whether such a process satisfactorily ascertains for the purposes of Government the total income derivable from a tract of country or not, it is altogether unsatisfactory as a basis for estimating the out-turn from each holding and it is upon this slender foundation that the elaborate superstructure of settlement has been reared. The demand for a permanency of assessment is not answered by pointing to the large Tanjore Mirasidar with his real or supposed income from land. The vast majority of lands in this Presidency are neither as fertile nor have as good irrigation facilities as lands in the Tanjore District or other deltaic tracts.

Again the question of how to deal with the more considerable holdings ought to have no effect whatever upon the treatment which small holdings urgently require. They do not enjoy the exemption which few non-agricultural incomes enjoy in respect of the income-tax. An average ryot family consisting of four members can hardly live according to any reasonable standard of living upon less than ten rupees a month. A rural family appears really to consist of five members, according to the returns of last census. Allow each member of a ryot family half an anna for each of his or her two meals a day, though three meals a day and one anna at least for each meal ought to be assumed. Allow a little for housing, clothing and tobacco, for marriage, childbirth,

sickness and funeral on the pettiest scale. The estimate of ten rupees a month can hardly be said to be otherwise than the lowest possible standard of living. The proportion of ryots who pay ten rupees and less to the total ryot population in this Presidency is over 67 per cent. while the proportion of paltas of Rs.30 and less is as high as 90 percent. Assuming that the assessment on an average of cases represents one-fifth or one-sixth of the gross produce, a ten-rupee holding will yield only fifty or sixty rupees for the year. Deducting the assessment, the ryot family is left with forty or fifty rupees to live upon all through the year. Even if in exceptional cases the assessment is claimed to be equivalent to one-tenth of the gross produce, the ryot will get only ninety rupees at the present scale of prices. But in fact the rise in prices cannot benefit the small ryot who consumes his own produce since the out-turn must be assumed to remain constant.

The objection, that the permanent settlement will only benefit the middlemen at the expense of the actual cultivators of the soil is not all correct. This aspect was emphasized by Mr. Montague in his recent speech at the Liberal Colonial Club. So far as this District is concerned, the Special Settlement Officer says that the lower classes of agriculturists, Pallis and Panchamas, are steadily acquiring land, that there is a tendency towards the diminution of the number of absentee landlords, and that the money-lending classes are not acquiring land at the expense of the cultivating ryots. All such risk, however, can and ought to be avoided by making small holdings inalienable except in the absence of heirs or subject to conditions of consent on the part of the revenue authorities, enabling only farm hands or other poor ryots in the village to acquire them from the original owners by transfer. Such legislation is desirable for other reasons as well and is even more necessary for the small ryot than for the large zamindars for whose benefit a special Act was passed. The evils of a rural exodus and of increasing emigration to inhospitable lands

oversea will be arrested and a prosperous population of peasant proprietors will be established. Large capitalists will be obliged to turn to industrial undertakings or to investments other than land and intensive agriculture will also be tried.

The need for the permanent settlement of small holdings of 30 rupees and less is hardly a degree less urgent than the case for small holdings of 10 rupees and less. As regards the larger holdings too, if the increased economic efficiency of the Presidency is to be realized, the extension of the principle of a permanent land assessment to all holdings is inevitable. But if the solution be deferred as regards holdings of more than Rs. 30 it must be at least conceded that the existing period of 30 years is too short and it is not unreasonable to ask for 60 years. We must press upon the Government the desirability of confining the enhancement solely to a rise in prices, and of fixing a maximum limit of 12½ per cent. in revising the settlements. It is not easy to see why the recommendation of the Royal Commission on Decentralization, in favour of legislation defining the general principles and period of settlement, should not have been carried into effect.

There need, however, be no loss of revenue to the State by the adoption of the system of permanent settlement even in the case of the larger holdings. The Indian exchequer can easily be replenished by substituting very moderate succession duties and duties on transfers and the unearned increment can be automatically tapped by assessing the income from land to income-tax. The whole of the complicated and troublesome irrigation and other cesses might be swept away and the enormous expenditure of the frequent surveys and settlements might be minimised. And all the difficulties of remissions and coercive processes would also cease to exist.

The Mysore Economic Conference.

At the Fifth Session of the Mysore Economic Conference, Mr. M. Visvesvaraya, the Dewan, delivered the presidential address in

which he reviewed the work done by the state under the heads, Education, Agriculture, Industries and Commerce. Mr. Visvesvaraya laid a practical and constructive programme of work to be done in the future by the various Committees with a view to the fullest economic moral and physical development of the State. The work was to be, in the words of the Dewan "a war against waste". We quote below extracts from his interesting address :—

EDUCATION.

Increasing facilities are being given for developing primary and technical education. A scheme for developing female education in the State and another for the establishment of public libraries in Bangalore and Mysore are under the consideration of Government. A few lectures were delivered by recognised experts in subjects connected with the Conference work. In connection with the project for a University in Mysore, information is being collected regarding the conditions under which the smaller Universities are working in the British Colonies and foreign countries. The questions connected with education will receive increasing attention in future as Government are convinced that activities in this direction are of the highest importance from an economic point of view.

AGRICULTURE.

During the year, the Department of Agriculture was reorganised and the scope of its work considerably enlarged. Questions affecting the agricultural population, such as the creation of large farms, improvement of tanks, extension of sugar-cane cultivation, etc., are engaging attention and enquiries into the economic condition of the raiyat are being pursued. Rules have been sanctioned for the grant of loans for dairy farming. Two experts have been appointed, a central silk farm has been started, and a silk association formed, to develop sericulture. Young students are being trained in sericulture and horticulture, and arrangements are being made to distribute disease-free eggs to cultivators engaged in the silk industry. The question of educating the adult population in the rural areas in the three

Rs. and of spreading correct ideas of business among them, is receiving attention, with a view to enabling the cultivators to maintain farm accounts and calculate their income and losses. The co-operative movement is making satisfactory progress.

INDUSTRIES AND COMMERCE.

Turning to industries and commerce, you are aware that a department came into existence at the beginning of last year. Eleven pumping installations and five or six saw and other mills have been started, and efforts are being made, by the grant of *takavi* loans and other means, to make the use of machinery popular. Instruction in weaving is given in the Government weaving factory in Bangalore and other out-stations. Demonstration parties have been organised to popularise fly-shuttle weaving. The three sugar-cane crushing plants established are reported to be working successfully. Recommendations have been made by the Committee regarding the establishment of a wood distillation plant, and, at its instance, the starting of a chromo-lithographic press has been sanctioned. Experts were appointed and investigations pursued regarding the possibilities of the manufacture of tiles, porcelain, matches, paper, coir-matting, etc. A report on the Industrial Survey, prepared by the special officer appointed for the purpose, has just been issued. The Bank of Mysore, which came into operation eight months ago through the efforts of this Conference is at present carrying on transactions to the value of over Rs. 23 lakhs.

WORKING OF COMMITTEES.

Besides the newly formed standing committee, there are three central and eight district committees working since 1911, and 29 taluk progress committees have been formed up to date. Several important questions which have been under deliberation and investigation by the committees are slowly taking practical shape.

The work of a committee falls chiefly under three heads. In the first place, it has to collect local information and statistics on all subjects engaging its attention. Some of this infor-

mation, if carefully compiled, may be of sufficient value to be printed and issued for the use of the people. Similarly, corresponding information has to be collected from foreign countries and spread among the local population. *Secondly*, the economic needs and wants of the area concerned should be examined, and a list of the more important ones prepared in the order of their urgency and importance. The list should be periodically revised and kept up to date. The investigation of each item should be pursued until a remedy is found or a decision come to. The *third* important work is to put forward practical working schemes for meeting wants and effecting improvements, and, after the same are approved, to suggest measures to execute them and to watch progress. The committee might also take up any other connected questions for study and investigation.

ORGANISATION FOR ALL ROUND PROGRESS.

There has been a frittering away of energy in various directions in the past, because it has not been utilised with sufficient concentration and in a manner calculated to produce the largest results.

All the activities and professions in the country may be defined and classed under, say, 6 divisions in a village, 12 in a town and up to 18 in a city. Nearly all the activities in a town and a village are also practised in a city although the extent to which they are practised may vary.

Taking a town, say, of about 10,000 inhabitants, for example, the activities and professions may be classified into a dozen divisions as under:—

1. Education,
2. Agriculture,
3. Industries and manufactures,
4. Trade and commerce, co-operative and joint stock enterprise,
5. Town planning and improvements, water-supply, drainage and house-building,
6. Municipal government and sanitation,
7. Physical exercise and recreation,
8. Business training, neatness, economy and public morals,

9. Religion and art,
10. Social activities and improvement,
11. Miscellaneous activities and professions not falling under any of the above heads, and
12. Any other activities peculiar to the locality.

The first four heads come under the purview of this Conference and we are gradually doing what may be needed to help to train the people. As regards all other activities, with the exception perhaps of those connected with religion, a central committee may be formed in each town and it may appoint some one, an individual or a sub-committee, to the charge of each class of work and hold itself responsible to see that the work of that profession is progressing, that people engaged in it are active and are able to help themselves.

In a village, the following six divisions of activities and professions might be enough:—

1. Agriculture,
2. Subsidiary occupation,
3. Education.
4. Industries, manufactures and trade,
5. Village communal work including settlement of disputes, and
6. Village administration.

The classification into 6, 12 and 18 is quite arbitrary, but it is necessary to indicate even an approximate arbitrary number for the sake of definiteness.

In every city, town and village, as already stated, a central committee or association should be responsible for providing agencies to keep all these organizations moving and in efficient working order.

The work to be done by the individual or sub-committee in charge of each activity or profession will be to bring together all the people interested in the work and make them act in unison, collect information and statistics, obtain useful information from abroad and spread the same locally, hold public and committee meetings and conferences, issue bulletins, leaflets and newspaper articles, collect funds and do everything in its power to arouse the people interested in that particular activity or profession, and make them think, move and

act together and endeavour to raise their standard of work to the highest level attainable.

Besides the local activities in each residential area, there should be an agency to guide and advise the individuals or committees engaged in the same profession or class of activity throughout the State. This guidance may be entrusted to an association or committee of leaders in the capital of the State or in some important town. The central authority will do for the whole State what each responsible individual or sub-committee does for the town. For each profession or class of activity, there will thus be a local agency to promote its objects and a central agency to guide and co-ordinate work throughout the State. There will come into operation local and radial forces to stimulate progress in each profession or activity, and the interlacing of the efforts which will follow cannot fail to raise the standards of work, or earning capacity, or both, of the people participating in the activities.

Progress, if it is to be sustained, should be many sided; but, in the present state of the country, economic progress with which we are concerned demands our chief attention. It is for the representatives of the people to develop other activities, and I feel persuaded that, if an organization such as I have outlined is brought into existence, every important activity and profession in the country will receive its due share of attention; there will be both co-operation and differentiation and every person engaged in any profession or business will be kept thinking, working and moving according to the best of his capacity and opportunities.

WASTE.

There is waste going on in the business life of our people in many ways—waste both of resources and of opportunities. There is waste of energy due to insufficient occupation, because agriculture gives full employment for only six or seven months in the year. There is waste due to illiteracy, because ninety-four persons out of every hundred are uneducated. There is waste through ignorance of the ways of

civilised people, because we fail to utilise their accumulated assets of wisdom and experience. Waste is also going on through our imperfect acquaintance with the commonplaces of civilization and lack of correct business ideals and business standards in daily life. Mental energy is wasted in caste disputes and village factions. Capital is wasted because money is hoarded instead of being made available for productive purposes.

There is waste of health because, although leading moral lives normally, men and women grow prematurely old for want of pride of person and attention to the elementary laws of health. The largest waste of all is the lack of capacity for co-operation, the difficulty of ensuring harmony, sympathy and oneness of feeling, in matters affecting the larger interests of the State.

THE WORK OF THE CONFERENCE.

The work of this Conference, which is to induce people to think ahead and work ahead and economise human energy, may be described as a war against waste. Our people should realise that if they have to get on now-a-days, they must give up indefinite ideals and lazy thinking and subordinate all activities and accomplishments to certain well defined needs of material progress. They have to take more pains over their work, toil longer hours and submit to the discipline and restraints of civilization. That will enable them to find continuous employment, raise standards of comfort, live longer and healthier lives, increase production, and share in the world's activities and pleasures of eventful living.

RESOLUTIONS.

Among the important resolutions passed at the Conference, the following will be found of interest :—

(1) That an intelligent and experienced officer of the Education Department who is a graduate be sent to Europe at State cost to study the organization of primary and technical schools in England and Germany. (2) That duly qualified Superintendents of Games and Physical Exercise be attached to the Mysore Normal School and the Maharani's

College, their duties to include the training of suitable instructors for District and Taluk Schools, and to bring these together annually for an exhibition during the Dusserah. (3) that a Government officer or private gentleman be deputed to Java to study sugar paddy and coconut cultivation, (4) that as factories are likely to extend in the larger industrial centres of the State, this Conference would strongly recommend the preparation of a scheme for an industrial suburb to each of these towns and that provision be made for railway sidings. (5) that the Industrial Committee promote industrial co-operation by employing suitable agency of at least three lecturers for improving hand loom weaving, brass work, cotton ginning and other industries on co-operative lines, that a fortnightly journal be published in English and Kannada devoted to activities of the Economic Conference, and (7) that a Central Committee of Co-operation be formed at a cost of Rs. 25000 per annum, with the object of developing the co-operative movement.

Labour and Co-operation.

Writing on the Labour Unrest and the place of co operation in the labour movement to the *Times of India*, George N. Barnes, M.P. sums up his conclusions on the subject as follows :—

(1) The distinctive place of co-operation in Labour advance must be constructive. That follows from the nature of the principle as well as from the habits of thought of co-operators and the traditions of the co-operative movement. Co operators will not be found with Labour when the latter is in flamboyant mood.

(2) Co-operation will be applied by small farmers in the co operative handling of agricultural produce, and it will find a greatly extended application in the extension of the consumers' federal movement as trade unionists rally up to its support. It will set an example to public bodies of social order and arrangement in business which those bodies may follow.

(3) But, further, I believe co-operators will be found, in relationship of mutual aid with organised labour, taking a part in larger constructive reform through the agency of public bodies. Or, to put it another way, I believe that Co-operative Societies will yet join Labour organisations in a joint movement to apply social co-operations into industrial life through the agency of the State as well as through voluntary organisation.

The Financial World.

The National Debts of the World.

A *Statement* compiled by the Department of Commerce at Washington is published in the *Monetary Times Annual*. It appears therefrom that the national debts of the world now aggregate \$42,000,000,000, having increased 20 per cent. in the last decade and doubled in the last forty years. The interest and other charges amounted in 1912 to \$1,732,000,000, or an average of slightly more than 4 per cent. though in many cases, especially those of the stronger nations, the interest rates are materially below that figure. "As shown by the following table," continues the *Annual*, "practically all the important countries show an increase in national indebtedness in 1912 compared with 1902 :—

	1912.	1902.
France	\$6,284,000,000	\$5,857,000,000
Russia	* 4,553,000,000	† 3,414,000,000
United Kingdom	* 3,486,000,000	† 3,885,000,000
Japan	* 1,242,000,000	262,000,000
German Empire	1,178,000,000	699,000,000
German States	3,736,000,000	2,688,000,000
British India	1,475,000,000	1,103,000,000
Italy	2,707,000,000	2,561,000,000
United States	* 1,028,000,000	† 925,000,000
	* 1918.	† 1903.

The aggregate of national indebtedness, including all countries for which data can be had, was, in 1800, \$2,500,000,000; 1850, \$8,500,000,000; 1900, \$31,250,000,000, and 1912, \$42,000,000,000.

British Credit Highest in the World.

Mr. Henry Lowenfeld writing in the *Financial Review of Reviews* says that as a merchant's credit is measured by the discount which he has to pay when melting his paper into money, similarly the only way to measure the esteem in which the credit of a nation is held is to compare the rate of yield afforded by its Loans as compared with the yield obtainable from the Loans of other Powers. The subjoined

Italian tax of 20 per cent. deducted.

table shows the yield of the Government Stocks of Great Britain, the United States, France, Prussia, Austria, Italy and Russia at their present ruling quotations :—

LOWEST PRICES NATIONAL SECURITIES IN 1907 AND COMPARATIVE YIELDS.

Issuing Nation.	Lowest price in 1907.	Rate per cent.	Yield per cent.		
			£	s.	d.
Great Britain	84½	2½	2	19	3
United States	129	4	3	2	0
France	93	3	3	4	6
Prussia	95	3½	3	13	8
Italy	100	5	4	0	0
Austria	97	4	4	2	6
Russia	77	4	5	3	11

It will be seen that in this list Great Britain takes the lead with a yield of £2-19s. per cent., United States are a good second with the low yield of £3-2s.

Another table is presented, offering comparisons over the years 1870-1907, which shows that, excepting 1901-1902, when the credit of the United States stood slightly higher, English credit led the way and still occupies the premier position.

The Swadeshi Speculator.

The importance of the small investor in India has been realised simultaneously with the need of his protection, and the Government of India have undoubtedly taken a wise step in increasing the limits for Post Office Savings Bank deposits. These came into force on the 1st April, and it should not take very long for the class in question to realise the advantages of Government security and a safe three per cent. over higher dividends on the frail standing of "Swadeshi" speculator. The increase in the limit is from Rs. 500 gross to Rs. 750 net, and the idea of substituting a net figure is to enable the depositor to withdraw as often as he likes, with the opportunity of saving and depositing, again. On the occasion of Sir William Meyer's visit to Bombay at the beginning of the month, the Chairman of the Chamber of Commerce

expressed some misgiving as to whether the increase in the limit might not enlarge the scope of the Savings Banks in an undesirable direction. Mr. Marshall Reid's fear presumably was that people would be drawn to the Savings Banks who would otherwise deposit their savings in a bank or invest them in some form of industrial enterprise. In his reply Sir William Meyer explained the reason why the change had been made, and assured the Chamber that full care would be taken to confine the operations of Government Savings Banks to their legitimate purposes. After all, there seems little ground for the apprehensions of the Chamber. Those investors who at present are the clients of the English banks will not be tempted by an interest of 3 per cent. Instead the Savings Bank should attract those whom the recent bank failures might otherwise drive to hoarding. The net deposits made in the Savings Banks in each year are utilised by the Government of India in their capital account and thereby supplement the funds that are raised by loan for expenditure on such works as railways and irrigation. Any measure which will assist in diverting hoarded money into productive channels is surely to be welcomed.—*Pioneer*.

Railway Deficiencies.

At the annual meeting of the Bengal Chamber of Commerce held recently, the Hon. Mr. A. M. Monteath said:—

During the past few years commerce has suffered acutely from inadequacy of Railway facilities. It has been felt in the matter of shortage of railway wagons, but this is not the root of the trouble. The root of the trouble is that for many years railway expenditure has been curtailed because money has not been made available. The result is that when good years come, such as the last few years, the Railways are found wanting. Trade has been hampered and some trade has been lost to India and has gone to other countries, but this is not all. How can we estimate what increase in trade there might have been, had Railways been fostered in lean years as they should have been? Trade requires transport and transport must exist before trade can be

created. Look at a map of India and note the conglomeration of names along every railway track, then go 20 or 30 miles inland from the railway line and the country is nameless. Does this not speak volumes for what railways can and do do? The railway grant for the past year has been 12 millions, the record grant for this purpose, and whilst we are thankful for this, not small but late mercy, still if it had been given when the Railway Conference recommended it in 1907, we should have had the benefit of it in the last few years of plenty. During the past year some 8,000 wagons have been on order and most of these have arrived out in India and it was only a few weeks ago that the East Indian Railway were complaining that they had wagons lying idle and now, to-day we are again face to face with our old and apparently ever present friend, wagon shortage. What we should press for is the continuance of 12 million grants, year by year, whether the years be lean or fat.

Industrial Loan Banks.

A writer in the *Horticulturists' Review*, familiar with the "Schulze-Delitzsch," the "Raiffeisen," and the "Haas" types of co-operative credit banks on the European Continent is filled with admiration for the amazing results achieved by each of these three systems. Then, he outlines a new project of "almost international magnitude which is to be created in Chicago."

This great banking scheme for the industrial classes owes its origin to Mr. Julius Rosenwald. The idea is, according to Mr. Rosenwald, "to enable wage-earners to borrow money easily, cheaply, and under self respecting conditions; to make small loans at low rates of interest—loans so trifling in sum that the ordinary bank would not consider them; to assist working men whose means are too insignificant to give them a bank."

"We shall require no security other than the endorsement of a fellow wage-earner."

"These banks, it is hoped, will in a large measure eliminate the loan shark now flourishing all over the world."

Upon inquiry, the writer finds that the scheme

involves an eventual capital of £1,000,000, and the first office is to be erected in Chicago—the forerunner of a whole chain of similar institutions throughout the United States; and ultimately spreading over the whole world.

No loans are to be made without definite knowledge that the money is to be used for legitimate and productive purposes. The small wage-earner, the country labourer, and the artisan will be able to borrow in an honourable businesslike way; and when his necessities have passed away he will be encouraged to save; the chief object of these banks being to inculcate thrift and self-help.

The scheme is evidently founded on the "Raiffeisen" banks of Germany, but it is on an amazingly prodigious scale.

What is Investment.

With the growing industrialisation of India people possessing spare cash will certainly aspire to earn more on their money by taking shares in companies. Such men will be able to avoid losses if only they will keep in mind the difference between Capital and Income.

Capital is that part of wealth which is used in the making of additional wealth. By itself capital is of no use in increasing wealth, but in conjunction with skill and industry it becomes a powerful force in the creation of new wealth. A manufacturer's factory, plant, and raw material come under the heading of capital, for they are all instrumental in producing a finished marketable commodity and thus increasing wealth, as, naturally, the manufacturer expects some monetary return for the use of his capital, mental activity, and industry. The retailer applies his capital in the purchase of goods at a lower price than that at which he hopes to sell, the difference between the buying and selling prices, less administration charges, advertising, and other incidental expenses, being an increase in his wealth. This increase in wealth is income to the manufacturer or trader.

So it is mainly with the investor, but there is an important difference: that, while the investor also uses his wealth for the purpose of increasing it, he places it for this purpose

into other hands than his own, and thus loses in a degree that personal control over it which the manufacturer or trader exercises over his own capital.

To be strictly correct, the manufacturer or trader who uses his money in his business does not thereby invest it. The essence of true investment is that the gain or additional wealth accruing as the result of the employment of Capital should not depend on participation in profits. It should take the form of interest on money lent, repayable in full at a given date, the extent of the gain, i.e., interest, being independent of the administrative powers of the users. This latter is *investment* in the strictest interpretation of the word.

It follows, therefore, that holders of Ordinary shares in commercial undertakings are not truly investors, any more than is the manufacturer or trader; for the holders of Ordinary shares are participators in profits, and their capital is subject to the many risks attendant upon partnership. This is not so, however, when the money is lent, as the user normally contracts for the loan at a prearranged rate per cent. for the use of his money, and the interest is earned and accrues from day to day, automatically increasing the value of his capital, the original sum lent being still repayable. Capital can thus be applied in two distinct ways, either to participate in profits and losses, or invested at any agreed rate of interest and it is important that this distinction is carefully borne in mind.

Rural Banks.

On August 9, 1913, the Senator for Florida, the Hon. Duncan U. Fletcher, introduced in the Senate of the United States, a Bill providing for the establishment of a complete system of co-operative rural banks. The Bill was read, and referred to the Committee on Banking and Currency. Addressing the Senate on the same date, Mr. Fletcher expounded the principles which underlie the Bill, and an outline of his plan is in brief, as follows:—

(1) that the present banking system, in which the ultimate reserves are practically controlled by a small number of banking institutions in New York, is defective, serving the needs of

the whole country badly in times of stress, and serving the needs of agriculture worst of all;

(2) that no commercial system of banking can adequately meet the needs of agriculture;

(8) that a system must be created whereby the capital and accumulated savings of agriculture must be made available and reserved for meeting the credit needs of those engaged in agriculture;

(4) that progress in agriculture depends today upon co-operation and organization among farmers, and that all forms of agricultural co-operation must be related to a co-operative system of rural credit;

(5) that, in view of the overwhelming interest of the country as a whole in the prosperity of agriculture, the savings deposits in the post-office, as well as other government funds, might profitably be lodged with the rural banks, and used to meet the demand for agricultural credit;

(6) that, as the element of saving is prominent in any system of rural credit, rural banks should enjoy the same exemption from taxation as savings and loan associations.

The Bill proposes to establish three separate classes of institutions: (1) Local Rural Banks; (2) State National Rural Banks; and (3) The National Rural Bank of the United States. The Local Rural Banks would be owned and operated by local farmers and might be founded with a minimum capital of \$2,000 in shares of a nominal value of \$10, sold at \$25; their area of operations would be a small district, and the character of the business they might transact is specified. The net earnings would be used to pay 6 per cent. on the invested capital and, after that, to create an additional capital fund. When the earned surplus was equal to twice the amount originally invested, the stock would be brought in by the banks at the price of issue, and the banks would become mutual banks without capital stock, operating at net cost. In the case of the dissolution of a bank, any existing surplus would be used for building or maintaining good roads in the territory served by the bank.

The State National Rural Banks would be controlled entirely by the Local Rural Banks in

each State. They would act as clearing houses and reserve banks for the Local Banks. All profits would go ultimately to the Local Banks which are the shareholders in their respective State Banks. The National Rural Bank of the United States would be established in Washington, and be owned entirely by the Local and State Rural Banks. It would be controlled by nine Directors, five elected by the Banks and four nominated by the President of the United States.

The distinguishing feature of the whole system is the power which, it is proposed, shall be given to each and all of the Banks to use their credit, as well as their cash assets, to meet the needs of the farmer. The Bill contemplates the creation of long-term bonds secured by first-mortgages on farms, to a maximum of 60 per cent of their assessed value. These would be guaranteed in turn by the Local Banks, the State Banks and the National Bank, and would, it is hoped, thus be raised into the status of high-grade investment securities, readily acceptable all over the world.

State Loans.

An Australian correspondent writes to the *Statist* with regard to the question whether the capital of State undertakings properly constitutes part of the State's public "debt." "The Treasurer of New South Wales" he observes, "has foreshadowed a variation in the methods of presenting the State's public accounts which should interest its creditors. He rightly points out that the bulk of the State's public indebtedness has been incurred through providing capital for the State's public undertakings—such as railways, tramways, harbour works, irrigation schemes, and so on. He urges that loans so raised do not really constitute debt properly so called, but are analogous to capital account in the case of a private company. So he suggests that our public balance sheet should be amended in such a way that this fact should be more clearly brought out. He sees, as everybody else sees that as these undertakings expand, as they are, bound to expand in a country larger than France and Germany combined, there will be

no end to the growth of our debt, while at the same time such debt is in no way comparable with indebtedness incurred through wars."

"At the same time," proceeds the *Statist's* correspondent, "it is perhaps not wise to draw the analogy between public debt so incurred and capital account of a public company too far. After all, it is their own money that the shareholders of a company find. If it is lost, they alone are losers. It is they who have the privilege of appointing the directors, who are jointly responsible for the management, and if these prove incompetent or neglectful they may be removed. These are not among the privileges of the holders of our Government stock. They put their money into railways, it is true, but that is the end of the matter as far as they are concerned. The management is conducted without reference to their interest. If anything went wrong they would claim the legal status of creditors, not of mere shareholders, who would divide any surplus assets after other creditors had been paid."

Short Loans.

The *Daily Telegraph*, traces the origin of the practice of raising money on a large scale by short-term notes, instead of by long-term bonds, to the United States; and remarks that many such loans had to be renewed at maturity and have by now been running for six years or more. Renewals have been so frequent in New York that the supply of these loans has increased instead of being reduced. The same custom has been adopted in England and France, so that what was apparently regarded at first as a mere temporary expedient must now be viewed as an established practice. M. Cailloux has manifested a preference for this system recently, remarks the *Madras Times*, but has rightly laid stress on the fact that all the issues he suggested "would be subject to comparatively rapid amortisation." In spite of precautions of this kind, "the new borrowing will always have a tendency to get ahead of the repayments." But experience in respect to various short loans seems to justify them. In France, this danger is at least as great as else-

where. There is the double risk to face, of redemption at inconvenient times and difficulty in raising loans. Besides this, a Government depending largely on short loans would be always in the money market, either borrowing or paying off or converting. The Finance Minister, instead of being the master of high finance, would be its slave sometimes. France might take a lesson from Germany, if her banks and people would submit to the application of Teutonic methods. Quite recently, the Prussian Government launched at the Berlin Banks a demand for another 20,000,000. It expressed willingness to accept the money in any form most convenient to the lender. The Prussian State Bank sent out a preparatory circular, stating that "public opinion must be respected until there is a further relief of tension in the loan market." The issue was to be in 4 per cent. treasury bonds, divided into sixteen series, one series to be redeemed each year. And the money was forthcoming almost as soon as it was asked for. "Quick change finance" has thus been adopted in Germany, but with modifications that appear to deserve careful study; for only part of the money borrowed has to be paid on the "short loan" basis, the liquidation of the whole loan being, apparently, spread over a period of sixteen years.

The Ways of Usurers.

Here is an instructive communication *apropos* a deceptive form of moneylending advertisement. The advertisement in question set out tables of so-called "repayments" which are designed to befool the unwary with the idea that they will only be required to pay back instalments totalling the amount of the advance; as an example, fifteen monthly payments of £1 13s. 4d. would "repay £25 bill or note." When the borrower applies to the lender he finds, of course, that he is not going to receive £25 in cash or anything like that sum in return for his bill or note for £25. The precise amount which he will get depends partly upon his necessities and ignorance and partly on the rapacity of the shark with whom he has the misfortune to be dealing. But in the majority of cases the usurer advances about 70

per cent. of the amount for which the borrower signs a promissory note.

Assuming that a borrower has received £17 in exchange for a promissory note for £25 to be paid off in fifteen monthly instalments of £1 13s. 4d. a month, it is shown what the rate of interest will be. The borrower will have the use of £17 for one month only, for at the end of one month £1 13s. 4d. is to be paid, leaving £15 6s. 8d. for another month, when the second instalment will reduce it to £13 13s. 4d., and so on. 'Now, if all these figures of £17 for one month, £15 6s. 8d. for one month, £13 13s. 4d. for one month, and so on, are added together, it will be found that the borrower has the use of £95 6s. 8d. for one month which is equivalent to the use of £7 19s. for one year. Call it £8 for one year. For this accommodation he pays £8, *viz.*, the difference between the £25 paid and the £17 advanced. That is to say, he is paying £8 for the use of £8 for one year, or, in other words, interest at the rate of 100 per cent. As, however, the £8 for interest is not paid in a lump sum immediately the principal has been paid, but by a series of monthly instalments, the rate of interest, exactly calculated, works on at somewhat less than 100 per cent. per annum.'

Mr. Webb on Indian Currency and Finance

In a series of four articles contributed to the columns of the *Pioneer*, the Hon. M. De P. Webb, C.I.E., attacks the conclusions of the Chamberlain Commission singling out two "principles" laid down in their report.

The Commission say: *The first object to which any surplus (cash balance) should be applied, is the reduction or avoidance of debt.*

The £270,000,000 which India owes to day, represents in the main expenditure upon valuable public works—railways, canals, telegraphs, posts, etc., and is almost entirely *Remunerative Debt* which Government could get rid of tomorrow if it cared to part with its valuable State properties in India. In these circumstances, is "the reduction or avoidance" of remunerative debt the first object to which an Indian surplus should be applied?

India is a rapidly growing country that

urgently calls for development in all directions. Capital is everywhere deficient, largely owing to the lack of confidence and organisation which results in much of the savings of the people being retained in private reserves instead of being accumulated and invested for the good of all concerned. This deficiency could sometimes be obviated to a certain degree by utilising any surplus cash balance as capital to be employed on public works. A Treasury Surplus in India may be regarded as a windfall in capital, and can often be treated as such. To devote this windfall to the reduction or avoidance of *remunerative* debt would clearly be absurd. We do not at present want to reduce or avoid remunerative debt in India. On the contrary the incurring of such debt being as essential to India's further development as the expenditure of brains, labour and materials, we want to see as much remunerative debt created as possible. Fancy private enterprise about to construct, say, a feeder railway, coming to the conclusion that as the work would involve the expenditure of capital which would have to be borrowed from the public, therefore the work had better not be attempted! The Government are often in the position of wanting to undertake works that involve large capital expenditure. It is desired, say, to spend £12,000,000, on railways but Government can only manage to borrow £6,000,000. Fortunately they have a Treasury Surplus of £7,000,000. Should this seven millions be applied to the "reduction or avoidance of debt," Or should it be expended as capital on a highly remunerative public work?

In the case of India the restriction or avoidance of capital outlay would simply mean the avoidance or restriction of India's development and advancement. In short the Austin Chamberlain thesis as to the application of surplus cash balances in India (and the arguments deduced therefrom that India's surplus cash ought always to be sent to London because it is in London that Indian debt can be "reduced" or "avoided"), is seen to be inapplicable, unsound, absurd.

2. The Commission's other financial princi-

ple is even more amazing than its suggested treatment of Indian cash surpluses:—

"The first principle to be borne in mind in any consideration of the Indian finance and currency system is that the balances of the Government of India in India and of the India Office in London, and the portions of the Gold Standard and Paper Currency Reserves located respectively in India and in London, all represent in the last analysis one single fund. The titles attached to the constituent portions of this fund indicate to some extent the nature of the needs and liabilities for which the fund as a whole is required to provide. The name attached to each portion indicates the primary function of that portion; but neither in theory nor in practice have the separate portions of the fund been entirely reserved for the objects indicated by their separate names."

It is quite true that in practice the various funds of the Government of India and of the India Office have, during the last five or six years, been intermingled in an almost inextricable confusion—so far as the public have been able to observe. But to suggest that the India office's activities in this connection have been carried on in obedience to some "first principle" of finance whereby names are given to the several Departments of Currency and to several other Departments of Finance—quite separate businesses be it remembered—merely for the sake of a momentary convenience, and that other and more important considerations exist which compel the authorities at Whitehall from time to time to ignore the little departmental arrangements, is to put forward a theory of financial management that may possibly command respect among the administrators of some of the Central and South American Republics but which will certainly be received by the great majority of business people in India and elsewhere with consternation not unmingled with ridicule.

To understand clearly the significance of this "one single fund" conception of financial management, let us imagine for a moment the head of some great Commercial House expounding the new theory to his son about to be initiated

into the mysteries of high finance. The Chief would probably speak as follows:—Listen. One day you will have in your charge the Export Departments handling cotton, wheat seeds, etc.; the Industrial Department controlling our Coal Mines, our Cotton Mills, and the Match and Cement Factories; then you will have to keep an eye on the Sea and Land Transport Branch—steamers, railways and river flotillas; and lastly, on no account forget the General Import Department who deal with Manchester and Glasgow goods, sugar, timber and lubricating oils. Now I want you to remember that the first principle to bear in mind—and this is the key to our scheme of financial management,—is that the money employed in all the various departments and industries all represents in the last analysis one single fund. The titles to the departments and the headings that you will find in the general and subsidiary ledgers indicate to some extent the nature of the needs and liabilities for which that fund, as a whole, is required to provide. But neither in theory nor in practice have the monetary dealings and doings of the separate departments been considered separately in this business nor do we consider it necessary for the various Departments to be bound down by any hard and fast rules as to the conduct of their own particular businesses so long as our one single fund—our supply of ready cash—is employed somewhere somehow, and not exhausted. This is the first principle that you must keep in mind in studying how our finances are managed.

No commercial man would be surprised to learn that a private business managed on a "first principle" of this kind had drifted into difficulties,—that the Transport Branch had placed stocks of cotton in the Cement Factory, or shipped all the Firm's coals to Newcastle. (A year ago most of the metallic currency in the Paper Currency Reserve consisted of gold, the Paper Currency promising to pay bearer silver; while most of the metallic currency in the Gold Standard Reserve was composed of silver, the first object of the Reserve being to supply the public with gold.) In fact, nothing but chaos and bank-

ruptcy could be expected to result from the elevation to a "first principle" of the fantastic idea that the "titles attached to different departments" merely served to indicate *to some extent* how those Departments should conduct their business: and that there existed other and superior considerations to which the businesses of individual departments had normally to be subordinated. The truth is that ordinarily and usually *no such consideration can or ought to exist*, although it must be pointed out that in recent years the India Office has created an impression to the contrary as, for example, when, with a cash balance in hand, some £14,000,000 in excess of its immediate requirements, it (1) continued to withdraw money from India (2) at unnecessarily low rates of exchange (3) merely to lend it out to the London money market (4) from whom it was simultaneously borrowing large sums—temporarily and permanently—on India's account. These oddities of financial management, it may be repeated, were each and all explicitly condemned by the Commission (Ss. 181 to 185 and 192).

Responsibilities of the Proposed State Bank.

Speaking at a meeting of the National Bank of India on the State Bank, the Chairman said:—

"The responsibility of the State Bank would extend to the whole conduct and policy of the bank to its ordinary dealings with the public, its manipulation of Treasury and other public funds, its behaviour in times of stringency and crisis and in short to the every day working of a complicated machine. One of the most important functions assigned to the Bank is the taking over of the Paper Currency. It is admitted on all hands that this department of Government has been an immense success and it promises to become increasingly so as time goes on. It has been well managed hitherto and Government with its net work of treasuries all over India is in a better position to develop and extend it than any bank could hope to be. The note issue at present amounts to 65 crores and with the Commission's recommendations as

to increased facilities for the encashment of notes it is certain to go on steadily expanding. Of this amount 14 crores have been invested in Government Securities, and the report suggests that this should be immediately raised to 20 crores by a transfer of securities from the Gold Standard Reserve. The Scheme provides that the interest on 10 crores of this is to go to the Government, the interest on the other 10 crores, together with all future profits from the note issue, to belong to the bank. The latter would therefore at once step into a revenue of some 35 lacs a year, with every prospect of a further large increase at no distant time. It will require very strong reasons to justify the surrender of so large and so promising a source of revenue in order to subsidise a scheme which even its supporters admit, is surrounded by serious practical difficulties.

Gold Coin and Bullion Imported into India by Sea in the Twenty-five Years ending 1912-13.

Years.	Private.	Government.
	Rs.	Rs.
1888-89 ...	3,11,90,882	...
1889-90 ...	5,07,10,273	...
1890-91 ...	6,50,08,317	...
1891-92 ...	4,11,89,291	...
1892-93 ...	1,78,17,891	...
1893-94 ...	3,14,65,300	...
1894-95 ...	1,75,62,800	...
1895-96 ...	5,02,92,692	...
1896-97 ...	4,49,11,790	...
1897-98 ...	7,28,12,221	...
1898-99 ...	8,84,00,542	...
1899-1900 ...	11,44,78,674	9,285
1900-01 ...	11,87,13,827	2,66,370
1901-02 ...	8,29,76,205	99,141
1902-03 ...	13,14,66,553	4,57,124
1903-04 ...	20,13,11,752	1,66,942
1904-05 ...	21,81,19,745	36
1905-06 ...	14,74,29,715	60,007
1906-07 ...	18,47,07,817	6,26,002
1907-08 ...	20,73,46,035	1,80,375
1908-09 ...	8,40,42,300	15
1909-10 ...	25,01,75,220	1,35,000
1910-11 ...	27,89,25,135	...
1911-12 ...	41,49,36,060	...
1912-13 ...	41,29,07,855	...
Total ...	3,35,88,98,892	20,00,297

The Educational World.

Agricultural Education.

The subject proposed for consideration by the Arnova Agricultural Society, namely, the causes of the small agricultural development of Galicia and the most efficacious means for extending it was the object of a learned discussion, in which the special importance of the education of the peasants was clearly shown. The following decisions were come to:—

(1) To ask for the institution of itinerant agricultural education;

(2) To increase the organization, development and working of the Agricultural societies by means of a uniform system of regulations;

(3) To increase competitions among livestock improvers and the use of chemical manure, petitioning the State to place on the Estimates larger amounts for subventions to these competitions and to distribute chemical manure to the Agricultural Societies free of charge in certain quantities and also some model machines for purposes of experiment;

(4) To request the Minister of Agriculture, Industry and Commerce to increase the subventions for prizes to farmers, live-stock improvers and labourers who most distinguish themselves in agriculture and live-stock improvement.

The problem of the improvement of agriculture is a problem with every one all over the world; and the above resolutions passed at Galicia afford a general indication of the form that such improvements should take.

The Cinema in Education.

The educative influence of the Cinematograph was discussed at the second annual dinner of the Cinematograph Exhibitors' Association of Great Britain and Ireland, held at the Criterion Restaurant recently. Mr. J. Ellis Griffith, M.P., Under-Secretary for the Home Office, presided. The Chairman, in proposing the toast of "The Association," said that whereas seven years ago 900 people were employed in the industry,

now there were 120,000. There were at present about 5,000 picture theatres in England and the number of people who paid for admission every week was about 7,000,000. The capital of the industry totalled about £70,000,000, and last year alone about 544 new companies were registered representing a capital of nearly £3,000,000. He thought there was an immense future for the industry. Its educative influences had not yet been quite appreciated, and he looked forward to the day when it would play a considerable part in that direction. His department had something to do with the provision of safe buildings for the people who were entertained, and he was allowed to officially say that he and his colleagues had the co-operation of those engaged in the industry in all cases, and had experienced very little difficulty in that respect.

Commercial Education.

Commercial Education is receiving much attention everywhere.

Two articles appear in the *Morning Post* on "Commercial Education" by Dr. Spencer. The general result of his remarks seems to be that a good Commercial Education—at least, in schools—differs from a good general education about as much as a Christmas pudding differs from a plum pudding. Commercial history, geography, and arithmetic are dismissed with scant courtesy. Commercial French and German are bowed out more ceremoniously, but not less decisively, but the thorough teaching of languages is strenuously insisted on. What remains comes mainly to this: stress on the economic side of geography and history for all boys, economics, the principles of accountancy and the materials of commerce for those who remain at school till seventeen, and some advanced subjects, such as the Law of Contract, for what the author calls "supra-matriculation" classes. Typewriting and Shorthand are, of course, given a place. Gymnastics is

particularly mentioned as also the study of the British constitution by English boys.

The moral drawn by the *Journal of Education* from this is that the business of school education is not to give technical training, but to form the mind. What is wanted for the boy who is going to pursue a business career is not particular accomplishments so much as brains and backbone, and the capacity to learn. It is the possession of this latter capacity, indeed, which is the real test of the success of schools. If some forms of education which have been much in vogue are now being discredited as a preparation for life, it is not, or it ought not to be, because the subjects taught are useless, but because either the subjects themselves, or the methods by which they were learnt produced an inelastic, wooden type of mind, that lacked versatility, and failed when confronted with problems unlike those to which it had grown accustomed in the classroom. To all business men who complain of the ignorance or incapacity of schoolboys the journal says that the real question is not what do these boys know, nor what can they do, but can they learn quickly and efficiently?

The Railways and the Farmer.

In the Western States of the U. S. A. the railways co-operate with the State Agricultural College in sending out single cars and, in some instances, complete trains equipped to demonstrate the latest discoveries and methods of scientific agriculture. The latest instance that has come to our attention is that of the Farm Demonstration Car of the New York, Ontario, and Western Railway. From a report of the first trip of this car, which was recently completed, we learn :—

The interior fittings of the car were removed, and under the direction of the State College of Agriculture at Ithaca it was fitted out for its work as the carrier of a travelling agricultural exhibit. A partition ran down to the centre of the car for about two-thirds of its length. On one side were placed the exhibits of the Department of Animal Husbandry; on the other was shown the display of the Department of Soil Technology; the other third of the car was

occupied by the Department of Poultry Husbandry.

These three departments were in charge of men of ability in their respective lines, both theoretical and practical. The exhibits consisted of samples of various kinds of feed, of various kinds of soil, of charts and diagrams, of simple apparatus for measuring rainfall and for testing the chemical properties of soil, of models of nests for laying hens and hen-houses, etc.

The car, it appears, was on the road for seventeen days, stopping at various stations, chiefly the smaller villages. The attendance for this period was over four thousand. In some cases meetings were held in the evenings in public meeting places. Both the farmers along the road and the railway officials agree that the experiment was highly successful and will be productive of good results. In this connection, the *Outlook* remarks "Aside from the technical value to the farmer of such a travelling exhibit and lecture course, its social influence is undoubtedly great in showing the importance of friendly co-operation between the railway and the farmer. The prosperity of American railways depends in a large measure upon successful crops; on the other hand, if the farmer cannot obtain reasonable, efficient and rapid transportation, his crops lose a great part of their monetary value. The railway managers and the farmers, therefore, are in a very real sense partners."

Cawnpore Agricultural College.

The following resolution has been issued by the Government of the United Provinces :—

For a considerable time the status and objects of the Cawnpore Agricultural College have been a matter of anxiety to Government, and the Lieutenant-Governor has now come to the conclusion that radical alterations are necessary in the course of studies there provided. In order to define clearly the difficulties with which Government has been confronted, it is desirable to give a brief *resume* of the history of the college. Previous to 1906 a school for the training of *qanungos* existed at Cawnpore: the college was built up on this foundation. In establishing an institution for the higher study of Agricultural subjects Government had in view three main

purposes. In the first place, it was intended to train candidates for the revenue service of Government, a service in which a knowledge of agricultural conditions had long been recognised as desirable. Secondly, the hope was expressed that candidates would be available for the staff of the Agricultural department, though it was recognised that higher training at Pusa would be required for research workers. Lastly, it was expected that, although the college would not be designed to train practical farmers, it would introduce a leaven of scientific agriculturists among the landholders of the province, and would give a sound technical training for the profession of land agent.

In 1906 the college was opened with a three years' curriculum carefully defined by the Board of Agriculture. The maximum number of nominees for training as *qanungos* was fixed at forty per annum. Their selection was left to the Director of Land Records and Agriculture. The maximum number of entries for the college was raised to fifty per annum, the remaining ten coming for training in agriculture and their selection being ultimately entrusted to the Principal of the College. In 1907 a principal, a qualified botanist and a qualified agricultural chemist were appointed, assisted by a staff of Indian professors. An ambitious building programme was embarked upon. Hostel and bungalow accommodation was first provided, and at the close of 1911 the imposing buildings in which the college is now housed, with their laboratories and class rooms fitted up in modern style, were opened.

The Benefits of Technical Education.

In a paper read at the Behar School of Engineering, Bankipore, the Rev. J. Ireland Hasler considered the benefits of a technical education from two standpoints, *viz.* (i) that of the individual who receives such a course of training, and (ii) that of the community of which he forms a part.

BENEFITS TO THE INDIVIDUAL.

* Herbert Spencer in his treatise on "Education," when dealing with the subject as to what knowledge is of the most use placed Mathema-

tics and Science in the foremost place and in regard to Mechanics argues that the fate of a nation may depend on the amount of mechanical knowledge which it possesses. Its commerce may decline if its manufacturers use bad machines, such as cannot compete with rival machines which waste less in friction and inertia. Its navy may sink to an inferior position amongst those of surrounding nations if its steps do not embody all the latest mechanical improvements. One of the European nations that has manifested remarkable self-development during the last century is Germany and not a little of its progress has been shown to be due to the general introduction and fostering of technical education—such education being not merely confined to the acquisition of manual skill, but embracing also the explanation of the processes of production, as well as instruction in science and art in their special relationship to various industries. Again, the special branches of knowledge acquired are those which have a particular utilitarian value. Mr. Hasler says that in the ordinary little emergencies of life the artisan or the engineer is of far greater service than the lawyer or literary professor.

Technical education caters for (1) self-discipline and self-development; (2) the prevention of 'cram'; (3) physical development; and (4) the bringing about of co-operation between hand and brain.

On its moral side, technical education inculcates the dignity of labour, a habit of thoroughness, and minute attention to details, thus building up real manhood and character.

BENEFITS TO INDIA.

The writer mentions that India is very largely an agricultural country and her industries that used to be flourishing are now in a state of decay and their degenerate condition is due in no slight degree to the fact that while other countries have invented or adopted new methods of production, India has lagged behind. She has become a land of raw products and a place of market for the manufactures of other countries. But the progress of a nation depends upon the establishment of a diversity of occupations which will relieve the

pressure on the land, and two of the best wealth producing occupations for a country are manufacture and mining. One of the ways to protect India from the direful effects of periodic famines is to promote a variety of occupations, both by the building up of industries by outside capital and agency and by the encouraging of local capital and enterprises to develop industries. For the latter method, i.e., for the successful development of any industry, men of expert knowledge and practical experience are needed and it is just such men that it is not very easy to find in any numbers in India at present. When the writer has said all that, it is easy to fall in with his conclusion that the benefit of technical training in India is that it effectively links the brain of India to her industries.

German Ideals in Education.

The report made to the London County Council, through their education officer, Sir Robert Blair, by Mr. J. C. Smail, Organizer of Trade Schools for Boys, on "Trade and Technical Education in France and Germany," contains interesting reading :—

The general impression made upon Mr. Smail as a result of his actual study of the compulsory system of continuation education in operation on boys of 14 to 18 years of age was that such education is of great value and importance, and is working smoothly with the keen support of employers. The following conclusions are reached as to technical courses,—

(1) There has been, broadly speaking a difference in ideals between Germany and Britain in the organization of technical courses. Germany is aiming at benefiting the nation by training properly all the workers through definitely specialized courses. Britain has organized so that individuals may secure what they think best for their own advancement.

(2) The fundamental basis of any course of study for technical students must be their trade or employment. If this is recognized and acted on in the preliminary years from 14 to 18 there is little danger of work at more advanced

stages, even if irregularly organized, being ineffective.

(3) Germany is aiming at making good citizens and has realized that a good citizen must be a good workman.

(4) Germany has come to believe that workshop training alone is insufficient to make a sound industrial nation ; that it must be reinforced by adequate education specialized to trades.

(5) This specialized education must include specialized calculations, technology, drawing and citizenship. Munich also believes in trade work in the compulsory schools, but Berlin does not.

(6) Citizenship must be taught to enable the worker to recognize his individual position in the State, his position with respect to his employer and his fellow workman, his family and social duties, the relative position of his trade in his own country, and in the world's commerce and industry.

An instructive estimate of the cost of continuation education shows that not only are more individuals being educated in Germany, but that in Berlin those who are being educated at approximately the same cost per head as those in London are receiving from four to five times as much education.

The School Garden.

In an article on "Nature Study" contributed to the January number of the *Tropical Agriculturist*, Mr. C. Driberg has some sensible remarks on the function of the School Garden and the value of nature study in promoting general knowledge.

The object of the school garden is not to promote agriculture or horticulture, though this might result indirectly. To try to make it a means of industrial training would be a fatal mistake, not merely because such attempts have proved ineffective, but also because the principle is unscientific.

The real object of a school garden is to improve the general education of the scholars by making it a field for nature study. With this

object it should be incorporated with the organization of the school.

Besides giving positive knowledge and a pleasant recreation, the work of the garden cultivates a love of industry, order, neatness, a sense of beauty, form, and colour, and touches the heart as well as the brain. As Mr. Rooper of the English Board of Education puts it "it is a natural gymnastic which bridges over the space that separates physical from intellectual growth, and serves as a link between learning and life." Professor Geddes, touching on this subject, says :—"Of all the facilities which teacher and school-board can provide, and which central authority can encourage, let me plead for the school garden."

As regards the range of general knowledge it is possible to gain by nature study in association with the school garden, that is only limited by the resources of the teacher. The following will give some idea of it.

Site and aspect, sun and shade, the sun in the solar system, how it "travels," the sundial, variation of the atmospheric temperature—local and general, causes of variation, measuring heat, the thermometer, evaporation of water, sunlight in relation to plant nutrition and growth, weathering, dew, wind, cold and frost, how soils are formed, ingredients of soil, sand, clay, etc., their properties, soil mixing, measuring beds and calculating areas, necessity for drainage, advantages, why does water rise from a saucer into a flower pot standing in it? properties of water, drought, mulching, how it helps to retain soil moisture, the seed, the plant egg, testing for vitality, percentage of good seed, germination, necessary conditions, planting distances, calculation of plants on a given area, rain, how formed, rainfall and vegetation, rainfall of different regions, the rain gauge, monsoons, growth of plants, rate of growth, nutrition, plant-food in soil and air, composition of air, how plants help to keep the atmosphere pure, transpiration of water, respiration or breathing, the parts of the plant, the flower, fertilization, formation of fruit and seed, insects and birds helping or hindering cultivation, fungus pests, weeds, the geographical distribution of plants, designing and lay-

ing out beds, plan of garden, weighing produce, records and accounts, descriptions or essays.

In conclusion, the recommendations made by the writer are :—

(1) That a syllabus for a junior as well as a senior course of nature study be prepared for the use of teachers.

(2) That pupils should be taken through this course and complete it at about the age of twelve.

(3) That the syllabus should deal with the facts and phenomena of common experience, whether connected with botany or zoology, chemistry or physics, geology or astronomy.

(4) That the seasonal method of treatment be adopted, and that the syllabus conform to local conditions.

(5) That at the end of this course the pupil should go on to a three years' course of experimental science proper in chemistry, physics and biology.

(6) That after this, each pupil should specialize in any one or two branches of science according to the future career he decides upon.

Compulsory Continuation Schools.

The *English Review* for March contains a striking article by C. Smith Rossie, on "Training Citizens at Munich." They do many things better in Germany than what is done on similar lines in England, and of nothing is this more true than education. It has been rightly observed that England is less in danger from German Dreadnoughts than from German education. And the purpose of the writer in the *English Review* is to contrast German continuation schools with those of England.

He points out that everyone admits as a fact that the English system of evening continuation schools has been a ghastly failure. Particularly was this made clear in the report recently issued by the education committee of the London County Council. In that report it was mentioned that out of 130,000 students enrolled, no fewer than 40,000 failed to attend, and out of 13,500 classes which were opened, 2,600 had to be closed because the attendance was below the minimum.

In Munich, which is the city *par excellence* of

continuation schools, attendance is compulsory upon all boys between the ages of fourteen and eighteen, which, indeed, is the case in most of the States in Germany. The continuation schools are, however, not held in the evenings, as in England, but on Sunday mornings and two afternoons weekly. Moreover, by the Imperial Labour Law of 1891 all employers of labour are compelled to permit youths under eighteen leave of absence to attend these classes. It is this compulsion of employers and employed that makes the continuation schools of Germany such a success—it is the lack of such compulsion in England which makes them such a failure.

In Germany the scheme of education is based on the idea of making good citizens. The course of instruction in Munich runs over three years. Sunday morning is devoted to matters concerning the Empire, the city, and the parish. The boys are taught the duties of State officials and the right of the citizens. The value of health insurance is explained to them.

The training in citizenship includes instruction in the proper forms of nourishment, recreation, and care of the health. The dangers and injuries associated with particular trades are also explained. Technical instruction is given according to the trade adopted by each lad, although from what has already been written, it is clear that there is no narrow interpretation of each trade's requirements. The lads are taught how to write letters, and in common with all other students, receive instruction in a subject with the curious name of "Aufsatz," by which is implied the finishing of the citizen—making a man of him, we might call it—or, perhaps, we might use the word gentleman. For "Aufsatz" not only aims at enabling the youth to steer through the dangerous currents of life, but promotes the culture of the "beautiful and good."

Teaching Thrift.

A campaign has been started in America with headquarters in Chicago, by what is known as the American Society for thrift, the purpose being to teach thrift in public schools, colleges and universities, to discuss thrift in commerce

organizations, and to preach thrift in churches. S. W. Straus, Chairman of the Organization Committee, declares that the work is already well under way and promises to enlist the forces of schools, churches, and the rostrum. The co-operation of farmers, mechanics, and women will be sought in a great national effort to arouse the Americans to greater individual thrift. It is the aim of the society to draw within its circle representatives of all trades and industries. Thrift is defined as something more than saving; it means also "earning, working, planning, and increasing, as well as conserving." Upon individual thrift the prosperity of the whole nation ultimately depends. The society hopes to have a representative in every city of the country, even small towns. Mr. Straus recently said of its work:—

"The American people as a nation dislike to be told that they are unthrifty, and yet it is true that they are unthrifty in the extreme. They boast of their money-making powers, and the facts justify them. Americans know how to make money, no doubt about that, but they don't know how to spend it—and that is equivalent to saying they don't know how to save it—for money gets its chief value from its use. I do not want to be understood as saying that the want of thrift explains the greater or even a great part of the poverty of the world, but I do say that the want of thrift aggravates the already existing poverty and makes a heavy burden still harder to carry.

"The happy-go-lucky spirit so common among the American people is the reason why so much money is spent in senseless pleasure and vice. A certain amount of pleasure is needed by all classes; there cannot be efficient work where there is no play, but there is no doubt that a billion dollars are spent every year by the people of the United States on indulgences which not only can not be described as sanel pleasure, but which do positive physical and moral harm.

"Now, if this society by education can bring but the discussion of the thrift habit before the people, it will have made a holier people. Thrift does not simply mean that one shall

deny himself food and clothing—no, the thriftier he is the more money he and his family will have for these purposes. Thrift aims at cutting out the useless and senseless expenditures that there may be more money for the things that are sensible and useful, and thereby make for a better people and Government. You can not have national thrift until you have community thrift, and you can not have community thrift until you have individual thrift.

"Thrift is not a mere forced rule; it is a virtue; it is a principle. Thrift is not an affair of the pocket, but an affair of character. Thrift is not niggardliness, but wisdom. Thrift is not so much a matter of money as an attitude of mind. Our people, the community, our Government, all will be better by the practise of thrift. Little by little was this country built; little by little was the wisdom of the world conserved; little by little did the structure of science grow; little by little did the wealth accumulate—that is thrift. A spendthrift may be as much a spendthrift with a dollar as with a fortune, and thrift does not require a great deal of money, but only wisdom in using it."

Rural Education and Rural Welfare.

Among the resolutions passed at the Third Congress of Farm-Women's Clubs held at Ghent about which mention has been already made in these columns, the following are reported as being the most important, in a recent number of the *Monthly Bulletin of Economic and Social Intelligence*.—

(a) The farm-women's associations must not limit themselves to turning out good housewives, but must also be centres of social union; (b) in the training schools for young women, belonging to land owners' families, who pass a portion of the year in the country, instruction in agriculture must be so organized as to permit of their devoting themselves with intelligence to social work connected with it; (c) courses of domestic and rural economy must be instituted for the use of the founders of farm-women's clubs and the programme of the institutions in rural centres must be utilised for the preparation of competent managers of these clubs.

In regard to the problems relating to the

farm-women's professional mission, all the resolutions passed substantially aim at including in the school courses instruction in agricultural book-keeping, gardening, kitchen gardening, etc. It is especially desired that the public educational department should make the needful provisions for ensuring that practical ideas on the best method of preserving milk, the use of which is continually extending and acquiring greater importance, should be imparted in country schools, and that contracts for sale of milk should be based on its state of preservation and the quantity of fatty substance in it.

It would be desirable also that book-keeping should be carefully taught in all institutes of agricultural domestic economy, that its first elements should be imparted in the elementary schools and that many lessons in it should be given for housewives, if possible on the initiative of the clubs, which should distribute large numbers of model registers and should organize competitions among members, with prizes for those who have kept the books of their farm best.

Finally, important resolutions were passed in relation to family training, rural exodus, etc., which were dealt with in the third division of the Congress. In connection with the first point, the farm-women's clubs were urged frequently to study in their meetings questions of household training, morality or health; as well as to encourage the reading of instructive magazines and the foundation of boarding schools exclusively for farmer's daughters.

With regard to the depopulation of the country districts, the necessity was recognised that the mothers should understand the dignity of the agricultural calling and inculcate on their children from their infancy a respect for the name and occupation of a farmer, and that they themselves should be above all convinced that country life is preferable, especially from the point of view of health and morals, to that of the city, notwithstanding the more attractive appearance of the latter, and, in addition, that, even before they are old enough for school, the mothers should initiate their children in field labour, in the care of young cattle and of

garden produce, instilling into them in their early years the spirit of order and economy; and, later on, during their school years in their spare time, interest them in the farm work, the furnishing of the house and the farm, in literature dealing with agriculture, etc.

Finally, the Congress judged it desirable, always with the object of suggesting means for directly or indirectly combating the rural exodus;

1st, that the attention of the farm-women be often drawn to subjects connected with education;

2nd, that the farm-women's clubs organize family festivals, evening entertainments, and meetings for purposes of recreation;

3rd, that a list of publications be drawn up suited to promote devotion to the land, the family and religion, and that they be recommended and placed at the disposal of the inhabitants of the country districts;

4th, that the manner of organising *mutual and co-operative societies* among members of the farm-women's clubs be studied.

The Public Library Movement in Mysore.

A writer in the *Karnataka*, in the course of a lengthy article on the subject, thus sums up the purpose to be served by the Library System proposed to be organized in Mysore:—

(1) To provide well equipped and readily accessible Reference Rooms for Students, Scholars, the Press and persons engaged in Industrial and Economic enquiries and researches;

(2) To lend books freely for home reading to all persons competent to avail themselves of the privilege without any restriction whatsoever, but with sufficient safeguards in the shape of a scale of fines and forfeiture of privilege, etc., against negligent or wilful damage to the books or their loss, and

(3) So aid the present ill equipped and mis-managed school libraries by arranging a system of school supplies from the public libraries and provide children's rooms attached to the libraries.

Institute for Shipping and World Economics.

In connection with the University of Kiel

there has, says the *Economist*, just been founded under Royal Patronage and in commemoration of the Imperial Jubilee, an institute for shipping and world economics. The idea is the collection and scientific study of all available material bearing on questions of shipping, international trade, colonial policy, and international economic questions generally. The primary objects of the society are to arrange for lectures in connection with the University, on all the various aspects of shipping, and to gather and arrange a library of the printed material, periodical and other matters bearing thereupon.

Agricultural Training.

The Central Provinces Administration has decided that all junior members of the Indian Civil Service shall go through a short course of training in agriculture, and this course was held for the first time in the autumn of last year. In regard to this, the administration report says: "It lasted for about three weeks, and consisted of a course of lectures at Nagpur, supplemented by practical demonstration on the Nagpur, Telinkheri and Raipur farms. The Junior Civilians, who had just completed their first or second year's service, were put through the course, which was followed by an examination. The course was a success, and it has therefore been decided to adopt the scheme as a permanent measure."

Cawnpore Agricultural College.

The United Provinces Government propose to reorganise the scheme of studies at the Cawnpore Agricultural College. There will be two courses of study, one for the smaller Zamindars between 6 and 25 and the other for recruits for Agricultural service. The latter is a three-years' course, qualification being School Leaving Certificate or Matriculation.

Teaching the Young Idea.

In a number of rural elementary schools in England new manual processes like milking and thatching form part of the curriculum. Under a qualified instructor the boys have a course of daily lessons which extend for a fortnight, and in some of the milking classes, girls are included as well as boys.

Departmental Notes.

INSURANCE.

The Security of Life Insurance.

A great British Financier, Professor De Morgan, has said:—

'There is no Financial Institution whose security approaches even remotely to that of a well-conducted Life Assurance company.'

A Life Assurance Company is safer than a bank, why? For this reason. The cause that has produced most bank failures has not been insolvency, in the majority of cases. The bank if given time to realise its assets, could pay its creditors in full. But there came a panic, a run upon the bank, the bank had its money tied up in investments of various kinds and was unable to meet its obligations at once. From the nature of its liabilities a Life Assurance Company has no cause to fear a sudden accumulation of claims such as has proved fatal to many a bank, its death losses come one at a time, periodically, gradually, even regularly, i.e., within expectations. It can gauge with sufficient exactness the amounts that will be required to be paid out in claims for many years in advance. The funds of a well-established life office are generally invested in Government Securities and Guaranteed Bonds, etc., i.e., always in ready convertible securities. The most wide reaching panic, the most serious period of financial stress bear less heavily on a Life Assurance Company than on any other Financial Institution of modern times.

Above all, 'Under the Indian Life Insurance Company's Act' the Government Insurance Department has full control over the affairs of Insurance Companies, while the banks have none at present.

Municipal Fire Insurance.

The question whether all Corporation buildings be insured with fire insurance companies or whether the Corporation should have its own insurance fund was referred after the New Market fire in Calcutta to the finance special committee of the Calcutta Corporation, who recommended that there should be a Corporation Insurance Fund and Rs. 20,000 be paid yearly to that fund for five years and that at the end of that period Rs. 10,000 be paid every year.

ECONOMIC PRODUCTS.

The Oil Palm.

The oil palm (*Elais Guineensis*) is the source of palmetto-oil and palm-oil. The former is used in the preparation of vegetable butter. The latter is in request by soap-manufacturers, being the most suitable fat for their purpose.

Paint from Beans.

From Manchuria comes the invention of a new paint that is both water-proof and fire-proof in addition to being cheap and durable. "Solite" is the name of this new product, and three months after its introduction it found a ready market in Shanghai, Harbin and Tientsin. It is reported that the Japanese Navy is testing it with a view to adoption. "Solite" is made from bean oil which is produced in tremendous quantities in Manchuria.

A Concrete Hardening Material.

Mention is made by the *Engineer* of a concrete hardening material containing 95 per cent. iron dust or iron flour, which is mixed with cement for finishing the surface of concrete floors. From 15 to 25 pounds of the material is mixed with 100 pounds of the cement while dry, and one part of this mixture to two parts of sand is used for the top coat, which varies from one half inch to one inch in thickness. It is said to make a hard and durable floor. It is serviceable also in making new concrete adhere to old concretes in repair work.

Citrus By-Products.

The problem of utilizing waste oranges and lemons has recently been studied by the U. S. Bureau of Chemistry with interesting results. It is found that lemons which have previously been discarded will yield from 15 to 60 pounds of citric acid per ton. Other promising by-products are the essential oils of orange and lemon, 60 per cent. of which can be recovered by methods recently devised. As much as 6½ pounds of essential oil has been obtained from a ton of fruit.

MACHINERY AND APPLIANCES.**A Railway Carriage Lock.**

An invention which should have come to light before this is a new safety lock for Railway carriages. The patent is a contrivance by which the engine driver of a train by one revolution of a wheel connecting with all the carriage doors locks every one at once as the train leaves the station. On the arrival at the next stop the guard manipulates a similar wheel in his van, and unlocks all the doors simultaneously. One of the leading British Railway Companies has accepted the offer of the patent for use on its line.

Fruit Grading Machine.

Mr. J. Martin Newton, a Ross fruit-grower, lately exhibited in London a new fruit grading machine. This is self-feeding, the fruit being carried by a canvas to the padded grading rollers. Of these there are three; the first passes the best fruit into a special receptacle; the second separates fruit a size smaller, while the last selects still another grade. By a simple readjustment it is possible to deal with smaller fruit. Experts who have seen the apparatus in working order have expressed their satisfaction with its efficiency.

Penny-in-the-slot Machine.

A new penny-in-the-slot machine has been shown to a number of Canadian papers and favourably reported on for the selling of newspapers automatically, and it is proposed to place a number of these automatic paper sellers in the streets of several Canadian cities, and in London as well. The machines work on a simple principle, in the same way as the many automatic machines. Each one holds from fifty to a hundred papers, and they are refilled with the different editions of the paper as they come out, a separate machine being devoted to each paper.

A Novel Use for a Motor-Cycle.

An American farmer is making use of a motor cycle in rather a novel way. It is fixed on a stand against the wall of the farm buildings, and drives a chaff-cutter and turnip-cutter at the same time. It does not cost much to work it. The turnip-cutter is on the same level as the cycle, and is connected by a kind of bicycle chain. The chaff-cutter is placed above the turnip-cutter on another floor, and connected by 2 in. belting. After it has been on some little time the engine gets hot, so a fan is made to revolve by the side to keep it cool. It is also used for churning milk. This saves a great deal of time for the workmen because it can do the two jobs at once.

SCIENCE AND INVENTION.**Fire-Proofing Wood.**

A new process for rendering wood, which is used for building purposes impervious to fire, has been discovered in America and it is very probable that later on it may be used in making furniture. The process consists of impregnating the wood by means of Electricity with Sulfo Borate of Ammonia. This wood has been submitted to severe tests by fire, and has withstood it. It is owing to this process that doors or wooden floors made of beach, fir-tree or poplar only 1·8 of an inch thick have resisted flames for one hour without being in the least way affected. Doors made of sheet iron, on being submitted to the test have lost their shape owing to the intensity of the heat whereas these new process doors not only withstood the flame on one side but the other side remained perfectly cool.

A New System of Refrigeration.

The Autovacuum Refrigerating Co. of Chicago and New Orleans are placing on the English market a novel type of ammonia absorption machine, the Autovacuum. It is made in various sizes, the largest having an ice-making capacity of 850 lbs. for each "boiling-off," as it is termed—that is, the application of heat for a period of two to three hours. The smallest size will make 175 lbs. of ice in about the same period. The makers estimate the cost of making ice by this machine at 5 cents, equivalent to 2½ annas in Indian money, per 100 lbs.—*The Ice and Gold Storage.*

Method of Preserving Bread.

An American has secured a patent for a method of preserving bread against staleness in which the bread is inclosed in a sheet of paper coated with wax or paraffin having a few small openings so distributed that air is admitted in such quantities that a moulding action is prevented; while at the same time the action which produces staleness is retarded.

Respiration of Fruits.

It should be noted, a contemporary says, that fruits respire, and require oxygen and the removal of carbon dioxide. Some fruits acquire a bad flavour if too much carbon dioxide is present, and apples wrinkle and turn brown when the supply of oxygen is too small. Cold storage will not properly preserve fruits unless ventilation is supplied. Paper-packing appears to hold carbon dioxide; possibly the low diffusion rate of the gas is partly responsible for this.

HEALTH AND HYGIENE.**Insect Bites.**

Neal writes to the *China Medical Journal* that he has found the following procedure very useful:—

Take one ounce of epsom salt and dissolve it in one pint of water, wet a bath cloth so that it will not drip and rub the body well all over, and not wipe afterward but dress, and flies, gnats, fleas, bedbugs, mosquitoes, etc., will never touch you. If one is exposed more than usual, being near water, or in a forest, then make a somewhat stronger solution, wet a cloth and rub the face, neck, ears and hands well—do not wipe but allow it to dry; it will leave a fine powder over the surface that the most blood-thirsty insect will not attack. Besides, the solution is healing and cleansing; it will heal the bites, subdue the consequent inflammation, and cure many diseases of the skin.

The Faking of Rice with Talc.

In a report of a Public Analyst in England, it was pointed out that it has become customary in some parts of that country to give a pearly shine to rice by shaking it with a little oil and some powdered Talc or Mica. The danger to health is not so much from the presence of this small amount of added mineral matter as from the loss of minute amount of digestive material known as vitamine, which lines each rice grain. This is lost in the polishing process.

Remedy for Constipation.

Deep breathing is a potent method of strengthening the abdominal walls as well as the diaphragm and, if carried out regularly will be found to give very efficient aid in securing a daily evacuation of the bowels. Women, it is well known, are usually restricted to costal (rib) breathing, and many office workers and other sedentary persons have much the same defect. Gymnastics even of the mildest kind will appeal to constipated people, who are usually lazy, but the deep breathing is worth trying, according to *Popular Science Siftings*.

An Anodyne to Pain.

A Medical authority states that saponated coal tar, in water, 5 parts to 20, applied to carbuncle or boil, "acts like an anodyne, and soothes to sleep."

HINTS AND RECIPES.**Mice Trouble.**

Cayenne pepper will rid cupboards of mice. The floor should be gone over carefully and each hole stopped up with a piece of rag dipped in water and then in cayenne pepper.

To Clean Hall Tiles.

When cleaning hall tiles a brush is not necessary, use clean soft water, ordinary yellow soap and flannel.

To Keep Out Flies.

To keep away flies from the bedroom, soak a sponge in oil of lavender and tie it to the top of the bed, flies will fly from it.

To Keep Cool.

To keep cool during hot weather, turn a cold water tap on and hold the wrists under the stream. In two minutes the entire body will go down several degrees of temperature.

To Clean Red Rice.

In order to clean all varieties of any red rice which might have become mixed in with the white, all the seed to be planted is passed over a plate of glass which had light reflected from below. By this method any colored grains could be easily detected and removed.

A Use for Lime-water.

When jars and jugs have been put away and smell musty, rinse them with lime-water. This is particularly good for all vessels used for milk, as there is no likelihood of their not being properly cleaned.

Banana Skins will Clean Leather.

The inner side of a banana skin is very useful for cleaning brown leather articles, be they bags or boots or leggings. After cleaning and brushing them free of dirt and dust rub the skin over vigorously, then when quite dry polish with a piece of old silk or velvet.

If a Hose Leaks.

If a hose leaks, cut out the injured part and make a splice as follows: Procure a short piece of pipe that will fit snugly in the hole of the hose, and heat it enough to melt the rubber. Then push it into the hose so that the joint will be at the centre of the pipe, and cool it in water. The hot pipe vulcanises the hose and pipe together, making a permanent and neat repair.

MISCELLANEA.

Standards for Tea.

According to certain Regulations enacted in the Commonwealth of Australia, tea which does not comply with the following standard of strength and purity is deemed unfit for human use :—

(1) The extract obtained by boiling the tea with 100 parts by weight of distilled water for one hour shall be not less than 30 per cent.

(2) The ash obtained by incinerating the tea in a porcelain crucible shall not be more than 8 per cent.

(3) The portion of the ash soluble in boiling distilled water, called the "soluble ash," shall not be less than 3 per cent.

The above percentages are to be calculated on the weight of the tea dried for three hours in a water bath with the water kept briskly boiling.

An English Public School.

The *Pioneer* understands that the Government of Bengal, at the instance of prominent Indians, have now proposed to the Government of India, the erection of a school in Bengal on the lines of the English public school staffed by Europeans for students where the parents could pay high fees.

Spleen Census.

It has been decided, says the *C. & M. Gazette*, to undertake a spleen census of school boys of ten years of age and less in Secondary and Primary schools of the Punjab. The census will be carried out twice, once before and once after the malaria season. To facilitate work, only schools in places where hospitals and dispensaries exist will be examined as investigation can be carried out by the staff in charge of these institutions.

A Financial Failure.

The well-known financial house of Chaplin, Milne and Grenfell has suspended payment, and has withdrawn the firm from the Stock Exchange in consequence of very heavy losses.

Agricultural Conference.

A cable received in Ceylon states that His

Majesty the King has consented to become a patron of the International Tropical Agricultural Conference to be held in London. The Government will give a dinner to the foreign delegates and a reception will afterwards be held at the Imperial Institute, Mr. Harcourt, the Colonial Secretary, receiving the guests. Professor Dunstan, in his inaugural address it is stated, will embrace the subject of technical education, advocating the claims of Ceylon for the Tropical College.

Pottery Factory.

A furnace and all necessary plant imported from Europe are in process of erection at present in the Gwalior State for a Pottery Factory. Besides porcelain articles, tiles for building purposes for which there is a considerable demand will also be manufactured and it is expected they will yield considerable profit. H. H. the Maharaja of Scindia is taking a personal interest in the matter and visited the factory and expressed great satisfaction at the work now being done there.

Review of Co-operative Credit.

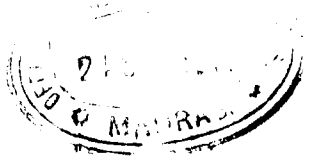
Since the Co-operative Credit Societies Act was passed in 1904 immense developments have taken place in the direction, and the Government of India in the Revenue and Agricultural Department have we understand under consideration, and will probably shortly issue, a Resolution on Co-operation in India. As the Act came into force ten years ago the review of the progress, the development and the extension of this important movement during this time should be most interesting and instructive, as this extension and development has probably been unparalleled in any other country in the world.

Municipal and Sanitary Engineering.

The London College of Municipal and Sanitary Engineering have of their own motion placed one free studentship for an Indian student at the disposal of the Association for the Advancement of Scientific and Industrial Education of Indians.

Motor Ploughs.

At the monthly meeting of the Royal Agricultural Society held in London on March 8rd a recommendation was received from the Implement Committee and adopted by the Council. It is proposed to hold in the autumn of 1915, trials for agricultural tractors and for ploughs to be used with tractors.



THE WEALTH OF INDIA

A Monthly Magazine of Practical Information and Useful Discussions

EDITED BY MR. G. A. VAIDYARAMAN, B.A.

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JULY 1914.

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The Wealth of India.**Current Topics**

BY ECONOMICUS.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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It was but a foregone conclusion that the recent failures of so many Indian banks would deal a rude shock to public credit. It is now ancient history that the trouble arose in the Punjab and spread to Bombay. The condition of the banks which came to grief was most unsatisfactory and the unbusinesslike methods and reckless management of the conductors were chiefly responsible for the debacle. Owing to the fact that the ball of the banking failures was set rolling in the Punjab, an account of the Joint Stock Companies in that province in the year 1913-14 cannot but be interesting. We see from the report of the Registrar that there were 146 registered companies working on 31st March 1914 as against 155 on the same date in the previous year. Thirty-one companies are said to have ceased working while twenty-two new ones were registered. Thirty eight more companies are also reported to have ceased working though this fact is not on official record. If these latter are taken into account, the total amounts to 69. It is interesting to note that half the new companies registered during the year were banks. The extent to which public confidence in banking institutions has been shaken may be gauged from the fact that one of the banks could not sell any shares at all, and one other, more fortunate, collected a

paltry sum representing an infinitesimal fraction of the advertised capital. The catastrophe which overtook the Indian banks was anticipated and openly predicted by close students of the development of indigenous banking who could detect serious flaws in the working of those institutions. The history of Indian banking is not without its comic side and the high sounding names of some of the concerns are ludicrously inconsistent with their resources. Mr. J. M. Keynes in his book on Indian currency and finance, gives interesting examples in this connection. He says:—"One comic opera Bank registered in Calcutta and in 1910 put down £20,000,000 without having at the time of the last return any paid up capital at all. Apart from this exceptional venture, the 38 banks registered in 1910-11 had between them a nominal capital of £1,306,000 and a paid up capital of £19,500. With enormous nominal capitals, they combine high-sounding titles—the Bank of Asia, the East India Bank, the Hindustan Bank, the United Bank of Commerce and so forth." We make this quotation because such ventures are not yet a thing of the past, though the public has learnt a wholesome lesson from the recent bank failures.

The Government of India have done well in issuing, through the Department of Revenue and Agriculture, a comprehensive resolution, dealing with the rise, progress, present position, and prospects of the co-operative movement in India. The adoption of the principle of co-operation for the production and consumption of wealth or for obtaining credit is a movement of comparatively recent times even in the progressive West. Since the advent of large-scale production and machinery driven by steam and electric power, cottage industries and industries upon a small scale have been rapidly displaced. Industrialism became the dominant feature of the economic organization of society and the future appeared to be bound up with the new wage

system and capitalism. It was soon perceived by some thinkers that this was no more the final or a permanent phase than mercantilism had previously been and co-operation was proclaimed to be the principle which would revolutionise the whole industrial and economic organization of societies. Extremely backward as she is, India is steadily coming in line with the nations of the West, adopting their industrial methods and experiencing their difficulties. India is no longer isolated from the outside world. She has become an important integral part of the world's market and has thus been thrown into the whirlpool of the commerce and industries of the world. The effects of this close association of India with the other countries of the world are being felt in various directions and she is now confronted with many of the problems which modern industrial and commercial developments have created elsewhere. So long as the population was small and its wants were few and so long as India's normal requirements were satisfied by the industry of her own sons, the economic question was not very pressing. During the past fifty years these conditions have gradually changed. The population has been steadily growing, thanks to the peace and order ensured by British rule, the old national industries have decayed owing to foreign competition, large numbers of people have been thrown upon the land and poverty and indebtedness have been the lot of the rayats. Various ameliorative measures have been taken by the State from time to time to assist the cultivator, but no appreciable results have accrued. Recurring famines and droughts have attracted the attention of the Government and the people to the chronic poverty and helplessness of the cultivators and craftsmen and proposals were made for the establishment of agricultural banks for the supply of capital to needy and indebted rayats. Looking to the vastness of the country and its teeming millions, the dense ignorance and impoverished condition of the cultivators

who form the bulk of the population, the keen competition and struggle for existence which are the characteristics of modern industrialism, one can easily perceive how radical and comprehensive must the measures be which may be devised for the purpose of improving the lot of the masses in India. The co-operative credit movement arose in Germany about the middle of the last century and it was not till 1890 that any noteworthy progress was made by it in that country. Within the last few years, however, several other countries on the continent of Europe have taken to it and they have remarkable results to show of the working of various classes of co-operative societies. It was in 1895 that Sir Frederick Nicholson submitted to the Government of this Presidency a valuable report describing the systems of co-operation in force in European countries and examining their applicability to Indian conditions. In 1901 Lord Curzon appointed a Committee under the Presidency of Sir Edward Law to report on the action necessary for the establishment of co-operative societies on a proper footing in this country. As a result of the recommendations of this committee a bill was introduced in the Supreme Legislative Council and was passed as Act X of 1904.

This is the genesis of the co-operative movement in India. Ten years have elapsed since its inauguration and the Government of India have taken the opportunity to describe its present position and indicate the lines of advance. Some people appear to think that the Resolution of Government has been pitched rather in too enthusiastic and optimistic a key. A careful perusal of it, however, leaves no doubt upon one's mind that though Government are zealously hopeful of the beneficial effects of the spread of the co-operative movement in India, they are likewise not unconscious of its limitations and possible dangers. They have, therefore,

given a warning against haste and have laid down sound principles on which the movement must be carried on. The number of co-operative societies, including those in the Native States of Baroda and Mysore, has, according to the latest returns available, risen to 12,324 and the number of members to 573,536. All but 176 of these societies have been organized for purposes of credit. The demand for the creation of new societies is very brisk, but the Registrars have wisely acted upon the principle that one good society is, in the end, better than any number of unsuccessful ones, and they have been going forward with the greatest caution and care. The societies have, no doubt, yet touched only the fringe of the great problem of agrarian indebtedness and stagnation and if co-operation is materially to affect the condition of the masses, more rapid progress must be made. Government, however, claim and very properly claim, that if 600,000 persons are members, the numbers directly affected, including their families, can scarcely be less than 3,000,000 and if the general benefits that have accrued to outsiders are taken into consideration, co-operation has brought relief to 60,00,000 of people. This is a result, be it remembered, of the working of the co-operative movement for a period of only ten years. It is true that there is still only one agricultural co-operative society in India for every 20,000 of the population engaged in agriculture, whereas in Italy there are 18 and in Germany 52. All things considered, the progress of the co-operative movement in India, it must be said, is quite encouraging. Within the space available to us, we cannot give even a rough idea of the various most important points dealt with in the Government Resolution and must ask such of our readers as feel any interest in the movement to read it for themselves. We most confidently assure them that a careful perusal will give them ample instruction. The Resolution describes the type of co-operative societies started in

India, the area and nature of their operation, the form of liability, the system of shares and profits, the sort of security taken, the objects of the loans made to members, central societies and provincial banks and in short, forms a convenient co-operative hand book. We learn the Government propose to issue copies of the Resolution in pamphlet form for distribution among people who may take interest in the subject and cordially welcome the idea. As regards the relation that subsists and ought to subsist between the State and the Co operative Societies, the attitude of Government is the correct one, neither one of indifference nor that of undue interference. If the progress of the movement is to be vigorous and healthy, a measure of independence is as necessary to the societies as a limited control and supervision over their working at the hands of the Registrars. Government believe that the advent of the co-operative societies is a new factor introduced in the complexity of district administration and they have indicated the right attitude the officials should take in connection with it. Long and wide vistas of the possibilities of the usefulness of co-operation open before the eyes of Government and they have pointed out in what directions the societies are likely to prove beneficent to the country.

The aim of the European syndicate which is going to make an experiment in cotton growing on a large scale in the Punjab, is obviously not philanthropic. It is well

Cotton Growing Experiment in the Punjab.

known that European cotton spinners have been working hard to ensure a steady supply of raw cotton at reasonable prices. The world's output of yarn and cloth is increasing within leaps and bounds with the extended installation of spindles and looms, but the supply of cotton is precarious, and the manufacturers are hard put to it to obtain it at a cheap price. Every country in the world is going in for cotton

spinning, not excluding China, and the dependence of those that do not grow their own cotton has become most inconvenient to them. The International Federation of cotton spinners has been steadily devoting itself to the question of a larger supply of cotton and the possibilities of India in that connection have demanded their serious attention. Mr. Arno Schmidt, their secretary, has visited this country thrice and has been struck with the remarkable capacity of India for the extensive cultivation of cotton. Deputations have waited upon the Secretary of State urging him to force the pace of Indian cotton cultivation and during the last few years considerable progress has been made mainly through the efforts of the Agricultural Departments. While the prices of foodstuffs have risen and threaten to stand at a high level, drought or no drought, the effect of an extended cotton cultivation upon prices is likely to be undesirable. If food crops are replaced by such commercial crops, the supply of food grains cannot be adequate to the demand therefor of a growing population. Apart from this larger question, the leasing by the Punjab government of 7,500 acres of land to a European syndicate raises many important issues which challenge careful consideration. We do not know the details of the agreement entered into by the Government of the Punjab with the syndicate and are not, therefore, in a position to offer a decided opinion on the arrangement. It is said that the land on the lower Bary Doab are to be leased for a period of twenty years on the usual conditions, no special favour being shown to the company. About nine lakhs of rupees are to be invested in the concern. The cultivation will of course be carried on by Indian farmers under expert European supervision, on up-to-date system and with the most modern appliances. The addition thus made to India's total outturn of cotton will of course be inconsiderable, but the Federation will have demonstrated the possibilities of cotton grow-

ing in India. The difference between the results of the crude methods of Indian cultivators will be placed in sharp contrast with those of cotton growing on a large scale and along scientific lines. The Federation must, of course, be hoping to make it a going concern and they say they will be more than repaid if the experiment leads to more land going under cultivation and yielding a larger quantity of cotton, thus adding materially to the world's supply. The object of the company is thus described by a contemporary :—"It is intended to introduce a system of intensive cultivation and it is hoped that the example shown by the company will cause other landed proprietors in India to adopt similar methods and to increase the yield per acre and materially improve the quality of the cotton". This is not the standpoint of other publicists who view with misgivings the passing of so much land into the hands of a company of international manufacturers. It may be objected to this view that it suggests a suicidal and a dog-in-the-manger policy. But the criticism is not without its significance and moral. It is certainly not immaterial to India whether her resources are worked up by her own sons or by outsiders. Another set of people have no objection to the scheme 'as long as the aim of the Punjab Government has been to permit of practical demonstrations of up-to-date cultivation being afforded to local cultivators through the agency of such a company working under an European agricultural expert and with steam levellers, steam ploughs and other modern agricultural implements. Of course, an enterprising zamindar or two may profit by the experiment. But how are the local cultivators to derive any substantial benefit when it is a question of plentiful capital and enterprise mainly?

In our May number we discussed the desirability of having a Money-lenders' Act in India in view of the ruinous opera-

tions of the various money-lenders which are found to be detrimental to the interests of the helpless debtors and of the country generally. The Government of India, in the Home Department, has now addressed a circular letter to Local Governments and Administrations on the subject of the feasibility of preventing the use of civil courts as an agency for the realization of the extortionate demands of money lenders. The evil is admittedly an old one and its existence is undoubted. It has been often discussed in the past but no substantial measures have been taken to put an end to it. The Government of India feel that the time is now ripe for a reconsideration of the whole problem so that a solution may be discovered. The important issues are whether the courts are at present compelled to give effect to unconscionable contracts and to enforce the payment of exorbitant demands, whether it is expedient to take steps to remedy the evil if it exists and in what way the evil can be conveniently prevented. Government then go on to enumerate the remedies that have been suggested and appear to think that legislation on the lines of the English Money-lenders Act of 1900 offers the best chances of success. The letter then proceeds to point out and answer the various objections that are likely to be raised against the proposal which embodies the principle of the English Act that 'the courts should have power to go behind any contract with a money-lender to enquire into all the circumstances of the original loan and of the subsequent transactions and to make such order as may be reasonable.' The Government of India declare that they are not pledged to any particular method of approaching the problem and reserve an open mind in respect of any criticisms that may be offered. Their desire is to 'evolve a practicable scheme by which the courts can be saved from all necessity of helping the usurious and the extortionate to fleece and ruin the simple and the imprudent. They are under no delusion as to the innocence of the debtor and

wickedness of the money-lender which are usually taken for granted. What they feel certain about is that the courts if vested with a wide equitable discretion, can be trusted to discriminate between the honest and the un-

scrupulous whether they be creditors or debtors. In the new legislation they seek an ally to the co operative credit movement which is not sufficient by itself to deal satisfactorily with the evil of indebtedness.

Special Articles.

INDIA AND ENGLISH CAPITAL

By V. G. KALE, M.A., *Professor of Economics, Fergusson College, Poona.*

The large volume of the outflow of British capital which goes every year to foreign countries and British Possessions to exploit their resources is the measure of the economic progress of these latter as well as of the increased wealth production in England. For some time past, complaints have been heard about the unpopularity of British securities and the growing tendency among British investors towards sending their capital out of the country. This was and is still attributed by some to the financial policy of Mr. Lloyd George which seeks to impose higher taxation upon large incomes from land and capital. It is also said that people prefer to go in for foreign and colonial stock on account of the more attractive rates of interest that are obtained in that way and this seems to be quite a satisfactory explanation. Countries in Asia and America look up to England and France for the supply of capital which they need for the exploitation of their resources and the self-governing colonies of Great Britain naturally obtain all the capital they want from the mother country. The existing industrial organization of the world is pulling down the old barriers which divided country from country, and though national jealousies and international rivalries still impede the free movements of exchange, capital has attained formidable powers which defy and overcome all such obstacles placed in its way. The export of

British capital has not in any way been detrimental to the industrial development of England as certain people feared it would be. The quantity of capital that goes out in this way may be regarded as surplus capital which cannot be remuneratively employed in England and brings larger returns when invested abroad. The exported capital does besides feed the home industries as if it were employed at home. When a foreign loan is placed in the London market, the debtor country does not take away so much gold from England. The loan is after all wanted for the construction of railways and other public works and a portion of it may be and is exported in the form of rails and other commodities. Great Britain is thus accumulating ever-increasing quantities of wealth year after year and is able annually to raise millions of capital, the bulk of which goes abroad to finance schemes of economic improvement in foreign countries and British Possessions. From a summary prepared by the *Economist*, we find that the total amount of money publicly raised in Great Britain in 1913 was £196,537,000—a sum that is about £14,000,000 smaller than the 1912 total and £5,000,000 larger than that of 1911. During the past five years, the capital issues have averaged about £210 millions annually. The share of foreign and Colonial Governments and Colonial Municipalities accounted last year for over £67 millions, which means an increase of more

than £37 millions over the corresponding figure for the previous year. Among British Possessions, Canada was, as usual, the biggest borrower, her total being £44,000,000 against £36,000,000 for the United Kingdom, £19,000,000 for Australasia, £19,000,000 for the United States, £15,000,000 for Brazil and £12,000,000 for Argentine. India and Ceylon between them took £3,824,000, and the smallness of the share of this country is likely to cause surprise. India's credit is certainly good and she has to borrow goodly sums every year for her railways and irrigation works. A contemporary remarks in this connection:—"All these conditions make India a very strong borrower—indeed if her credit were properly developed, she ought to be the strongest borrower in London. We find it frankly an untenable proposition that a country so situated cannot borrow as much on reasonable terms as for instance Mexico or the Argentine or Brazil."

Why then was the share of India in the British Capital exported abroad so small in 1913, is the question that naturally confronts the inquirer. The explanation suggested by Mr. Lionel Abrahams, for example, is that there has recently been a distinct fall in the price of Indian Stock in England and the Secretary of State has found it cheaper to borrow in India rather than in England. No doubt, Mr. Alfred Clayton Cole, the ex-Governor of the Bank of England told the Finance Commission that 'Indian credit had not declined relatively to that of other borrowers, if the quotations for her loans are compared with other trustee investments which have no fixed date of redemption.' Whatever it may be, the connection between that phenomenon and the methods of India Office finance seems to be undisputed, and as a contemporary observes, 'the Indian borrowings, both in this country and in London, have been kept down because very large sums have been taken from revenue for capital expenditure.' Owing to the practice of our Finance

Ministers of under-estimating revenue and over-estimating expenditure, fat surpluses have fallen into the lap of the Government of India and they have been held responsible for the inflated cash balances with the Secretary of State. These balances represented so much extra taxation levied upon the people, and should not have arisen. At any rate, they should have been expended upon the promotion of educational, sanitary and other reforms so as to contribute to the improvement of the condition of the people. But the Government is ever anxious to avoid and reduce the debt of the country which is by no means very large, and part of the surpluses was devoted to reproductive works, the funds for which should have been obtained by borrowing. Protests have been frequently made against the policy of meeting capital expenditure from the revenue surpluses, and the Hon'ble Mr. Gokhale has been the strongest opponent of this policy in the Supreme Legislative Council. For example, in moving a resolution recommending the abolition of the annual allotment for reduction or avoidance of debt under the head of Famine Relief and Insurance, he remarked:—"Now, sir, I have been contending again and again in the Council that as our railways earn a very fair rate of interest and as the credit of Government is excellent, the Government should confine the outlay on railway construction only to such sums as can be raised in the market out of borrowings; and any sums available out of current revenues should be used for other more pressing objects.' But this sound principle has not commended itself to our Finance Members, and as we now see, the fat surpluses which had accumulated with the Secretary of State and which had come out of the pockets of the Indian tax-payers were used to take the place of borrowings in the London market for railway construction. This points to the unsatisfactory character of the Financial management of the India Office

and the Government of India, and the sooner the system is over-hauled, the better.

Another question which also forces itself upon one's attention in this connection is, if owing to any cause or causes, it becomes difficult to raise loans in the London market, will it not be desirable to tap the Indian market more seriously? It may be that we shall not be able to obtain, in this way, the large amounts that are annually required for railway construction, but a substantial portion can be so obtained if the matter is properly approached. We are aware that European merchants are clamouring for an extensive programme, but the Government has to consider whether such speed is really justified by the true interests of the country. In any event, borrowings in India and in London together ought to suffice for any ambitious and costly schemes that Government may lay down. To quote our contemporary again, 'if the organization of Indian credit is seriously approached, both in India and in London, and the treasury system is reformed so that huge sums are not annually withdrawn from the money market during the busiest season of the year then it is impossible to doubt that the annual borrowing can be made on a scale sufficient to finance the reproductive works without looking to revenue.' The figures representing the issue of British Capital in the first quarter of the current year, go to show that the share of India was 2 millions out of a total of some 97 millions. Several witnesses before the Finance Commission advocated the raising of larger amounts in India and the Finance Member appears to

have approved of the idea. A considerable portion of the capital provided for railway purposes in the current year's budget is going to be obtained from investors in this country. The great difficulty experienced in floating sterling loans in England and the desirability of restricting India's sterling liabilities, have combined to suggest this welcome change in the loan policy of the Government of India. In the course of his budget speech in March last in the Imperial Legislative Council, the Hon. Sir F. Currimbhoy congratulated the Finance Member upon that loan policy and laid down this sound principle:—"Government should be prepared to go further and, as a matter of general principle, should decide that our reproductive loans must, in the first instance, be raised in India, and that the London market should be exploited only for the unsubscribed balance." Besides the reasons given by Sir William Meyer to support his new policy, Sir Fazulbhoy added two others, *viz.*, the exigencies of our exchange policy and the desirability of creating additional gilt-edged securities for the investment of Indian capital. While, on the one hand, the small share taken by India, of the capital issues in the London market is deplored, a plea is put forward, on the other, in favour of raising larger loans in this country. Even those, however, who want a big annual railway programme would not disapprove of the idea of tapping Indian sources in the first instance. It is to be hoped, therefore, that the new policy of utilising to the fullest extent the capital available in India for our reproductive purposes, will prove successful and will be continued in the years to come.

PINE-APPLE FIBRE.

BY ANANTA MOHAN RAY, B.A., *Agricultural Scholar and Deputy Magistrate, Cuttack.*

It is a matter of deep regret that no enterprising hand has as yet taken up the industry of pine-apple fibres. Several years ago it was anticipated that one of the most promising of Indian economic products would be the fibre of pine-apples (*Annasa Saliva*), and it was at one time expected to rival if not beat down the Jute Industry. In the early nineties, the Hon'ble Mr. Buckingham sent a small sample of this fibre to Dr. Watt, Reporter on Economic Products, who forwarded it to the Bengal Chamber of Commerce for the purpose of obtaining a quotation of its market value. The Secretary of the Chamber replied that there was no market for the fibre in India but suggested that a quotation might be forthcoming in London. This suggestion was acted on by Dr. Watt and samples were sent to the Imperial Institute. The latter submitted the samples to its expert referee, who reported that after practical tests he found the yield of "line" or long spinning fibre was much higher in proportion than that obtained from medium European flax; and that the spinning qualities of the long, as well as of the shorter fibre, were good. The samples sent however were too small to yield exact practical results but so far as could be judged, the fibre is very promising in character, and when well prepared, (i) yields material more nearly resembling Tussar silk than flax and hemp, (ii) would be very suitable for spinning into fine twine, or for textile purposes if properly softened. At the present time, it is believed that the value of the fairly cleaned pine-apple fibre in London market would probably be from £26 to 35 per ton. It is also considered that the results furnished by the sample under examination were sufficiently good to warrant a sample shipment of at least 5 tons to England. That quantity, the Imperial Institute considers, would suffice to yield exact practical results on a fair working scale as to its application by spinners to various purposes. It might fairly be

expected from the nature of the sample examined that in textile manufacture it will approach silk, would stand washing indefinitely, and would yield wearing suits more durable and comfortable than jute.

Let us hope that in the near future the cultivation of the fibre would increase. The fact that fallow and neglected lands can be utilised in its cultivation ought to invite more attention from the cultivators at large. About 20 thousand leaves from the fairly grown up plants will yield about a ton, which will in its turn yield one thirtieth of its weight of fibre. The fibre is extracted by scraping, beating, steeping in water, and finally exposing in the sun. Another washing and sunning gives a higher gloss and whiter and softer texture.

Pine-apples grow in almost all kinds of soil, either in open air or in shade. But the superior varieties are grown in sandy or clay loams in the open air, and rocky or harsh soils in shade. The soil is divided into furrows and ridges 1 foot apart and seed plant, that appear on the top of the fruits are planted 1½ feet apart on the ridges. Watering is barely necessary. In fact the crop requires very little attention and care. An acre of land planted in the above way would accommodate about fifteen thousand plants. Planted in early October, it is a biennial crop and can be harvested after 2 years or 20 months. The fruits find a ready market, the leaves are utilised for the fibre and each fruit will yield from 5 to 6 seedlings which can be planted again in course of harvesting so as to keep up a continual supply in rotation. Garden topes, road sides and boundary ridges can be utilised for the crop. It has thus a great advantage over other crops in as much as it hardly calls for any additional or special land and every cultivator can thus utilise the maximum of his available space.

Books of the Month.

Prof. Gide's Political Economy.

The scholars in Germany, France and other continental countries of Europe are steadily making such important contributions to the development of philosophy, history, sociology and the other sciences that any one who wants to keep in close touch with the growing volume of literature upon these subjects feels it essential to know modern languages such as German and French. There is now-a-days a tendency in India for earnest students to try to acquire sufficient mastery over these languages to enable them to follow the latest trend of thought and the number of such people seems to be steadily growing. Taking economic science, for instance, we find that England cannot claim to lead the way and writers in America, France and other countries have been bringing out very useful and instructive works on the subject. It is, however, satisfactory that authoritative or original books in other languages are not allowed to remain sealed books to those who know no language but English and almost all such works are made available to English readers by means of translations. The keenness of western students about knowledge and study is evinced by the translations of works of merit that appear in the various European languages. One of the best and most popular text books on political economy is the one by Charles Gide, an eminent economist of France. The fact that the work has already gone through more than eight editions in the original French and has been translated into the Russian, Swedish, Polish, Dutch, Finnish, Spanish and Bohemian languages speaks volumes for its excellence. The first English translation was published in 1889, and since that time the book has been very widely used in England and America as a college text-

book. The American translation of Charles Gide's book, a second edition of which appeared in 1911, has been used in India for the last few years and is by Prof. C. William A. Veditz. In translating the book, the translator took care to eliminate all distinctively French illustrative material as not being directly valuable to English and American readers and substituted data mainly from American sources. To Indian readers this was, of course, no special convenience, though they could obtain therefrom a closer acquaintance with the American systems of currency, banking, tariffs and so forth. One great merit of Prof. Gide's book is that it does not suffer from an undue bias against or leaning towards particular schools of economic thought and he deals very fairly with all of them. He is always anxious to place before the reader the different points of view from which a subject may be looked at and never writes in the spirit of a partisan or advocate. This is a great advantage to students who want an impartial statement of a subject made to them. He likewise never fails to trace the historical development of economic institutions and to indicate their present and prospective tendencies.

Such being the value of Prof. Gide's book, we desire here to draw the attention of our readers to a new translation* of the author's *cours d' Economie politique* which has been just published. This edition "has been carefully revised by its author in order not only to bring the figures up to date, but so far as is possible within the limits of one volume, to keep abreast of the latest changes in facts

* Political Economy by Charles Gide, Professor of Social Economics in the faculty of law in the University of Paris: authorised translation from the third edition (1913) of the "*cours D'economie politique*" under the direction of Prof. William Smart by Constance H. M. Archibald, M.A., London, George G. Harrap and Company: Price 10/6 net.

and ideas." New chapters are thus added and many of the old ones entirely rewritten. Being primarily intended for French students the book has a distinctively French background and colouring as Veditz's translation was illustrated and amplified by American facts and problems; but the main purpose, *viz.*, to explain clearly the principles of economic science has not been lost sight of. In common with many economists, Prof. Gide had, in the earlier editions, not thought it necessary to treat of the principles of taxation, but that defect has now been removed in the edition under review. Similarly the question of the organization of poor relief which had been only slightly touched, has been accorded a fuller treatment. It would not be possible here to point out where additions have been made and where more material has been placed at the disposal of the reader. Suffice it to say that the new edition is a great improvement on the past ones and we can confidently recommend it to those who would like to have a good text book on Political Economy. It notices the latest developments in economic and industrial organization such as syndicalism and would thus be of great use to one to keep abreast of the times in such matters.

A Co-operative Manual.

The following Press note has been issued by the Government of Bombay :—

Government desire to call attention to the recent publication of 'A Manual for Co-operative Societies in the Bombay Presidency' (price 8 annas). It has been compiled by Mr. R. B. Ewbank, I.C.S., Registrar of Co-operative Societies, and embodies all orders of Government relating to co-operative societies down to the close of the year 1913. It is intended for the guidance of all persons, official and non-official, taking part in the co-operative movement, and Government believe it will speedily prove most useful, and even indis-

pensable, not only to novices but also to experts.

The Manual opens with an introductory chapter which gives a short historical sketch of the birth and development of the movement, explaining the need for, and the function of co-operation, and describes the chief types of society. Next the Co-operative Societies Act of 1912 is printed in full, together with the rules framed under the Act. Separate chapters are devoted to the uses and organization of credit societies with both limited and unlimited liability, unions, seed societies, and granaries, weavers' societies, distributive stores societies and manure-supplying societies, and a set of model by-laws is provided for each type. The functions of Central Financing Institutions are also made clear, and as an illustration the agreement between Government and the Bombay Central Co-operative Bank is given in full. Other chapters deal with the general management of co-operative societies, the making of loans to members, the keeping of accounts, inspection and audit liquidation and the privileges accruing to societies and their members. Model forms suitable for every variety of co-operative business are given under the appropriate headings. The final chapter explains how Government servants can best further the movement without incurring the risk of officialising it, while an appendix reproduces the resolutions of the Government of India issued under the Old Act of 1904 and the amended Act of 1912, and supplies a useful bibliography of English works on co-operation.

It may be added that the Manual will be kept up-to-date by the periodical publication of additions and corrections.

Cotton Seed Products.

We have received from Mr. C. Ranganatha Rao Sahib, Secretary of the Industries and Commerce Committee of the Mysore Eco-

conomic Conference, a bulletin on the manufacture of cotton seed-oil compiled from accurate sources of information.

The conclusions that may be drawn from the facts relating to the cotton seed oil industry that have been noted in the book may be briefly summarised as follows :—

(1) Indian cotton seed has attained a permanent hold on the European market as a valuable source of oil and cake and commands steadily increasing prices there.

(2) The magnitude of the cotton seed-oil industry in America indicates in a general way the possibilities of future development if taken up in the proper manner in India, the next largest cotton producing country in the world.

(3) The various products obtained from the seed are found to be of such great use in meeting the primary wants of men, cattle and the land that the establishment of this industry which touches industrial development at so many points is something of a national duty.

(4) The pioneers who have started the industry in India have created a market for the products and solved all the technical problems connected with the industry so that it is no longer in an experimental stage.

It may be noted that a company for the manufacture of cotton seed-oil has been formed in Bangalore with a capital of 3 lakhs and the Government of Mysore will take shares to the value of half a lakh. The prospectus of the company estimates for a net profit of 14 per cent. on the proposed capital. The pamphlet is worth studying by all those who are interested in industrial openings in India.

Instructions for Rearing Mulberry Silk-worms.

In some parts of India the silk industry is declining but in other places such as Kashmir it has made great progress. Sericulture has been declining, but the question has now been

taken up by the Agricultural Department and signs of improvement are already visible and it is hoped that the revival of the industry is merely a question of time. Failure and decline of the industry are largely due to the want of expert knowledge as well as the want of proper organisation for supplying disease-free eggs to the rearers.

It is with pleasure therefore that we welcome the '*Instructions for the rearing of mulberry silk-worms*' which have been prepared by Mr. M. N. De, Sericulture Assistant to the Imperial Entomologist and issued as a Bulletin of the Agricultural Research Institute, Pusa.

This bulletin has been prepared with the idea of assisting the Mulberry Silk Industry in various parts of India and particularly in Bengal, where the industry has been declining for some years past. The methods described in it have all been thoroughly tested at Pusa and considerable attention has been paid to the selection of varieties which will yield the best results. It is believed that if rearers will start on the lines suggested, a great improvement in quality and outturn will result.

Principles of Economics : Artha-Sashtra.

Professor Balkrishna, M.A., has brought out a book on 'Artha-Shastra' which places before the Hindi public his mature thought on Economics with special reference to Indian conditions. He has dealt not only with the basic principles of the subject but has also discussed in detail the practical bearings thereof upon the economic needs of present day India. The book is the outcome of years of patient study and keen research into the dry domain of statistics and will, we are sure, prove a substantial addition to the scanty literature on that important subject. Although the book runs to 550 pages, it has been priced at Re. 1-8-0 only and can be had from the Book Department, Gurukula, Hardwar.

The Agricultural World.

Explosives in Agriculture.

In a lecture delivered before the Institute of Chemistry, England, recently, Mr. William McNab said that the effect of exploding a cartridge judiciously placed in the ground is to shake it up and fissure it to a far greater extent than can possibly be done by spade work, and new trees planted in such prepared ground make much more rapid and vigorous growth and bear better; while in an old orchard the ground can be similarly opened and shaken without injury to the standing trees which, having less dense soil to penetrate with the roots, make corresponding good growth and get a new lease of life.

Per contra we give below the paragraph relating to the use of explosives in agriculture clipped from the latest report of the Imperial Agricultural Chemist at Pusa :— For some short time past the use of dynamite or other similar explosive, for the breaking up of "hard pan" or the removal of tree stumps, has been recommended in the press. It is a subject which naturally lends itself to "copy," but should be approached with some little consideration. Experiments have been made at Cawnpore and at Pusa by myself in collaboration with the Chief Chemical Examiner, Ordnance Department, and the Deputy Director of Agriculture, Central Circle, United Provinces, and a separate report will be made. In any case these experiments will have to be considered preliminary, but it may here be suitably remarked that these explosives are comparatively expensive in India at present; also that, whilst it is possible to ascertain immediately to a limited extent what the nature of the effect of the explosive has been in any particular case, its agricultural value can only be subsequently ascertained by the growth of trees

or crops on the land. Hence in any case it will only be possible to appraise correctly the financial aspect after the lapse of several years.

Feeding Experiments.

The principal results of certain feeding experiments conducted by the Irish Department of Agriculture may be summed up as follows :—

I.—Pig feeding experiments—

(a) Pigs were fattened successfully without potatoes.

(b) The feeding value of potatoes was rather less than one-fourth that of a mixture composed of two-thirds maize meal and one-third pollard.

(c) For fattening pigs, maize meal was worth about 10s. per ton more than barley meal.

II.—Calf feeding experiments—

Fed to calves along with separated milk, the following meal mixtures gave almost identical results :—

A:—1 part ground flaxseed.

2 parts maize meal.

2 parts oat meal.

B:—1 part ground flaxseed.

2 parts maize meal.

2 parts wheat meal.

III.—Cattle feeding experiments.—

(a) Fed to cattle on grass, equal quantities of the following mixtures of foods produced the same live weight increase :—

Home-grown.

1 part wheat meal

1½ parts barley meal.

2 parts ground oats.

Imported.

1 part maize meal.

2 parts undecorticated cotton cake.

(b) The undermentioned mixtures of con-

centrated foods gave almost similar results when fed to fattening cattle in stalls :—

Home-grown.

- 1 part wheat meal.
- 1½ parts barley meal.
- 2 parts ground oats.

Imported.

- 1 part decorticated cotton cake.
- 2 parts maize meal.

Testing Seed Corn.

The following is from an American Journal:—
The testing of each ear that will be used for seed is not such a difficult task, and may be accomplished much more easily than imagined. This is done by securing a box about 30 inches square and 3 or 4 inches deep, filling the box full of sand. Then drive nails or tacks 2 1-2 inches apart all the way around the edges of the box and over these nails stretch a string back and forth so as to mark the box off in 2 1-2 inch squares. The squares are then numbered on the edge of the box. The ears of corn to be tested are then laid on the floor, if no rack is available, numbered, and ten kernels removed from various parts of the ear. They are placed in the same point downward so as to be about 1-2 inch below the surface. A very good method of numbering the ears is to pin bits of paper to the butts of the ears. This can be done very easily with ordinary pins. The kernels from ear No. 1 are now put in square No. 1, ear No. 2 in square No. 2., etc. The box of sand containing the corn is then thoroughly saturated with water at about blood heat, covered with old sacks or carpet, and placed near the stove or open fire, where it is moistened down daily to hasten germination. The temperature should be kept between 75 and 90 degrees if possible.

Cotton Production.

That America is losing her lead in Cotton Production is the conclusion of a writer in a recent number of the *American Review of Reviews*. In the season of 1912-13 the United

States raised approximately two-thirds of all the cotton grown in the world. In the season of 1913-14, with the second largest crop America ever produced, America is likely to lose its dominant position. For first time since the introduction of the cotton gin it looks as if the rest of the world has grown more cotton than America. It is remarked that England, France, Germany and the Great Asiatic Countries are stimulating cotton production both at home and in their colonies. And, moreover, the writer remarks that the cost of production of cotton has considerably increased in America.

The following figures give the final estimate of the cotton crop of India for the current year compared with two previous years :—

	1913-14.	1912-13.	1911-12
PROVINCES AND STATES.	BALES.	BALES.	BALES.
Bombay... ..	1,397,000	1,324,000	599,000
Central Provinces and			
Berar	961,000	910,000	913,000
Madras	513,000	471,000	385,000
Punjab	594,000	373,000	241,000
United Provinces ...	484,000	428,000	251,000
Sind	133,000	123,000	124,000
Burma	50,000	46,000	32,000
Bihar and Orissa ...	19,000	19,000	19,000
Bengal	13,000	21,000	25,000
North-West Frontier ...	14,000	13,000	12,000
Assam	12,000	10,000	11,000
Ajmer-Merwara ...	15,000	26,000	12,000
Hyderabad	400,000	300,000	300,000
Central India	273,000	206,000	22,000
Baroda	175,000	196,000	96,000
Rajputana	132,000	125,000	73,000
Mysore	16,000	19,000	17,000
Total	5,201,000	4,610,000	3,288,000

Germination of Rice.

A German writer, who, during a series of years, has studied the conditions of germination of rice, summarises the results hitherto obtained as follows :—

(1) The maximum, optimum and minimum temperatures for the germination of rice are 40° C., 30 to 35° C. and 10 to 13° C. respectively. From the practical point of view it is

important to know that the development of strong seedlings is favoured by warm irrigation water.

(2) Light exerts no influence on the germination of rice.

(3) The same holds true for light of varying refraction.

(4) Rice germinates equally well both in water and in air, when the grains are husked or unhusked, and when the grains are treated with water which contains oxygen or which has been deprived of it by boiling.

(5) The plumule appears sooner if the grain is placed in favourable moisture conditions than in water.

(6) The radicles and crown roots develop considerably sooner in the air than in water.

(7) The stem grows much more rapidly in water than in the air. The opposite is the case with the radicles and crown roots.

(8) The frequent renewal of the water in the experiment had no sensible effect upon the development of the stem or roots.

(9) The same holds true for differences in the depth of water, provided they keep within the limits of 3 to 20 cm. (1·2 to 8 inches).

(10) The suitable degree of moisture for the germination of rice is 60 to 95 per cent. by weight of the seed-bed's capacity for water.

(11) Rice grains are saturated by an amount of water equal to about 25 to 30 per cent. of their air-dry weight.

(12) Rice grains cannot be made to germinate until they have absorbed about 25 per cent. of their air-dry weight of water.

(13) The loss of weight of the unhulled grains during steeping amounts to only 1·5 per cent. of their weight, even after 20 days, if the temperature is 10° to 15° C. (50° to 59° F.).

Artificial Manure.

In a paper read recently before the Society of Arts, Mr. W. B. Bottomley described a new type of artificial manure which would seem to

threaten serious competition with the products of the electric furnace. It has long been known that the nitrogen required by plants cannot be obtained by them direct from the air, but must be presented to the roots in a fixed form before it can be assimilated. In 1886 it was noted that certain leguminous plants developed on their roots bacterial nodules, the bacteria in question having the power of fixing the atmospheric nitrogen to the benefit of its host, the union between the two constituting a form of symbiosis. High hopes were entertained that inoculating soils with cultures of these nodule bacteria would give a great increase in fertility, but these anticipations were almost wholly frustrated. Similarly, when "Azotobacter" was discovered in 1901, and was proved to have greater powers as a nitrogen fixer than any other, hope again ruled high that by inoculating soils with fluid cultures of this bacterium the fertility would be notably enhanced. Here again the net result was failure. The matter has, however, been pursued further at the Botanical Laboratory of King's College, and Professor Bottomley claimed that these researches had been attended with complete success. It was found that suitably treated, peat formed a most excellent medium for the growth of this bacterium, and soils manured with this peat have shown a marked enhancement of their fertility. Before inoculating the peat with the bacterium in question, the raw peat has to undergo a preliminary treatment by another bacterium, which was found to have the power of converting natural peat into a humated neutral medium. Attempts to achieve the same end by neutralising the humic acid of the peat by alkalis resulted in complete failure. The peat after inoculation with the special bacterium is kept at a constant temperature for a week or ten days, after which period it is sterilised by the action of live steam. It is then inoculated afresh with a mixture of *azotobacter chroococcum*

and *bacillus radiicola*, and after a few days' incubation at 26 deg. Cent., is ready for use. An important point is that the azotobacter continue to flourish after the peat has been added as manure to the soil to be fertilised, thus fixing further nitrogen. In a series of comparative experiments made on an exhausted soil the new manure showed the following percentage of advantage over its competitors:—

Crop.	Inoculated Peat. per cent.	Artificial. per cent.	Farm Dung. per cent.
Potatoes ...	123	75	41
Turnips ...	100	47	26
Beet ...	281	54	43
Onions ...	110	110	46
Carrots ...	260	20	28

With fertile soils the addition of a very little of the treated peat is stated to give a very large increase in the rate of growth. This is believed to be due to the presence in the peat of accessory food bodies, for which a special search is now being made.—*Engineering.*

Dry Farming.

Mr. J. Russell Smith writes enthusiastically to a recent number of the *Dun's Review* about the dry farming in vogue in Tunis.

Dry farming depends upon two things: first, conserving what little moisture there is; and second, using as crops those plants which are most economical in their water utilization. In both of these points, namely, an economical type of plant, and an efficient system for checking evaporation—the dust mulch—Tunis is mentioned by the writer to be ahead of anything to be found in the United States, or for that matter, in any other extensive dry farming region.

Tunis utilizes a new crop plant type, namely the tree. The tree is ahead of the grains and grasses both in its efficiency as a catcher and utilizer of water, and it combines with this a superiority over all other types of plants in its adjustment to the dust mulch.

In the first place the tree has the great advantage of being a permanent institution. This point is very important when compared with the limitations of maize, wheat, or any other of the grains. They are plants of short life, and they have a regular cycle of growth which must proceed unchecked. They spend the greater part of their time and energy in rearing a stalk that is of little use to man. Then after some months of stalk building, these plants must in a short time make their seed. If they do not at that particular time have conditions ready for seed-making, the plant blasts and a crop failure results.

In contrast to this, a tree, adjusted by nature to the arid environment, has great ability to hold moisture from the time it falls to the time it is wanted. Furthermore, it can equip itself wonderfully to get what moisture there is. The olive, the greatest crop tree of Tunis, is, says the writer, an admirable example of the tree's ability and its superiority to handle the water question. In regions of 20 inches of rainfall, where the water wets the ground to a considerable depth, the wild olive is a deep-rooter, sending its roots down for many feet to find and bring back the available water-supply. Deep rooting, however, is of no avail in places where the rain is so slight that the water cannot go down very far before the process of evaporation again brings it to the surface and throws it off into the thirsty air. In such localities the olive is not a deep-rooter at all. Instead, it becomes wide-rooted, spreading its feeding rootlets over a wide area close to the surface, thus being in a position to grasp every shower and even a heavy dew as soon as it falls.

In addition to the above perfection of dry farming, the Tunisians, observes the writer, have developed another practice well worthy of imitation elsewhere; namely, the raising of ridges along the face of the gentle slopes so that it is impossible for water to run away from the place where it falls. Thus there is no loss

of water whatever through run-off. The perfect dust mulch can be maintained to keep the water after they have made it go into the ground, and the most efficient of all types of plants—the tree—is utilized to turn this water into crops.

Green Manuring.

In the Annual Report of the experimental work carried on in the Coimbatore Agricultural Station for the year 1912-13, we read that the farm cultivation exemplifies the various improvements which the department have been from time to time advocating, such as the reduction of the seed rate by the adoption of thinner planting, and the economy effected by the use of green manure grown on the land instead of green leaf brought from elsewhere. Of the first point there is not the slightest doubt. The average seed rate for the whole of the farm lands was 17 lbs. per acre, or about 6 Madras measures, as against the 30 or 40 Madras measures which was formerly used, and this without the slightest reduction of the crop, which is indeed generally increased by the adoption of this system. More care must be expended in lifting the seedlings, to avoid breaking the rootlets, but once the women are accustomed to plant singly, they work faster than when planting bunches, so that there is really no loss.

The question of green manuring is not so simple; it is complicated by two other issues, the effect of watering the land for the purpose of germinating the green manure seed, and the effect of the time at which planting is done. The relative importance of these three factors is, and must for many years, remain a matter of judgment. In land, poor in organic matter, the wonderful effect of a heavy dressing of sun-hemp is astonishing, and may lead, unless considered along with other results, to exaggerated opinions about the value of this improvement. In the large deltaic tracts, where leaf is scarce, and at times impossible to obtain,

green manuring occasionally must be resorted to, even at the risk of failure from other causes, as the land will show the effect of this soiling for many years. On the other hand, on the farm lands, it has been the practice to apply up to 4,000 lbs. of leaf every year, with the result that the effect of the leaf is likely to be much less striking. The saving of cost in growing leaf will of course vary with the district. It is not always easy, moreover, to puddle in a very heavy crop of green manure with the inefficient ploughs and cattle generally available. The risk of injury to the land by hot weather irrigation and subsequent drying, is not only in the great encouragement it gives to the weeds, directly by irrigation and indirectly by stopping grazing, but is also due to other causes which are not so clear, and for which an explanation is not so easy to find. It is partly biological, and partly due to the alteration in the texture of the soil, which follows a summer flooding, and subsequent drying; this alteration tending to a blocking of the pore spaces and consequent loss of percolation. The effect is more marked in some lands than in others.

There is further the question of time. From observation it seems fairly certain that the earlier the crop is planted, the bigger will be the yield, because paddies planted at considerable intervals seem to ripen generally at about the same time. This is not to say that there are not differences in the different varieties, but those differences are largely dependent on the times at which the paddies are planted in the particular districts in which they are grown. The changes which may occur when a paddy is transferred to another district, or to another season, are well known, and instances may be gathered from our experience here.

This being granted then, the farmer is placed in a position of some difficulty. If he cannot grow a green manure crop, he will have to forego green manuring, or spend much money on buying leaf: if he waters the land for the

green manure crop he runs the risk of damaging his land in the operation, while if he waits until irrigation water is received, he may be late with his crop. It is more and more recognized that it is sound policy to depend upon a separate water supply, such as a well, for the preparation of seed-beds, so that no time will be lost in getting started as soon as water is received; if a green manure crop is to be grown, six weeks or two months may be lost.

This does not exhaust all the problems which this interesting crop provides. The question of a hot weather ploughing (without irrigation) is still a matter to be decided, while such problems as the amount of green stuff which the crop can take, the effect of continuous heavy dressings of leaf and the effect of the different sorts of leaves are yet unsettled.

Solution of Plant Food.

Dr. C. F. Juritz, writes in the *Agricultural Journal of South Africa* :—

I have said that unless the plant food constituents in the soils decompose they cannot be absorbed by the plants. The main reason of this is that until they decompose they do not become soluble, and that they should become soluble is essential, seeing that plants take up their food from solution. But how does the plant food get dissolved in the soil? First of all by the acids which the root hairs of the plants secrete. The roots of plants, as far as can be ascertained, secrete carbonic acid, while many also secrete oxalic and citric acids. These act on the fine soil particles, and dissolve them in a manner that in most cases pure water could not do, and so this plant food is rendered capable of absorption into the plant itself. But there is another way in which this solution is obtained, and that is quite independent of root action on the part of the plant. I referred at an earlier stage to the three forms of water in the soil: first, there is the free water that drains away or runs off quite easily and rapidly after

flooding by rain or irrigation; next there is the capillary water that does not run away, but moves about slowly, and only under the stronger force of capillary attraction, and is not lost to the soil unless by evaporation from the surface, or when the plant root absorbs it; last of all there is the film water, which, by the immense power of surface tension acting on an almost infinitely thin film of water, is so tenaciously held by the tiny soil particles, with a pressure, it is said equal to 10,000 times that of the atmosphere, or 150,000 lb. per square inch, that only the application of heat can break the bond. Now under this great pressure chemical reactions may occur which are quite impossible under ordinary conditions, and so too this film water may dissolve out of those soil particles elements of plant food which would not ordinarily be dissolved out of minerals by water. These are the means by which the plant food in the soil enters into that liquid state in which alone the plant can absorb it. Once dissolved in the film water, the plant food may, with comparative ease, be passed on to the capillary water, and be thereby transported to other parts of the soil for the plants to feed on. The roots are always, as it were, sucking up this capillary water thus charged with plant food, and as soon as the soil in the immediate vicinity of the rootlets is dried by this suction, capillary attraction causes the water from adjacent parts of the soil to creep along to supply its place, so that there may be said to be a continuous current of capillary water in the direction of each root hair.

As the dissolving power of the film water varies greatly according to the minerals that it acts on; and as the root hairs of different plants secrete different acids, or the same acids in different strengths, you will understand how impossible it is for the soil chemist, with one standard method of soil extraction to treat the soil in his laboratory precisely in the manner that plants act on it: all that he can do is to

approximate as nearly as possible to the field conditions without ever hoping to imitate them exactly.

But in discussing the actual process of plant feeding, I have hitherto been dealing only with the mineral constituents of plant food; nitrogen is not included among these, but is usually contained in the soil in two other forms, namely, as (1) organic nitrogen, in the remains of dead leaves and other parts of plants, and (2) as atmospheric nitrogen, in the air that circulates through the pore spaces in the soil. The organic nitrogen is just as incapable as the mineral silicates of becoming dissolved in the soil water, and before it can enter into the plant it has to be transformed into soluble nitrates. This transformation is effected by certain kinds of bacteria or micro-organisms in the soil. As for the atmospheric nitrogen it can be taken up only by leguminous plants, or plants which are provided with nodules or swellings on the roots, and these nodules swarm with other bacteria. In both cases, whether it be the soil bacteria that fix the organic nitrogen or the plant bacteria that utilise the atmospheric nitrogen, bacteria constitute the means of rendering nitrogen available to the plant, and the first requisite for a successful issue of course is the presence in the soil of those bacteria. In fertile soils they are present in enormous numbers, but in other soils they may be practically absent, and such soils have to be inoculated with the needed bacteria before any nitrogen fixation can go on. Next, the soil must have a free air circulation, not alone that the nitrogen which leguminous crops need may be supplied to them, but also because the bacteria cannot live unless certain conditions are fulfilled, and one of these conditions is a sufficiency of air in the soil. If the air supply of the soil is so dense that air cannot circulate in it the bacteria may be said to be drowned in one case and suffocated in the other. They can as little exist in a soil that lacks moisture, as in one that has all its air spaces filled with water, and

so the happy medium must be observed, and in order that the best results may be obtained, the soil may have what is called its optimum of water. There are therefore, as you see, many factors that between them regulate that optimum.

CONDITIONS AFFECTING SOIL FERTILITY.

Do not imagine that an unproductive soil always means deficiency in plant food. It may mean that and it may not. It may mean that there is abundance of plant food material, but not just in that condition wherein plants can take it in; it may mean that there is not only plant food material, but even plant food itself in an available condition, but that lack of aeration, brought about either by excessive density of the soil or by water-logging, is stifling the plant's root action. Unproductiveness in soils is so often the result of cultural errors that it is unwise to seize upon lack of fertility as the fundamental cause, and yet that is exactly what most people do. It is true that there are many soils in this country that are wanting in fertility, but I have quoted to you several cases of chemically good soils in which mismanagement of water supply or imperfect physical manipulation has caused the ills that have been laid at the door of the soil's chemical qualifications. We cannot deal with those ills by mere random guess-work; they require study, especially in a relatively young country, and as our conditions generally are so different from those of the older countries, we need fuller study of our many productive soil types, in order that they may serve as standards of comparison when we are faced with problems of unproductive soils or have to deal with cases of actual or supposed infertility.

Deluded Hens.

The results of the experiments at the Ideal Home Exhibition in Olympia as to the influence of electric light in stimulating the egg production of hens proved exceedingly interesting. A

competition was arranged, between five hens which retired to roost at sunset and five others induced to work overtime by the presence of electric light. The first mentioned hens laid ten eggs in four days, while the "overtime" workers laid nineteen. The eggs laid by the five overtime-working fowls were bigger than those of their rivals. The hens were chosen at random, and the egg-yield counted daily. It appears from a note on the subject by *cow-keeper* that electricity is not necessary, but by means of a hurricane lamp the amateur's hens can be made to increase their egg-yield.

Artificial Ripening of Cotton.

The question of ripening is one of the most important in the cultivation of cotton. An American inventor seems to have found a process for ripening cotton by artificial means, which would allow all the bolls being gathered at one picking. The *Textile World Record* says that L. De Costa Ward, of the Philadelphia Textile School, has tested bolls matured naturally and others artificially by the Hall process. They showed practically the same length of staple in both cases, with the artificially matured fibres possessing greater strength. The seed from the bolls was tested by M. J. Williams, Government Chemist, who reports that the oil and fat in the artificially ripened seeds was 2.82 per cent. higher than in the naturally ripened ones.

Care of Seed.

Every farmer who saves his seed for sowing the following year should bear in mind the following points:—

Winnow the seed very thoroughly so as to remove all light grains. Light grains are caused by (1) the seed not having ripened properly, and hence they will not give healthy plants; (2) the attack of insect, many of which are still inside the seed and will attack the sowed grains when stored.

Dry the seed thoroughly in the sun once after winnowing, and again a fortnight later. At

the second drying, be careful to notice if any weevils come out. If so, a third drying will be necessary. A layer of dried neem leaves can be placed between the ashes and the grain as an additional precaution.

Storing Potatoes in Sand.

As a result of the Agricultural department's successful demonstration of the advantage of storing potatoes in sand, to reduce the loss by potato moth, there has been a marked extension of this method this year in the Farrukhabad district. Some 2,000 maunds have been stored by the cultivators in sand, and the department have made arrangements to store considerable quantities for seed purposes. It is hoped by this simple method of storage to effect a check on the large losses of potato seed suffered in this district.

Foot and Mouth Disease in Cattle.

H. D. gives the following treatment for foot and mouth diseases in cattle in a recent issue of the *Times of Assam*:—*For Cows*.—Take 2½ oz. of Nitric Acid and add to same one gallon of water. This is the mixture. To each animal with the disease give *internally* two or three table spoonfuls a day.

The hoofs of the animal and the teats should be washed with a solution of one-third of the above strength, and tar should be applied to the feet. This should be done, both before and after milking. The above *prevents infection* and cures within one week.

Ant Repellents.

The *Gardener's Chronicle* reports that dry corrosive sublimate may be used to prevent ants from making their way on to the tables, chairs, shelves, and other furniture of dwelling-houses. The method of use is to soak cotton tape an inch wide in a saturated solution of corrosive sublimate, allow it to dry, and then fasten it around a table leg or on the edge of a bookshelf, etc. If the tape remains dry it serves for months as a repellent to ant invasions.

The Co-operative World.

Sir Horace Plunkett on Co-operation.

The annual conference of the Co-operative Societies of Great Britain and Ireland concluded its proceedings in Dublin on June 3rd.

Sir Horace Plunkett spoke on the contribution which Ireland had made to the Co-operative movement. They began their work in Ireland, he observed, in the midst of an agrarian revolution—happily peaceful as such revolutions go—which had already half transferred, and was going completely to transfer, the agricultural land of the country from the landlords to the tillers of the soil. The object of the movement was the reconstruction of rural society after the movement had swept away the landlord and tenant system. They in Ireland worked out a complete scheme of rural civilisation.

The special contribution that Ireland had made to the rural problem might be thus stated: Agriculture is an industry, a business, and a life. Into that industry must be introduced the teaching of modern science, into the business must be introduced modern commercial methods, and into the life must be introduced those elements of modern civilisation which would enable agriculture to resist the lure of the city.

Redeeming Low Class Families.

A good deal of light has been thrown upon this question by the work of the Servants of India Society in starting Co-operative Credit Societies amongst Mill hands and sweepers.

It is now proposed to carry this movement farther by establishing a Co-operative Credit Society in Parel Mill district to redeem 40 low class families residing in the Gujarati quarters there. The 40 families comprise 146 persons, of whom 57 are earning members, the total income being Rs. 775 per month, and the total

monthly expenditure Rs. 458, but the whole of the balance of Rs. 381 goes towards part of the payment of interest on debt, as the rate of interest exceeds 75 per cent.

The total indebtedness of the 40 families is Rs. 7,950. The people are all frugal in habit and total abstainers. Thirty-seven families are Municipal servants (sweepers) and the standard of education is low. The 40 families now pay an annual debt charges amounting to Rs. 4,300. Under the Co-operative scheme the debt will be paid off and the annual interest on new debt will be Rs. 1,400 and the rest of the savings will go towards the amortisation of the Co-operative debt.

The rate of interest charged by the Society will be 18 and three-fourths per cent., and the public are invited to subscribe deposits to the Credit Fund.

Audit Fees from Co-operative Societies.

The following notification appears in a recent issue of the *Fort St. George Gazette*:—

"The following rule, which it is proposed to make in exercise of the powers conferred by Section 43 (2) (h) of the Co-operative Societies Act, 1912, is published as required by sub-section (4) of the same section and notice is hereby given that it will be taken into consideration by His Excellency the Governor in Council after the expiry of two months from the date of this publication. Any objections or suggestions relating thereto must be submitted for the consideration of Government within the said period.

Draft Rule.

In exercise of the power conferred by section 43 (2) (h) of the Co-operative Societies Act, 1912, the Governor in Council is pleased to make the following rule for the purpose of levying from all Co-operative Societies registered

under the Act fees on account of audit work done by Government Agency:—

(a) Central Banks shall pay a fee of 5 per cent. on net profits subject to a maximum of Rs. 750 *per annum* for each Bank;

(b) Non-Agricultural Societies shall pay 5 per cent. on net profits subject to a minimum of Rs. 15 per society;

(c) Agricultural Societies shall pay 5 per cent. on profits subject to a minimum of Rs. 5 per society; and

(d) Non-credit societies shall pay one per cent. upon total annual sales subject to a minimum of Rs. 50 and a maximum of Rs. 750 per society.

The above rates are tentative and are liable to revision by Government."

Co-operative Dairying in India.

Among the interesting papers read at the United Provinces Co-operative Conference was one on the 'Co-operative Dairy at Benares' by Mr. R. W. D. Willoughby, I.C.S. This dairy society is said to be the pioneer enterprise of its kind in those provinces, and possibly in all India.

After shortly describing the Benares experiment which has been so far successful, Mr. Willoughby raises the question whether State or Municipal aid should be accepted. In his opinion, subvention by the State or Municipality is objectionable on all Co-operative principles. As regards the commercial side of the business, Mr. Willoughby says:—

"As Registrar I am concerned with commercial success of the dairy societies from the point of view of the *gualas* and not with the cheap supply of good milk to the inhabitants of the large cities. If, however, the municipalities, to whom this is the interesting side of the question, are willing to spend money as a matter of business to secure such a supply, I don't see why they should not do so. The money would have to be applied under definite conditions (which the municipalities would be in a position to enforce) and on as commercial a basis as pos-

sible. In Benares, for instance, apart from the establishment of motor transport, it may be possible to accept municipal help in the shape of the construction of model byres at the existing farms (and at other depots if opened up by motor transport) on conditions of sanitary inspection and a minimum supply of milk at approved shops. Another urgent need is a he-buffalo (the society has managed to obtain the services of a bull from the district board). The last requirement is pasturage for dry cattle."

Mauritius and Agricultural Banks.

In the *Colonial Journal* for April 1914, an article gives consideration to the question of co-operative banks for the Indian small planters of Mauritius. Recently the Government appointed Mr. Wilberforce, who has had much experience in India, to advise in the matter, and the conclusions he has arrived at are given in the article under consideration. At the beginning of the enquiry, very one pointed out that the circumstances of the Indian in Mauritius and India were different, that Indians in the colony are of different races and religion, and that not one of them trusted any other; that by becoming civilized they had lost the honesty of a more simple people; that they are always fighting and litigating; that they live in scattered hamlets one or more of which form a village, and that no commune spirit exists in these villages. While admitting the justice of these criticisms to a large extent, Mr. Wilberforce was not disheartened by these difficulties, as they are for practical purposes precisely the same as were met with and successfully overcome in India. Moreover, the colonial Indian is much more intelligent than the Indian at home. He has seen more of the world, and has acquired new tastes and ambitions. The frugal Indian of simple wants represents an original type which is disappearing in Mauritius. There is therefore no occasion on this ground to doubt that co-operative banks would be less successful in Mauritius than in India; but if

would be necessary to educate the people in the matter, and to help them with Government supervision.

For several reasons and from experience obtained in India, Mr. Wilberforce advises that banks with share capital but of the Raiffeisen type have the best prospects among Indians in Mauritius. It is proposed that Government should advance to co-operative banks sums not larger than Rs. 10,000 at 6 per cent. and that the amount advanced should not be larger than the share capital that is actually subscribed, the advance being repayable in instalments spread over ten years. Government should have full power to recover the whole amount at any time, if it considered the bank is mis-managed, or for any other reason. The whole of the profits from the Government loan should be placed in the Reserve.

Mr. Wacha on Co-operation.

In page 388 of the June issue of the *Wealth of India* we pointed out that Mr. Wacha had written to the *Commonweal* stating that Co-operative Societies were unsuited to India and must ultimately perish. This attitude naturally evoked considerable criticism and the following letter is Mr. Wacha's full explanation of his attitude:—

"Allow me to make myself better and more clearly understood. My pessimism is not confined to the appalling and heart-rending indebtedness of the ryot. It covers his entire economic condition of which I frankly admit indebtedness is a dominant factor.

All these years I have understood that the object of the State is to ameliorate this entire economic condition of our Indian peasantry. In short, his redemption from debt and the general improvement of his condition, which at present, is nothing but that of a serf, are the objects which, I have always understood, are dear to the heart of the Indian Government. The question then is, whether the Credit Co-operative Societies will bring about that happy

amelioration. I for one would answer it in the negative. These societies and the aid that they give or may give are in their nature pure palliatives. The ryot may be temporarily eased. His general economic condition can hardly improve materially. In fact, the principal economic evil, from which he grievously suffers, is this indebtedness. It is a heavy millstone hanging round his neck. I venture to ask these societies whether they can ever hope to move that millstone off the neck of the peasantry. In all probability they will reply that they cannot. In that case I should say that they need not exist at all. The ryot wants free bread, quite sweetened, without the bitterness of the indebtedness which is so galling. He is a serf, a slave sold to the usurer. Redemption from that bondage is his only salvation. If that redemption is not forthcoming, then, the very existence of the societies is uncalled for. In that case they are mere stones, not bread. That is the way I look at this serious economic problem which, the more it remains unsolved, the more it will prove a great danger to India in times to come. Palliatives are one thing, radical cure is another. Our peasantry demands a radical cure, namely, freedom from indebtedness and a fresh start with a clean slate so as to enable them to pursue their industry with a standard of comfort suited to their humble life, and some saving for a rainy day, a saving which will not compel them to flock to the relief camp at the first pinch of famine. I repeat, therefore, that the method of the Egyptian Agricultural Bank is the only one, and a satisfactory and successful one, to bring about that economic regeneration which we all wish. Officials and even non-officials who blindly follow officials, may look askance at that method. They may carp at it. They may try to pick holes in the system. But in spite of all they may do to run it down. I am thoroughly convinced that it is the only method whereby slowly but steadily the ryot may be enabled

to pay off his debts, be a free man, instead of a bond-slave to the money-lender, and become fairly prosperous. It will be a day of rejoicing when that agricultural consummation can be accomplished. Each Province should have a State Bank on the lines of the Agricultural Bank of Egypt for no other purpose but to help the ryot. By all means let there be any number of branches in the villages and towns. The present societies may be usefully requisitioned to perform the function of the branches. They will be so many rills in different directions from the great river source, the Provincial Agricultural Bank. All other institutions are doomed to failure. I wish I may prove a false Cassandra and the Government a true prophet. But until the prophet has demonstrated to the world his miracles by means of the barren Co-operative Credit Societies I must continue to entertain most emphatically the views I hold."

Co-operative Credit in India.

A recent issue of the *Gazette of India* contains a most interesting Resolution, issued from the Department of Revenue and Agriculture of the Government of India, tracing the growth of co-operation in India and indicating the benefits (economic, social and educational) which the movement, if wisely directed, may be expected to produce, as well as the dangers to be avoided. It describes also the main features of the various types of society, discusses a number of questions of administrative detail, examines to what extent State aid has been and should be rendered, and finally considers how far in the every day work of administration District officers should keep in touch with the movement and utilize this new element in the national life.

GROWTH OF THE MOVEMENT.

Ten years ago, says the Resolution, there was nothing beyond a few scattered experiments to indicate the presence of the co-opera-

tive movement in India. To-day there are over twelve thousand, with nearly six hundred thousand members and with a working capital of over five crores of rupees, and Co-operation has firmly established itself as a powerful factor in the material and moral welfare of the people. There has been a brisk demand for the creation of new societies at a more rapid rate than is represented by these figures. They had been flooded with applications for enrolment, and even when applications were not received, nothing would have been easier than to create new societies as it were by beats of drum. The principle on which they have acted in spreading the gospel of co-operation has been to make sure before accepting converts that the matter has been well considered and the new doctrine understood, as one good society is in the end better than any number of unsuccessful ones. The failures that have occurred in the cases when the course was not followed have fully justified the caution with which the numbers have been increased. It is sometimes urged that the movement only touches an infinitesimal proportion of the population, and that, if the co-operation is material to affect the condition of the masses, more rapid progress should be made. But it must be borne in mind that the benefits of the societies are by no means confined to registered members. If 600,000 persons are members, the numbers directly affected, including their families, can scarcely be less than 3 millions; and if we take also into account the general reduction of the rate of interest and similar benefits to outsiders which have followed the spread of the movement, it can fairly be claimed that co-operation has already brought relief to some six millions of people—a very gratifying and indeed phenomenal outcome of the work of ten years. It is true that there is still only one Agricultural Co-operative Society in India for every 20,000 of the population engaged in agriculture; whereas in Italy for instance, there are 18, and in Germany 52. But the movement in India is only at the beginning

and the progress made in the first stage has been unequalled in any other country.

ECONOMIC BENEFITS.

In respect of economic benefits it has been calculated that in interest alone the agriculturists of India by taking loans from Co-operative Credit Societies instead of from the village money-lenders are even now saving themselves from absolutely unnecessary burden of at least twenty lakhs of rupees per annum, and there is no reason why in a few years this figure should not multiply itself several times over. Also with the progress of co-operation and credit democratised, money that has lain rusting in hoards has been produced and placed in deposit; money that would otherwise have lain idle has found a serviceable form of investment; capital that would otherwise have been inaccessible has come into the hands of the agriculturists. Agriculturists' old debts have been paid off and old mortgages redeemed and there are cases where even the debts and mortgages of whole villages have been cleared off. This improvement in the economic position of the people must result in an increase in their purchasing power and in the expansion of external and internal trade.

Co-operation has also stepped in to assist the Agricultural Department in bringing home to every cultivator the benefits that agricultural science offers by providing the means whereby as each improved variety of seed is perfected and made ready for use, it can be conveyed from the Government farm to every village over large areas and can be multiplied thousand-fold. It has enabled the purity of the seed to be maintained and the best price to be secured for the produce. It has placed within reach of the cultivator cheap manure and implements, tested and approved by experts. It has supplied to cattle breeders, bulls of superior strains or the improvement of the village herds and it has provided the means by which useful information can be disseminated. Wherever agriculture and

co-operation have gone hand in hand they are fast developing a truly organic connection. It has indeed been stated by outside servers that the efforts of these two departments have made a deeper impression on the life of the people than any of the other measures which Government is engaged in promoting.

PROGRESSIVE INFLUENCE

But these direct economic improvements are not the only benefit which co-operation is conferring on the country. Co-operation has been in the widest sense of the term education both intellectual and moral. When men are associated for business purposes they feel the need of education. There are tangible reasons for learning to keep, countersign pronotes, to read pass-book and receipts and knowledge of this kind must lessen the chances of fraud; while members who are able to read simple co-operative literature will take a more intelligent interest in their society and in the progress of the movement. Illiteracy is a hindrance to the movement, and just as co-operation leads to a demand for literacy, it encourages the demand for co-operation. The effect of co-operation, however, extends beyond this. It does more than merely provide cheap credit. It encourages thrift. The criterion for admission to a society is a man's character and not his wealth; and men when brought together for their common weal, and when pledging their common credit, have influenced, each other's conduct and advanced each other's interests in ways previously undreamt of in this country. The fact that the members are ultimately responsible for the payment of the debts of each and every member operates as a powerful check on expenditure on unproductive purposes greater than that absolutely required by public opinion, and marriage expenses have accordingly been curtailed. Drunkards and gamblers have been reformed or excluded from societies. Self-restraint, punctuality, straightforwardness, self-respect, discipline, contentment, and thrift have been encour-

aged. In some areas litigation has markedly decreased. In others the common funds have been used to start schools, to provide scholarships, to distribute quinine, to provide drinking wells, to clean streets. The impetus of co-operative credit has led on to saving banks, benefit funds, and provision for the poor. Those who have first-hand knowledge of co-operative societies are emphatic in their appreciation of the change which the movement is making in the character of the people affected by it, and it is important to bear in mind that co-operation is not merely a device for obtaining cheap money or for increasing the economic resources of members, but is also a potent educational influence, and as such is deserving of the warmest support from those who have the welfare of the people at heart. The managing body of the societies have frequently been entrusted with the arbitration of disputes and with other duties which belong to the traditional village panchayats, and there is some reason to think that the continuity of aim and the solidarity of feeling inherent in the movement may lead to a revival of the corporate village life which has been so weakened by the disintegrating influences of modern times.

GOVERNMENT AND THE MOVEMENT.

The relations of Government to the movement have been criticised from two opposite points of view. There are some who contend that the movement is essentially one for the people to work out on their lines, and that Government interference at any stage is uncalled for. But in no country is the movement entirely independent of Government aid, and it is certain that in India without initiative and help from Government, co-operation would be still unknown. Government alone was in a position to supply the knowledge and organisation necessary to start the work, and Government alone is able, by its association with the movement to create the outside confidence necessary to give it stability. The fact that societies,

though primarily self-contained and self-governed, are subject to supervision by Government officers has an important effect in attracting public confidence, and the benefits thus accruing to the country at large fully justify the expenditure of public money on official supervision. Lastly, the co-operative movement by bringing the officers of Government into close touch with the people in economic matters provides opportunities for developing those closer relations in other respects which it is so desirable to foster.

But just as there are some critics who deprecate Government assistance so too there are others, both non official and official, who plead for a far greater degree of Government intervention than has hitherto been permitted. They urge that in order to touch more than the fringe of the population a far more rapid rate of progress is called for, and that unless the Government staff be largely increased and unless active measures be taken by Government to propagate the movement, its effect must be small and its progress low. This, too, represents a policy which Government has felt itself at liberty to adopt. Not only is it the case that work done by a large centralised department tends to become mechanical and listless, but the movement must in its essence be a popular one, and nothing should be done to weaken the feeling among co-operators that it is based upon self-reliance and independence. Government, therefore, in the best interests of the movement must not allow co-operation in this country to become an official concern managed by State establishments. The result is that Government has to steer a middle course and this has been the policy adopted both as regards supervision and financial aid.

FINANCIAL INDEPENDENCE.

So far as financial aid is concerned there has been intervention on the part of Government, but it has been of the slightest possible character. When co-operation was initiated

ten years ago, Government was urged to subsidize the new societies liberally and its apparent parsimony was criticised. But the evils of excessive liberality were fortunately foreseen, and the restriction of State aid was due not to niggardliness but to the fact that in other countries experience had shown that unrestricted assistance was a dangerous and might be a fatal gift. It was decided, however, as in the early stages there was no immediate prospect of bringing societies into contact with the general money market, that subject to equivalent contributions from the members, loans might be given within certain limits. But except in one or two provinces, where special reasons for help existed, registrars have properly discouraged any undue reliance on such assistance, and the proportion of the total capital of societies represented by Government loans now scarcely exceeds 3 per cent. Without these loans many societies would not have come into existence, and in fostering infant societies they have fulfilled a useful purpose. But events have fully proved the wisdom of the policy of avoiding excessive State aid, and it is to the adoption of that policy that the inherent strength of the movement is largely due.

CONTROL AND AUDIT.

As regards the difficult question of control and audit, it is recognised that these duties cannot be left entirely to the private agency of unions and central banks. It is desirable that this non-official agency should be utilized as much as possible, and that purely departmental routine in the work of audit and control should be avoided. But the success of the movement would be endangered if this principle were carried out to an extreme. Without some degree of Government supervision, registrars would lose touch with the societies and the outside public who depend largely on the information possessed by registrars, and who value the scrutiny carried out by those on whom they rely would lose that confidence in the financial

position of the societies which it is so essential to maintain. But while the movement must be essentially a popular one, and while excessive official supervision must be avoided, it by no means follows that Government officials outside the circle of those directly connected with co-operation should hold aloof. It is true that the details of initiation and inspection should be left to the expert agency provided for the purpose, and it is no part of the duty of the District Officer to intervene in the internal administration of societies.

WHAT THE DISTRICT OFFICER MAY DO.

But as co-operative societies are no longer isolated experiments outside the sphere of district work, and as, beyond the material benefit which they offer, they represent an influence closely connected with the welfare of the people and powerful now and in the future for good or evil, the District Officer cannot dissociate himself from the movement. On the contrary, a knowledge of co-operative principles has now become as essential as a knowledge of revenue law and it is his duty to maintain the closest touch with societies not allowing them to languish or develop on undesirable lines through want of vigilance. Without in any way becoming an active propagandist he should personally and not through his subordinates make himself acquainted with the progress of the movement in his district, encouraging and helping those who have formed themselves into societies, enlisting the interest and support of men of influence and wealth and assisting with his advice those who seek to avail themselves of the benefits of co-operation.

This in no way involves the officialising of co-operation, nor does it trench upon the essential principle that the movement, if it is to succeed, must be a popular one. Rather will it gain in strength by such encouragement and guidance while the more closely the District Officer is in touch with the societies the more surely will he find to his hand new and valuable agencies to help him in his daily work.

DISTRICT ADMINISTRATION.

It is for Local Governments to consider to what extent and in what manner use can be made of societies in each Province in district administration ; how far they can afford a means of ascertaining the real public feeling of the district ; how far they can by rendering voluntary aid assist in promoting primary education, rural sanitation, and medical relief ; in what manner they can be used in times of scarcity and famine or during the prevalence of epidemics ; or whether the training afforded by them will lead to the development of a true system of village government. In these and other ways it may be found possible to utilize the co-operative organization, and the movement should, if wisely directed, exercise an important influence in promoting the welfare of the people. But although it is still uncertain to what extent and in what manner societies may assist in the work of the district, there can be no doubt that a new factor in administration which cannot be disregarded has come into being and that new duties and responsibilities have been thrown upon the District Officer.

The Government are grateful for the help of all kind that has come from every quarter from commercial firms, from great bankers, from planters, from zemindars, from ryots, from retired Government servants, both European and Indian, from missionary bodies of all denominations from the Salvation Army, and from numerous other classes and associations.

CENTRAL BANKS.

As societies increase it has been found necessary to federate them under Central Banks, or corresponding organisations. In some Provinces these have again been brought under a Provincial Bank, and the establishment of such banks in all the major Provinces is probably only a matter of time. These central institutions bring individual societies into touch with the general money-market and serve as distributing centres for their balances. Their management

present special difficulties and if co-operation is to be secured against catastrophe, this portion of the organisation will require particular attention. It is necessary for similar reasons to insist on adequate inspection and audit of individual societies and Government, while anxious to secure as much autonomy as possible for the movement cannot dissociate itself from the task of securing at all times, both on financial and on social grounds, an efficient degree of supervision. Finally although District Officers need not concern themselves with the details of initiation and inspection they must recognise that a new factor in district administration has come into being, that new duties and new responsibilities have been thrown upon them, and that the movement if wisely directed may form yet another link which binds together Government and the people.

Industrial Co-operation.

At the recent session of the Mysore Economic Conference, Mr. M. A. Narayan Iyengar, Registrar of Co-operative Societies in that Province, suggested that the Industrial Committee of the Economic Conference should promote industrial Co-operation by employing a suitable agency of at least three lecturers for improving handloom-weaving, brass-work, cotton-ginning, lift-irrigation, rice-hulling, and other industries on co-operative lines.

Mr. Alfred Chatterton, however, opposed the proposal on the ground that a body of lecturers could accomplish no practical results by mere talking. He accepted the value of co-operation as an agency for promoting good work, but he could not allow that anything was within the scope of obscure outside bodies without any technical experience. Also, such a measure would interfere with the work that was being attempted by the Department of Industries and Commerce in this connection.

In the end, the proposition was put to the vote and carried by 33 votes, Mr. Chatterton being the only opposer.

The Industrial World.

Pencil Factory in the Punjab.

Mr. N. Godebole, M.A., Professor of Chemistry in the Dyal Singh College, Lahore, who has been engaged for the last two years in investigating the possibilities of a pencil factory in the Punjab, is said to have succeeded in obtaining the requisite quality of clay from which to manufacture different grades of "lead." His next investigation was in the direction of finding suitable wood in sufficient quantities, and from stations that possess transport facilities. He has been constantly in correspondence with sylviculturists in several parts of the country to get samples of wood, and with experts on the Continent of Europe, including those in Nernberg, to have those samples tested. In these preliminary investigations his efforts have been entirely successful. We have, says a contemporary, seen both samples of wood and pencils manufactured by Professor Godebole. His products, as compared with those of other countries are encouraging. He has at least three samples of wood on which he can rely for a reasonable supply for some years to come and the samples are said to be certainly equal to the best of the foreign materials. One sample, in particular, is reported to be even superior to the foreign material ; but the Professor is not yet quite certain of the supply of this wood being large and steady. The secret of success in Professor Godebole's scheme lies, not so much in the available quantity or raw material of requisite quantity, though these are important factors, but in the tools and machinery he proposes to employ in the manufacture. After the collapse of this industry in Bengal, the Professor's venture will be watched with interest and will ensure sympathetic co-operation from Indians.

Indian Imports.

As pointed by the *International Review of*

Commerce and Industry, the two prevailing features of Indian imports are :—(1) Their British origin ; (2) the fact that most of the goods are manufactured. Some of these it would be practicable to manufacture in India, should she decide, sooner or later, to use her raw material in her own factories. In spite of the expansion in the cotton industry of Bombay, Lancashire skill still finds an easy conquest in the Indian market. A large import trade takes place in carriages and carts,—articles which are made in India, though evidently not on a sufficiently large scale. There appears, too, an opening for capital and enterprise in manufacturing at least some portion of the chemicals, drugs, medicines, dyes, colours, earthenware, glassware, and furniture purchased abroad. The Government have taken up the question of the production of oils, animal and vegetable. It would benefit India to prevent its ground-nuts, now being produced in such vast quantities, and its cotton seed, from going to Marseilles, when India needs the industry, the oil and the cake. Indian made cotton-seed oil and ground-nut oil want considerable improvement in both colour and flavour, involving the provision of more suitable plant and the devotion of greater skill for their manufacture. Much capital is not required.

Indian Beeswax.

Supplies of Indian beeswax are drawn chiefly from the Sunderbans, Chota Nagpur, Chittagong, Darjeeling and Sambalpur in Bengal ; the Khasi Hills in Assam ; the Eastern Dun forests and Khari in the United Provinces, Betul, Chanda, Chindwara, Damoh, Hoshangabad, Jubbulpore, Mandla, Nimar, Raipur and Wardha in the Central Provinces ; Bashahr, Chamba, Hazara, Jhelum, Kangra, Kulu and Simla in the Punjab ; Khandesh and the Deccan in Bombay ; Ellichpur, Mangrul, Melghat and

Wun in Berar; Bellary, Coimbatore, Cuddapah, Ganjam, Godavari, Kistna, Kurnool, Madura, Malabar, Nellore, the Nilgiris, North Arcot, South Canara, Trichinopoly and Vizagapatam in Madras; and Bharno, Chindwin, Katha, Mandalay, Minbu, Pyinmana and Tenasserim in Burma.

The beeswax exported from India is the product of three species of *Apis*, namely: *A. dorsata*, Fabr.; *A. indica*, Fabr.; and *A. florea*, Fabr. The wax derived from each of these is practically identical in composition, but differs somewhat from European wax, chiefly in its lower acid value. Besides entering into a number of local industries, there is a considerable amount of beeswax exported mainly to Germany, the United Kingdom, France, Belgium and the Straits Settlements. In preparing the wax the honey is first removed by squeezing the comb between the hands. It is then washed in cold water to further remove honey or other soluble matter contained in it, after which it is placed in a vessel half filled with water and heated over a fire. As a rule no attempt is made to grade the wax before melting, so that comb containing brood, eggs, twigs, leaves, grass, etc., is included in the boiling. These impurities separate from the wax when in a melted condition, and are removed by straining the wax through cotton cloth. On cooling, the wax is made into cakes or balls. A second melting is sometimes given and turmeric powder is frequently mixed with the wax to give it a bright yellow colour. In a melted state it is poured into vessels containing a little water, which serve as moulds.

The Labour Problem in India.

Replying to Sir Harry Johnston's letter to the *Times* and its comment thereon Sir Henry Cotton writes:—The misunderstanding is, I am afraid, deliberate. The "*Times*" writer, who voices capitalist opinion, comes to the conclusion that there is "an absolute shortage of labour in all industries in India which are based on

modern capitalistic conditions," and while he has no remedy to offer for this state of things goes on to observe that "the difficulty becomes more acute year by year." There is no foundation for these statements and, indeed, the very reverse of them is the truth. In point of fact, not only is there no shortage of labour in India but the supply always exceeds the demand, and whatever difficulty there may be among capitalists in obtaining labour is entirely due to their own reluctance to make the rate of wages higher which the increased cost of living in India has made inevitable.

There is no country in the world where the labour market is larger than it is in India. The supply is practically inexhaustible. Indians in all classes of life are extremely reluctant to emigrate from their own country—very much more so than we are in the West—but yet they pour forth in shoals as ordinary labourers on sugar, tea, coffee, rubber and other plantations in our Colonies. According to the Census returns of 1911—and the numbers have enormously increased since that date—there were more than a million persons in our Colonies employed on such service who were born in India. Of the total number 474,000 were enumerated in Ceylon, 281,000 in the Straits, Settlements and Malay States, 88,000 in British Guiana, 78,000 in Natal, 51,000 in Trinidad, 85,000 in Mauritius, 29,000 in Fiji, and 8,000 each in Jamaica and Zanzibar. The number in Canada was 2,842. What is the meaning of these figures? They mean that more than a million labourers had emigrated because they found that they could get better wages abroad than they could earn in their own country. They certainly do not mean that there is any shortage of labour supply in India itself.

Why then is it that British capitalists in India should complain of a shortage? Why is it that, as the "*Times*" points out, a resolution was passed at a Conference of Chambers of Commerce held as long ago as January 1905,

asking for a Government Commission to investigate the inadequacy of labour for organised industries? The answer is not far to seek. The cost of living in India, that is to say the price of rice and of other necessities of life is three times as great as it was fifty years ago, and about twice as much as it was twenty five years ago. This is due to many causes, partly to increased facilities of communications and to the absence of reserves of food supply which formerly amounted to three-quarters of a year's consumption, and partly to the passing of lands which used to be devoted to cereals to more profitable crops such as jute. In any case the fact of the increase in cost of living is indisputable.

THE QUESTION OF WAGES.

But how about wages? Of course they have increased, but the increase is infinitesimal in comparison. Let us take the largest industry in India under the control of British capital, *viz.*, tea. In the Province of Assam alone the strength of the labour force is 800,000 of which practically the whole is imported from other parts of India. The difficulty of this labour supply is chronic, and there has never been a time in the history of the industry when it could not be called acute. It has always been due to the question of wages which have never been paid on an adequate scale. It was officially denounced as inadequate in the sixties, and although the latest official figures are not at my disposal I have no doubt that I am well within the mark if I say that the increase of wages since that date has not been more than two pence a day per head. It is no wonder that Mr. C. C. McLeod, the chairman of the Assam dinner a few weeks ago while congratulating the tea industry upon its present prosperity, should have referred to the labour difficulty. That difficulty we may be sure will never be solved until some portion of the twenty or thirty per cent. dividends which now find their way to the pockets of the share-

holders is transferred to the wages account of the concern.

Just as with tea so it is with all other capitalist industries such as mining, jute and cotton mills, transport work, and the like. But it is the fact that these industries have been more responsive than tea to the necessities of the situation and the labour difficulty is therefore less felt by them. But it is felt, and for the same reason though in a less degree. There is ample labour available for one and all, but it will not come unless the workman is enticed by the offer of a wage which will make it worth his while to leave his home.

Cleaning Silverware.

The discovery and recent perfecting of electric silver cleaners mark a distinct advance in the art of silver polishing. So writes Mr. L. V. Redman in a recent issue of the *Scientific American*.

Silver polishes and cleaners have consisted until very recently of materials which dissolve off the tarnish or cut it off by rubbing with fine powders. The black oxide or sulphide which forms as tarnish upon the surface of polished silver appears at first as a film so thin that it displays beautiful iridescent colors of purple and blue; the thickening of the film produces the black oxide color. Solvent polishes are composed of chemicals such as ammonia and cyanide of potash. These chemicals dissolve off the black coating and leave the silver a beautiful satin finish on the surface. The cyanide polishes are very poisonous and should be used only with the greatest caution.

Abrasive polishes are composed of very fine powders and are designed to cut away the tarnish. The powders are very hard materials, such as, for example, tripoli, rouge, double floated silica, volcanic ash, kieselguhr, fuller's earth and pumice. Each particle as it passes over the surface of the silver cuts off a small part of the tarnish coat, the scratch being too small to be seen by the eye without the aid of

the microscope. This method of cleaning silver is very wasteful, as it not only destroys the tarnish, but also destroys or wears away the silver. However, it is the only method which will give to silver that excellent, burnished shield effect, which at times is so much to be desired.

New electric silver polishes are being introduced to the public. They are designed to take advantage of the electric current which exists between two metals, when these metals are in contact with each other in water. The electric current, which is produced when two metals are in contact in water, is much stronger if an electrolyte like washing or baking soda or common salt be added to the water. The potential is further increased if the water be brought to boiling. Early attempts to make these polishes a commercial possibility were unsuccessful, for the metal used was tin. The water and soda were put in a tin pan and the liquid was brought to boiling. The silver articles to be cleaned were placed in the pan, immersed in the boiling water and in contact with the tin dish. When the pan is new the silver is cleaned rapidly, but the tin soon dies or becomes passive, that is, covered with an insoluble film of tin oxide, which will not conduct the electric current. Once the tin pan becomes passive, it is thrown away and a new one takes its place. The fault never lies with the powder. The powder is invariably soda or soda mixed with a little common table salt.

With the introduction of aluminium kitchen utensils another method was adopted for cleaning the silver. The aluminium dishes were used in place of the tin. The voltage is much higher between aluminium and silver; the cleaning of the silver is the matter of a moment if a spoonful of soda be added to the boiling water. The pan will clean the silver if the silver is left in cold water in the pan over night. However, this method of using aluminium utensils is not to be recommended, as the vessels are soon blackened on the inside and the aluminium

ware is dissolved away by the soda and destroyed.

Aluminium dishes have been made and patented, for the special purpose of serving as silver cleaners. These boxes or pans are fitted at the bottom with rods of zinc which serve as an electric contact between the aluminium and the silver articles. The pans or boxes work fairly satisfactory, and because the zinc rods serve as conductors, they do not go passive or dead as the tin is inclined to do.

Another form of electric polish has been introduced into the market very recently which for cheapness and efficiency is at present unequalled. The powder is put in small packages and is accompanied by a sheet of metal which is an alloy of aluminium and other metals higher in the electric series. All that is needed is a vessel of granite, iron or tin in which water may be boiled. The powder is put into the boiling water and the sheet of metal is thrown in among the silver articles which are being cleaned. The only precaution necessary is to take care that the piece of metal is in contact with the silver. The cleaning is done in a moment and several pieces of silver may be cleaned at the same time. As soon as the cleaning is accomplished the metal should be taken out and washed in hot water and dried, if the best service is to be obtained from it. As these silver cleaners are composed only of washing soda and salt, there is nothing in them injurious to health. The silver after cleaning should be washed in pure hot water and dried, otherwise it may have a slightly yellow color and taste bitter or brassy. These effects are due to the soda which remains upon the surface of the silver and tarnishes it yellow. These electric polishes do not dissolve the tarnish of silver as ammonia and cyanides do. Nor do they wear off the coating of black as the rubbing powders do. The blackened silver is actually reduced to bright metallic silver by this method and is replated upon the silver article.

Thus the silver surface is preserved and the life of the silverware prolonged indefinitely by this treatment. Laboratory tests have shown that silver vessels placed in sulphur or sulphides until the silver is blackened and then cleaned by this electrolytic method, do not lose enough silver in one hundred treatments to be detected with a scale which weighs accurately to one two hundred and fifty thousandths of an ounce. The rapidity of the cleaning, the simplicity and the cheapness of the method, and the saving on the silver, should recommend the method to every one interested in silver cleaning.

The Dairy Industry.

CONTROL OF THE MILKSUPPLY IN THE TOWNS.

The following are the views of Messrs. Mulligan and Hutchinson on the control of the milk supply in towns which we promised our readers last month.

Although the milk trade appears to be in a deplorable condition the present arrangements cannot be unduly interfered with until an alternative organization for the supply of milk has been built up. It thus seems desirable to introduce healthy competition from outside where the cost of production is considerably less. With reasonable facilities in the way of transport, it is possible that this could be accomplished. The Military Dairies have shown that milk, after pasteurizing, can stand a 14 hours railway journey across one of the hottest parts of India.

It is also worth considering whether the demand for cheap milk and therefore watered milk by the poorer classes could not be met by a supply of pasteurized skim milk from the country, the bye-product of *ghi* or butter factories.

The most important milk product is *ghi* or clarified butter which is manufactured throughout India. Being thoroughly sterilized in the process of manufacture it keeps for long periods and is thus much more suitable than butter for a hot country. It is largely produced

from the milk of buffaloes. The process of preparation is well known and need not be described here.

Commercial *ghi* is much adulterated with fats and oils and it is difficult to obtain pure *ghi* in large towns.

Butter is of course largely made throughout India being the first stage in the manufacture of *ghi*. Although the main commercial product is *ghi*, there is nevertheless a considerable demand for butter owing probably to the difficulty of obtaining pure *ghi*.

Tinned butter is now largely produced in Gujerat (Bombay Presidency). In spite of the absence of ready market for the separated milk the trade in tinned butter has developed considerably and the product is used all over India, Burma and the Straits Settlements. The introduction of the cream separator some years ago has had a great deal to do with the development of this industry. The cream is separated in the villages and sent to the large centres like Bombay and Ahmedabad where the butter is made and tinned. In the case of Bombay, the cream ripens on the way and is ready for churning when it arrives at its destination. The whole process is carried out under the most insanitary conditions. Still the trade is firmly established and its success is a testimony to the value of an efficient piece of dairy machinery where conditions demand rapidity in handling the produce.

The use of the separator in *ghi* and butter-making could probably prove of advantage owing to the great superiority of separated over skim milk.

METHODS OF HANDLING.

From the Bacteriological standpoint, the treatment of milk may be considered from three points of view :—(i) The presence of organisms causing deterioration in quality ; (ii) the presence of pathogenic organisms ; (iii) the presence of organisms causing deterioration of milk products such as cream and butter.

The importance of securing, so far as possible the absence of such deleterious organisms does not require emphasis here, but it is worth while to point out that no advance can be made in dairying in this country until the absolute necessity of proper dairy technique has been realised by those engaged in this pursuit. This is all the more so in view of the fact that the average air temperatures in India approximate much more closely than those in Europe to the optimum for multiplication and physiological activity of such bacteria as occur in, and produce harmful results to, milk and its consumers. Numerous and frequently repeated experiments in Europe and America have demonstrated clearly one important and fundamental fact, namely, that the success of various processes of sterilization or semi-sterilization such as pasteurizing, both in increasing the keeping properties of the milk and in ridding it of pathogenic organisms, depends almost entirely upon the original bacterial content of the milk when brought into the Dairy for treatment; this original content itself depends upon the method of milking and the conditions under which it is carried out and further upon the methods of handling the milk in transit to the dairy. These conditions in Europe are strictly regulated by careful dairy-men in response to the public demand for pure milk and to Government or Municipal Regulations enforced by Local Inspectors. In India there is no such demand from the Indian consumers nor legal compulsion to back it if it existed. Only the European community requires or demands pure milk and in the numerous localities where no dairy under European supervision exists the milk is boiled by the consumer to ensure the destruction of the deleterious organisms which may be assumed to be present.

Attempts have been made in some towns, such as Calcutta, to obtain better conditions for drawing the milk from the cow; in this city municipal milking sheds were erected and the

gowalas invited to use them free of charge, but the attempt was a failure, principally owing to the unwillingness of the latter to put themselves to the inconvenience of bringing their cows to the sheds. Nothing but legal compulsion is likely to overcome this difficulty, and a further one arises involving the necessity of paying for the cost of supervision, always high in India if effective, and at the same time of meeting the demand for the cheap milk. Not only do the numbers of bacteria eventually found in milk after passing through the dairy depend largely upon the conditions of milking, during which operation the milk is exposed to infection from particles of dust, manure, dried urine and other sources, but the eventual composition of the bacterial complex will be largely determined by the character of the infection taking place at this period, any large number of organisms of one species gaining entry at this time obtaining an advantageous start resulting in their eventual predominance. The quality of the milk both with regard to its keeping power and suitability for consumption, or production of cream and butter thus depends very largely upon the conditions under which it is drawn, and therefore the first step towards improvement must be in this direction. It seems hopeless to persuade the Indian cowkeeper to milk his own cows under sanitary conditions; the Indian consumer makes no demands for milk which is pure either in regard to absence of deleterious organisms or to freedom from adulteration with water, and in the absence of such demand no unnecessary trouble will be taken to avoid either contamination or the profits resulting from adulteration. Only in towns where public feeling is created by an enlightened minority and given expression to by municipal action, it is possible to make use of preventive measures to ensure the provision of milk of better quality, and even then such attempts may be frustrated by the refusal of the cowkeepers to submit to control, as in the

case of Calcutta. Here Government intervention seems called for, but, the immediate danger appears to be a possible rise in the price of milk and a reduction in the supply. In many localities, especially in and around large towns, the profits from the sale of milk are small and depend largely upon adulteration; were municipal supervision introduced, involving not only the expenditure of more time and trouble on the part of the cowkeeper, but a possible reduction in his opportunities for adulteration, many of the latter might give up milk production altogether. The remedy for this seems to be the introduction of better milking breeds, provision of grazing grounds and winter fodder, and the organisation of collection and transport. There can be no doubt that in time the gradual interaction of demand by the enlightened minority and action by Municipalities and Local Governments will create a public feeling in favour of better milk and gradually raise the standard of popular demand. Then dairies run by Indian proprietors will want to know how to produce pure milk and good butter, and it will be necessary to provide the information; at present we are dependent upon European experience, which, as in many other cases connected with agricultural operations, requires very serious modifications to enable it to be of practical utility under Indian conditions.

So far as manufacture of butter is concerned, enquiry both in Bombay and Bengal indicates that the consumption of this milk product is largely limited to the European community, and although large quantities are made in Bombay, mostly from cream imported by rail from the Ahmedabad and Surat districts this is distributed over India for European use, or else exported to other countries such as E. Africa, Burma and the Straits. Butter is not likely to displace *ghi* as an article of consumption by Indians, for various reasons, one of which is the inherent keeping capacity

of the latter due to the prolonged high temperature incidental to its manufacture, another scarcely inferior in importance, being the possibility of adjusting its market price to the requirements of various grades of purchasers, by means of adulteration with such substances as sesamum oil, cocoanut oil and animal fat; in addition to these two reasons a third exists in the prejudice against butter as an article manufactured under conditions which may have brought it under the ban of religion or caste. It appears, however, that there is a growing demand for butter amongst Indians not for consumption as such but to be used for the manufacture of *ghi*.

Financial Help to Industries in Baroda.

A set of rules have been framed by the Department of Commerce and Industries, Baroda, under which financial help will be given to industries in that State. The rules provide:—

(1) That mills and factories organized as Joint-Stock Concerns and registered under the Baroda Companies' Act will be helped.

(2) Preference will be given to such industries as may secure a direct return as in the shape of Excise revenues or may help the development of the natural industrial resources of the State.

(3) That a sum up to one-third the amount to be invested in buildings and machinery and other fixtures will be lent by the State. The rest is to be got up by means of shares by the promoters.

(4) The concern will issue debentures for the amount to be lent by the State. The period for the debentures is to be ten years.

(5) The State will charge 5 per cent. or more as the case may be.

(6) The State will not supply any working capital except in a very special case when money may be advanced against liquid assets of the concern, keeping a safe margin.

Delhi.—The Deputy Commissioner, Delhi.

Coorg.—The Registrar of Companies in Coorg, Mercara.

Ajmer-Merwara.—The Assistant Commissioner, Ajmer-Merwara, Ajmer.

Baluchistan.—The Revenue Commissioner in Baluchistan, Quetta.

Punjab.—The Registrar of Joint Stock Companies in the Punjab, Lahore.

Auditors' Certificates.

The Government of Bombay have issued the following press note :—

In Press Note No. 3169, dated 3rd April 1914, the public have been informed that under section 144 of the Indian Companies Act, 1913, no person can be appointed to act as an auditor of any public company unless he holds a certificate from the local Government entitling him so to act; that members of certain Institutions and Associations are entitled to act as auditors without a certificate; that rules have been framed for granting certificates to all other persons desirous of acting as Auditors; and that an Auditor's Council consisting of an Official President and four non-official members has been appointed to aid the Governor in Council in the examination of applications for Auditors' certificates. It has now been decided to charge the following fees for the issue and renewal of Auditors' certificates as contemplated in Press Note No. 3938, dated 29th April 1914 :—

	Rs.
(i) For a permanent unrestricted certificate	100
(ii) For a permanent restricted certificate	75
(iii) For a provisional unrestricted certificate	50
(iv) For a provisional restricted certificate	87½

The temporary certificates already granted

without levy of fees to certain persons are valid for the period for which they are granted. The grant of permanent or provisional certificates in place of these temporary certificates will be subject to the rules as amended by Government Notification No. 5615, dated 16th June 1914, and they will be issued in accordance with the recommendations already given by the Auditor's Council unless those recommendations are subsequently amended.

Cocoanut Trade in Madras.

The following statement taken from the Review of the Sea-borne Trade of the Madras Presidency for the year 1913-14 shows the marked increase in the demand for copra in recent years :—

	Quantity.	Value.	Average value per cwt.
	cwt.	Rs.	Rs. A. P.
1897-1907 (average)	...	16.75 lakhs	...
1907-08	...	21.28 "	...
1908-09	388,993	52.02 "	13 6 0
1909-10	532,176	74.19 "	13 15 0
1910-11	445,892	78.26 "	17 9 0
1911-12	632,360	113.16 "	17 14 0
1912-13	684,721	128.38 "	18 12 0
1913-14	761,726	155.45 "	20 6 0

Formerly copra was used chiefly in the manufacture of soap but in recent years, improved methods of refining have removed its peculiar taste and its value as a food is now generally recognised. Copra from Malabar commands a higher price in Europe than that from any other source. Cochin supplied 71 per cent. of the total exports. Shipments to Belgium increased sixfold and those to France trebled. Russia increased her share by 70 per cent. but shipments to Germany declined by 12 per cent.

The following table showing the foreign trade in the several products of the cocoanut palm during the past four years may be read with interest by our readers :—

	1910-11.		1911-12.		1912-13.		1913-14.		Increase or decrease in 1913-14.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cocoanuts No.	107,470	Rs. 4,909	126,125	Rs. 5,927	82,669	Rs. 4,151	70,813	Rs. 5,164	- 11,856	+ 1,013
Coir fibre cwt.	11,755	1,23,303	10,235	1,04,498	8,879	94,550	14,053	1,65,392	+ 5,174	+ 70,842
Coir manufactures "	634,594	68,69,887	738,853	79,75,710	7,15,969	81,48,891	765,787	88,07,356	+49,818	+ 6,58,465
Coir rope (cordage and rope) ... "	13,056	1,17,156	16,464	1,62,262	16,518	1,81,178	16,531	1,82,358	+ 13	+ 1,180
Copra ... "	445,892	78,26,171	632,360	1,13,16,282	684,721	1,28,38,681	761,726	1,55,45,534	+77,005	+27,06,853
Cocoanut oil galls.	1,890,297	33,95,175	2,120,645	39,65,775	929,971	18,43,444	1,060,139	22,48,169	+130,168	+ 4,04,725
Cocoanut poonac cwt.	137,801	6,22,532	166,263	7,43,475	1,27,396	6,18,309	81,057	3,93,012	-46,339	- 2,25,297

Modernizing the Retail Store.

Mr. Thaddeus S. Dayton of New York contributes an article on the above subject to the columns of the current number of the "*Dun's Review*" in which he gives various suggestions for popularising the retail store.

In the first place, he advocates the decoration and illumination of the retail stores so as to make them attractive to the customers. Window dressing is another method. The object of putting goods in the window is to get the people to come inside with an impulse to buy. The arrangement of show windows is therefore a matter that demands study and thought. The object is to concentrate the spectator's mind on the thing that is to be sold and to get him inside the shop.

A third method of modernising the store is to hang at the front of the shop exhibits consisting of cartoons of the articles advertised together with specially attractive pictures. The object is to make a food product so good that the very picture will create an appetite.

In the arrangement of the goods in the store, neatness and order are the first requisites

to be cared for. There must be a definite plan in arranging the stock so that there may be a sequence which will draw the customer from one counter to another after he has bought the thing he came in for. The writer is not for too much harmony. In his opinion there must be contrasts so that the effect may not dull the interest of the customer. In the west, the telephone is considered as one of the most valuable aids for securing orders. The extent to which it may be used depends on the salesman's ability to originate and apply schemes for getting customers into the habit of ordering goods by that method.

Other methods of the merchant to modernise the retail store are also detailed by the writer. There is delivery of goods by the use of light and heavy motor cars. Then there is the method of advertising in newspapers and magazines. Free distribution of samples to all the houses in a town contributes a good deal to popularising the store.

Is an Estimate Binding?

If a firm give you a written estimate for

(7) The accounts of the concern that receives loan from the State will be audited by competent auditors besides, for which no charge will be made.

(8) The State will have a right to appoint a Director on the Board of the concern so helped.

(9) That suitable modification may be made in these rules in individual cases, if found advisable or necessary.

Industrial Activity in Indore.

In view of the gradual disappearance of the opium trade in Malwa and to find means for employment of the large capital liberated thereby, some enterprising merchants of Indore have decided upon a new departure in the line of trade hitherto followed by them, writes a contemporary. Some four years ago Mr. Sarup Chand Hukam Chan', who is known as the "Merchant Prince of Malwa," with the assistance of Sir Currimbhoy Ebrahim & Co., started the Indore-Malwa Cotton Mills, which proved to be the most flourishing concern in Central India. Now Mr. Hukam Chand has started another mill at Indore. The new concern, we learn on the authority of the *Pioneer* will have 22,000 spindles and 588 looms and will give employment to about 15,000 persons. Large tracts of land on which opium poppies were grown have already been converted into cotton cultivation. The area under cotton cultivation is fast increasing in Indore and Malwa and their enterprising merchants seem determined to make good the loss from the disappearance of the opium trade by developing new industries.

Weaving by Dictation.

Peculiar methods are employed by the Indian weaver in converting his original design into a textile, states an American Consular report, on the carpet making industry. Instead of working from a coloured drawing or diagram, the weaver has the pattern translated on paper into rows of symbols, each of which

expresses the number of stitches and the colour. With this written "key" in his hand, the head weaver sits behind his subordinates and dictates the pattern to them, one row at a time, all through the breadth of the carpet. These weavers—generally quite small boys—sit in front of the warp strings and tie in the requisite number of stitches of each colour as called out to them by the reader from his ciphered scrip. These boys, who perform the actual process of weaving the pile, follow day by day the dictations of the head man, knowing nothing of the pattern they are preparing, but gradually building up in a mechanical way the carpet on the strings before them.

Sheep-Breeding in the United Provinces.

The results of the sheep-breeding experiments recently undertaken by the Civil Veterinary Department with a view to ascertain how far it is possible to improve the quality and quantity of the wool of the indigenous sheep have up to the present proved most encouraging. The introduction of the merino strain has been found to have a very beneficial effect on the quality of the fleece, which has been very favourably reported on by expert wool judges. The quantity of wool has also increased; the half-bred lambs giving an average of about 8 lbs. per head against about 1 lb. usually obtained from the country-bred. Flocks are being located in various parts of the provinces to ascertain what tracts are most suitable to sheep-rearing and production of improved wool.

Bananas in India.

The *Philippine Agricultural Review* writes that banana growers in India are becoming interested in the possibility of the banana-flour industry and in the near future it is probable that there will be a considerable production of by-product foods of this sort in evidence in that country. The great advantage of the flour, meal, chips, etc., is their adaptability to storage for the dry season and, at times, the famine-centre trade.

The Commercial World.

Business Enterprise in India.

The following is an abstract of the Joint Stock Companies registered in the months of April and May 1914.

	April.	Rs.
1 Trading Company ...	...	5,00,000
1 Company (other than specified above).	...	20,000
2	Total ...	5,20,000

	May.	
<i>Burma.</i>		
1 Trading company...	...	2,50,000
1 Rice mill ...	...	5,00,000
<i>Bengal.</i>		
1 Navigation company ...	...	4,00,000
1 Trading company ...	...	3,00,000
1 Tea Planting company ...	...	3,00,000
1 Coal Mining company ...	...	20,00,000
<i>Delhi.</i>		
1 Trading company ...	...	2,50,000
<i>Bombay.</i>		
1 Cotton mill ...	...	82,00,000
8	Total ...	72,00,000

Commercial News Service for Germany.

The *Deutsche Export Revue*, the official organ of the German shipping and export trade, publishes details of an elaborate scheme, worked out by the German Government together with the leading industrial shipping and financial authorities for exploiting the foreign press on behalf of German commerce. The German Foreign Office has guaranteed to furnish £12,500 to launch a new syndicate for a German news service abroad, provided that a similar amount is raised in business circles. The condition has been fulfilled by contributions of £40 each from practically all the important industrial and financial concerns in the country. The syndicate is understood to be already in operation. The parent establishment is the existing news bureau whose activities will be gradually extended throughout the world, especially in the direction of replying in proper form to anti-German news and attacks on Germany. The managerial Committee includes Herr Von Borsig, head of a well-known locomotive firm and the official Deutsche Bank.

Registrars of Companies.

The Registrars of Companies under the Indian Companies Act (VII of 1913), appointed for the Provinces of Bengal and Bombay, are Mr. F. R. Carson, Legislative Department Building, top floor, Calcutta, and Mr. J. C. D'Almeida (sub. *pro tem.*), High Court Chambers, Fort, Bombay; for the other provinces the list below shows the officers appointed to carry out the duties of Registrar:—

Madras.—The Inspector-General of Registration, Madras.

Bihar and Orissa.—The Commissioner of Excise and Salt and the Inspector-General of Registration, Ranchi.

United Provinces.—The Registrar of Joint Stock Companies and Co-operative Credit Societies in United Provinces, Allahabad.

Assam.—The Commissioner of Excise, Assam Shillong.

North-West Frontier Province.—The Revenue Commissioner, North-West Frontier Province, Peshawar.

Central Provinces.—The Registrar of Joint Stock Companies, Central Provinces and Berar, Nagpur.

Burma.—The Collector, Rangoon Town District, Rangoon.

some work, and you accept the estimate and they execute the work, is the estimated price binding, or can the firm legally enforce a higher price on the ground that the actual cost of carrying out the work was greater than they anticipated, whereas they had only given you an estimate? Such a doubt in anyone is answered by the *Organiser* thus:—

Everything depends on whether an order was given and accepted for the work to be done at the estimated price. In most cases the word "Estimate" is a misnomer, and in fact the person giving an estimate implies not merely that "I estimate that this work will cost you so much," but "I will undertake to do this work for so much," and the person for whom the work is to be done places an order for the work in consideration of which he agrees to pay the estimated price. Hence, the custom, when a firm is not willing to be bound by its estimated price, to render an "approximate estimate."

If a firm issues an order for work to be executed at the estimated price, and the person giving the estimate commences work or can be shown to have accepted the order, a firm contract is made, and no claim can be made for an increased amount to be paid unless the written order is varied in some way or other. If, on the other hand, a man says: "I estimate this job will cost you so much," and you say: "Go ahead and keep the price as low as you can," then the man doing the work could not be bound by the price, but would be entitled to receive the cost of the work, plus a reasonable profit, unless it could be clearly shown that the cost had been increased by some fault of his, or unless he had explicitly agreed not to charge more than the estimated amount.

Cotton Exports.

India exports 49 per cent. of her cotton in the raw state and in the last ten years at all events, the price of Indian cotton has been mainly governed not by the magnitude of her crop but by the price of American cotton. It is,

therefore, not surprising to find, says the *Indian Trade Journal*, that, although a general rise of values is disclosed by the prices of cotton seed and of Broach cotton respectively, it cannot be said that the two articles keep pace with each other. The average annual price of cotton seed has evidently risen by 74 per cent. between 1903 and 1912—that is to say, in nine years. This represents an average increment of 69 per cent. per mensem. But on the average of the ten years' records, we find that from January to September there is usually a rise of 3 per cent in price attributable to the seasonal fluctuation that we find in respect of most crops.

It may be added that as a rule India exports 12 per cent. of her cotton seed.

The figures relating to production of cotton seed are based on those for production of cotton, since it may be taken broadly that the weight of seed bears an approximately constant ratio to the weight of lint.

The quantity of cotton seed produced in India is equal to about 29 per cent. of the production in the United States.

Condensed Milk.

The views of the Committee of the Bombay Chamber of Commerce were requested by the Bombay Government with regard to the method which should be adopted for distinguishing between *Condensed Milk* and *Skimmed Condensed Milk* imported into India and in this connection a copy of a letter from the Government of India together with other correspondence on the subject was forwarded for the information of the Committee.

Under existing orders a brand of condensed milk was required to be marked "prepared from skimmed milk" if analysis showed that it had been prepared from milk containing less than 3 per cent. of fat. But it was pointed out by the Hon'ble Sir Pardey Lukis, Director-General, Indian Medical Service, that this method appeared to be defective. The Government of India considered, therefore, that the present method should give way to a system

under which the classification of condensed milk should be based on a fixed percentage of fat for each tin. The minimum proportion suggested by Sir Pardey Lukis was 12 per cent. and in his opinion a tin containing fat in a smaller proportion should be required to be marked "prepared from skimmed milk." This figure was based on the supposition that the original cow's milk from which the contents had been prepared, contained 3 per cent. of fat, and that condensation was effected in the proportion of 3 to 1, a ratio generally adopted by manufacturers.

The Government of India were inclined to accept the above proposal.

The Committee, after giving the matter their careful consideration, replied that they approved the proposal to introduce a system under which the classification of condensed milk should be based on a fixed percentage of fat. But they pointed out that it had been represented to them that as the finest condensed milk imported into Bombay did not contain more than 9 per cent to 10 per cent. of fat, it would appear that 9 per cent. might be a more suitable minimum than 12 per cent.

Indian Condiments.

This is the subject of an article in a recent issue of the "*Grocer's Journal*." The writer gives an account of the Indian chutney. The foundation of all chutneys, he says, is the mango fruit, which is treated in various ways, being made up into some thirty well-known and well-defined varieties of chutney. The mango forms the base, as it were, other fruits being added to give the particular flavour required according to the recipe.

Reviewing the history of the trade in chutneys existing between England and India the writer states that there is a better demand for them now in England than twenty-five years ago.

Here is a list of condiments available in the English market with a short description of each.

First and foremost amongst these is the sweet-sliced mango, which is a sweet chutney containing bold slices of mango fruit, and is medium hot in character. This kind is the best "seller" and the most in demand by the general public.

Beugal hot is a hot pungent chutney ground into a pulp and quite free from slices.

Mild mango is similar in character to the sweet-sliced mango, only, as its name implies, it is not hot.

Green mango is a sliced chutney, unsweetened and moderately hot.

Cashmere.—A mixture of sliced and pulp mangoes, sour and very hot.

Tamarind.—A sweet ground chutney, with tamarind flavour.

Madras.—Another ground chutney, moderately hot in character.

Besides the above cheap varieties, there are the higher grade chutneys manufactured from selected mangoes and prepared with a great number of ingredients, the mango slices being more tender than those used in the cheaper varieties, and the chutneys being generally milder and sweeter.

The following description of a few of the leading kinds may interest our readers:—

Extra Sweet Sliced Mango.—A delicious sweetened chutney, containing tender slices of mango fruit, flavoured with spices, and moderately hot.

"Colonel Skinner" Chutney.—A mixture of mangoes and other fruits cut into slices. Medium hot and prepared from an old original recipe.

"Major Grey".—A sweet mild chutney of a sweet pickle character.

Bengal Club.—A real fruity pulp chutney of a very mild nature.

Sweet Lucknow.—A mild sweet chutney with a great variety of fruits blended with mango slices.

Tirhoot.—A very high-class sweet-sliced mango chutney, moderately hot, but prepared with the choicest mango slices and selected spices.

Comparing the Madras, Bombay and Calcutta chutneys as regards price, quality, etc., the writer observes :—

"Madras is more celebrated for its curry powder and Mr. P. Venkatachellum, its manufacturer is well-known throughout the world. The success that has attended the cooks and chefs in different parts of the world to make curries similar to the curries made in India, is solely due to the excellence of his powder."

Spices such as turmeric, coriander seeds, cardamoms, mace, cinnamon are blended together in certain proportions to form the curry powder.

The other articles comprising the "Indian condiments" are described by the writer thus:—

The term "Indian Condiments" includes other articles besides chutney and curry powder, although the demand for these is, comparatively speaking, limited, but manufacturers make some very good Indian pickles packed both in oil and in vinegar—of these the lime pickle, mango pickle, and brinjal pickle are the most popular.

Another popular line is Bombay Ducks, which is not a duck at all, but, strange as it may seem, is a dried fish (sometimes called "Bummalo Fish"), which is appreciated by Anglo-Indians, although its somewhat strenuous aroma is quite enough to keep off ordinary mortals.

Poppadoms.—These are a dry, thin, paper-like biscuit which is used for eating with the said Bombay Ducks.

Although it can hardly be described as a condiment, a favourite article imported from India with these goods is Guava jelly, a delicious jelly made from the guava fruit, the demand for which is growing very steadily in this country.

The Handling of Salesman.

The importance of each factor that goes to make up a successful selling scheme is psychologically and critically analysed in an able article written by Mr. H. C. Grote to the *Tea and Coffee Trade Journal*.

Mr. Grote would want successful salesmen to possess these qualities—

First.—Personal appearance.

Second.—Good character.

Third.—Manner of address.

Fourth.—Proper knowledge of your goods.

Fifth.—Ability to represent you in a creditable manner.

Mr. Grote's remarks on price cutting often suggested by salesmen to secure more business deserve to be borne in mind :—

Probably the most aggravating thing is the "price-cutting salesman," the fellow whose ambition is to gain a reputation in his territory for selling goods cheaper than his competitors. His boast is that his prices are always below others. He gets his business "on price."

He should be taught that it is better salesmanship to talk "quality"; that upholding price is upholding grade, and that to deliberately cut prices regardless of grade or quality is a reprehensible crime. Choke this sort of fellow off quickly; if you do not he will continue the practice to his own detriment and a corresponding loss in your profits.

Explain the demoralizing effects of useless price cutting by teaching him how to sell goods; by convincing him that it is better to have the courage to ask a price and stick to it than to cut prices, which nine times out of ten is unnecessary, anyway. Cutting prices is the lazy or incompetent salesman's idea of getting business. One price cutter follows another. If your man cuts prices, the next man following, not to be outdone, makes it his boast that he can do the same or better. Thus prices are demoralized all along the line.

Nip price cutting in the bud promptly. Do not allow it to grow if you do not wish to lose control of your prices.

It is the duty of the sales manager to show his men the fallacy of meeting every price made. Establish your prices on a living profit basis, then insist on your salesmen getting the prices you have established. They will sell as many goods and make more money for you, and your temper will not be so often ruffled.

HINTS ON ADVERTISING.

Who Pays for Advertising?

Advertising is a feature of large-scale production in industrial economics. The absurdity of the popular notion that the cost of it is borne by the consumer is apparent, when we remember that prices, are fixed by fierce competition. Advertising, instead of raising the value of an article to the consumer, actually lowers it, as successful advertising brings about a wider market and consequently stimulates increased production.

Daily, almost hourly, one might add, new articles, new products are sprung upon the market and these would never leave the store until by assiduous advertising, a desire for their purchase is created in the public. Thus, in a sense, advertising sometimes *creates* value; or, if one would not wish to go so far, advertising hastens the capitalisation of values. Advertising can never be a determining factor in fixing prices; much less in raising them, for the above simple reasons.

But who pays for it? If not the consumer, the manufacturer should pay. Then, that would certainly tell upon his profits. The manufacturers would not be prepared for such a sacrifice. We see also firms pursuing a continuous advertising policy extending over fifty, sixty years or even more and they have not been known to grumble that they have lost by advertising.

Here then is a ticklish problem—who pays for advertising? Mr. E. S. Hole in a debate on the subject held at "The Column Club" contended that advertising is paid for by the firms who do not advertise. The same opinion was once expressed by a writer in the *London Opinion*. This, Mr. Hole proves by an ingenious argument.

Who bears the burden of any successful innovation? Those who do not use it and those who are interested in that which it displaces.

An analogy exists between the process of an intricate machine and that of selling. The machine can often be improved and simplified by dispensing with certain parts. That is exactly what the simplification of selling processes by means of advertising does to our social system. Advertising is the cheapest form of selling, and those businesses which, by the adoption of it, secure a greater volume of business, do so at the expense of their non-advertising competitors. Therefore, according to Hole, in the long run, the latter bear the burden.

The "Next-Reading-Matter" Preference.

Advertisers want their advertisements published facing reading matter and pay heavily for such positions. Is it worth while paying so dearly for the space? Apparently not, if we are to believe a prominent psychologist at one of the American Universities who is stated to have recently made the following interesting experiment. He placed before his class eight newspaper pages, each containing four quarter page advertisements. Beside them he put sixteen other newspaper pages, each containing two quarter-page advertisements and two comic cartoons. The students looked at each page for the space of thirty seconds, and then wrote down what they could remember of the things advertised. They remembered a far greater proportion of those occupying the pages devoted entirely to advertising than of these on the pages where their attention was attracted by other things. If advertisers would hold to this academical test, they would unconsciously restore to the editorial matter its much needed dignity.

Electric Fan in a Perfume Shop.

With the object of luring customers into his shop, a perfumery merchant of New Orleans, La., has placed an electric fan in his doorway to carry out into the street the enticing odors of his shop. An attendant with an atomizer sprays the fan with various perfumes.

OPENINGS FOR BUSINESS.

[For particulars, address the Director-General of Commercial Intelligence, New Imperial Secretariat I, Council Street, Calcutta, mentioning the *Wealth of India*. Firms that may like to follow up any enquiry should give proper references and restrict themselves to those enquiries only which they are fully and seriously qualified to handle.]

COIR MATTING.

A London firm is desirous of communicating with shippers in Madras of coir matting. (C 390)

GROUNDNUTS, LINSEED AND JUTE.

A London firm is desirous of communicating with sellers of groundnuts, linseed and jute. (C 391.)

MONOZITE AND RED GARNET SAND.

A merchant in Cochin, Madras Presidency, is desirous of communicating with buyers of monozite and red garnet sand. (C 393.)

MUSTARD SEEDS.

A firm in Lahore, Punjab, is desirous of communicating with importers in Dunkirk (France) and Odessa (Russia) of mustard seed. (C 394.)

TAMARINDS.

A firm in Hamburg, Germany, is desirous of communicating with shippers of tamarinds. (C 399.)

BONES.

A firm in Warwick, England, is desirous of communicating with exporters of bones, principally small crushed bones. (C 400.)

FISHING RODS.

An official in France is desirous of communicating with shippers of black, yellow or pink bamboo fishing rods. (C 403.)

IMITATION JEWELLERY.

A merchant in Liverpool is desirous of communicating with importers of imitation jewellery such as brooches, necklaces, bracelets, finger and ear rings, watch chains, etc. (C 404.)

METAL AND RUBBER WASTE.

A merchant in Hamburg, Germany, is desir-

ous of communicating with exporters of metal waste and rubber waste. (C 406.)

NUX VOMICA, GINGER AND ARECA NUTS.

A London firm is desirous of communicating with exporters of nux vomica, ginger and areca nuts. (C 407.)

STEATITE.

A local firm is desirous of communicating with sellers of steatite or soap stone. (C 410.)

WAGONS.

A firm of manufacturers in Blackburn, England, is desirous of appointing agents at Madras, Delhi and Calcutta for the sale of bullock wagons. (C 411.)

CROCODILE FAT AND HIDES.

A merchant in Chandbali, Orissa, is desirous of communicating with buyers of crocodile fat and hides. (C 414.)

CRUDE ASBESTOS.

A Bombay firm is desirous of communicating with sellers of crude asbestos (crysolite). (C 415.)

CYCLES.

A firm in Birmingham is desirous of communicating with importers of bicycles and motor cycles. (C 416.)

DIVI DIVI.

A merchant in Chandbali, Orissa, is desirous of communicating with buyers of divi divi. (C 417.)

DRUGS.

A correspondent in Australia desires to be placed in communication with shippers of the following Indian drugs:—Indian hemp, catechugum, cheritta, cinchona, nux vomica, castor oil, santal oil, senna leaves, ginger, cardamom seeds, mustard oil. (C 418.)

HARDWARE, BI-METAL AND ALUMINIUM GOODS.

A London firm is desirous of communicating with importers of hardware bi-metal and aluminium goods. (C 419.)

The Economic World.

Cost of Living: Will it Decrease?

Sir George Paish is stated to have said at the Manchester Statistical Society, that the consequences of the recent advance in the cost of living have been numerous. In the United States it has caused reductions in the tariff, the reform of the banking system, and a demand for the abolition of Trusts. In Germany it has caused the existing tariff to press unusually hard, and the Government have been compelled to impose heavy taxes on the wealthy classes, whereas, when the cost of living was lower, taxation was mainly placed upon the masses. In France it has led to taxes on incomes being proposed in lieu of further taxes on imports. In the United Kingdom it has brought forward schemes for increasing the productivity of the soil. Speaking broadly, it has kept down import duties, caused heavier taxation on the wealthy and strengthened the power of the working classes. It is the manufacturing districts and classes mainly that have suffered from the high cost of living, and the agricultural districts that have benefited from the advance, or rather recovery, in the prices of vegetable and animal food and of raw textiles. Roughly, the income of the agricultural countries has increased on the average by nearly 60 per cent. without any additional work on their part having been necessary.

Even after allowing for the higher prices they have to pay for the manufactured goods they consume, cultivators have not for a long time been so prosperous. The income of wage-earners engaged in manufacture has, however, only risen to one-third the same extent, judging by data compiled by the American Census Bureau.

The question arises; Will the existing high cost of living be maintained? After consider-

ing in detail the causes, firstly, which brought about the abnormally low prices of food and raw material in the nineties, and, secondly, that have contributed to the subsequent great advance in price, and after taking into account not merely the extent of the probable increase in supply, but also the volume of demand, it seems likely that the recent tendency towards a reaction will continue and that prices will gradually decline again.

Co-Partnership in the West.

In the United Kingdom the class of business in which profit-sharing and co-partnership have chiefly flourished is that of gas companies; and about half of the gas produced by gas companies in that country is produced under profit-sharing conditions. In France, on the contrary, there are only two instances of profit-sharing gas companies; and the group in which profit-sharing has extended most widely is that of insurance companies and banks, a group that has only one profit-sharing representative in the United Kingdom. Mines and quarries, railways and tramways, and metal, engineering and shipbuilding firms are also represented in France either exclusively or much more largely than in the United Kingdom; while, on the other hand, the clothing trades, the food and tobacco trades, and the chemical trades (including soap manufacture) are more largely represented in the United Kingdom than in France.

In the United Kingdom a very large number of schemes still provide for the payment of the bonus simply in cash; while in the most recent schemes, particularly those of the gas companies, the plan of giving workpeople facilities for the purchase of shares in the undertaking is largely adopted. The typical French system is that of capitalizing the bonus; and of the various methods by which this can be effected, that which

finds most favour is the method of converting the accumulated bonuses into a "patrimoine," that is to say, a capital sum sufficient to provide a pension for the employee after his retirement, and also something to leave to his widow and children after his death. It will, of course, be understood that the funds for providing the "patrimoine" are not in all cases exclusively derived from the accumulated profit-sharing bonuses, but are sometimes supplemented, or even provided as to the larger proportion by deductions from salaries, or by a charge on the general expenditure account of the employing firm.

In Germany, profit-sharing has made little progress, and many of the schemes introduced have been comparatively short-lived. At the present time about thirty schemes in all are known to be in existence. The twenty-one undertakings for which particulars are available only employ about 15,000 or 16,000 persons, or about one-seventh of the number employed under profit-sharing conditions in the United Kingdom. There are in addition a number of agricultural profit-sharing schemes, breweries, metal and engineering works, a weaving factory, an insurance company, a river steamboat company, a fruit-preserving company, and two mercantile firms.

The profit-sharing undertakings in Holland are mostly very small, the only two large firms practising the system being the Dutch Yeast and Spirit Factory at Delft, which has about 750 work-people, and the Dutch Engine and Railway Material Works at Amsterdam, which has upwards of 2,000. Nevertheless, the Dutch schemes present many interesting and original features. In the case of the profit-sharing scheme of the "Veluwe" Paint and Varnish Manufacturing Company, the distinguishing feature is that the capital is always kept at the same figure, the stock of the original shareholders being gradually transferred to the employees working for the

company, and from them, as they retire, to their successors.

In Switzerland there appear to be only eight or ten profit-sharing schemes in existence, and most of these are in small undertakings. It is, however, interesting to observe that profit sharing was tried in the Federal postal service as long ago as 1869. It was abandoned in 1878, owing to an anticipated diminution of profits, but also owing to the excessive accounting involved.

In the United States the dominant type of profit-sharing is that of issuing shares to employees on specially advantageous terms. The offer of shares is usually accompanied by the requirement that the subscribing employee shall remain in the firm's service, or shall retain the shares in his own possession for some years after he has fully paid for them. It does not appear that profit-sharing is looked upon with very great favour in the United States, the principal reasons being the attitude of the Trade Unions and the preference of employers for other means of improving the position of their work-people, such as "welfare" institutions—a movement which has been taken up with enthusiasm by many employers in the United States.

Rural Life Congress in Belgium.

The April number of the *Journal of the Department of Agriculture and Technical Instruction* in Ireland contains an article explaining the full scope and object of the Rural Life Congress which is to be held shortly in Belgium. Its object, is 'the improvement of rural life.' The deliberations of the congress should serve to direct public attention to a movement which has been gradually taking shape in recent years and which finds its urban counterpart in the efforts made to forward better town planning and the provision of healthier and more beautiful surroundings for the city dweller.

It is said that the object of the congress is to

solve the problem of how to make rural life attractive. After shortly describing the model village at Ghent the writer gives the scope of the congress.

The "Congress for the improvement of rural life" which is the first of its kind, is not intended to overlap or interfere with the activities of any other agricultural or social organization, but it hopes to utilise and develop what has already been accomplished in regard to the improvement of social and family life in the country.

In addition to the Central Committees, Provincial Committees will be formed. Their duties will be to make the Congress known throughout the country, recruit members, collect subscriptions and generally assist in the work.

The ground proposed to be covered is a wide one, as may be seen from the scheme of work which has been outlined for each section. The subjects to be dealt with are as follows:—

Section I.—General Questions.

1. What is the importance and the place of agriculture in the general economy of the province, and what are the conclusions to be drawn therefrom *in relation solely to the object pursued by the Congress?*

2. What encouragement is offered to agriculture, commerce and industry by the province?

3. Comparison between the benefits bestowed by public authorities on large, as compared with small, municipalities.

4. The needs of farmers in regard to public agricultural bodies.

5. The needs of farmers in regard to other public bodies.

6. Part which might be played by agricultural associations in regard to the object of the Congress.

7. Labourers' housing societies in rural districts.

8. How may industrial workers, townfolk

and poor persons be attracted from towns to rural districts?

9. Various propagandist methods in regard to the improvement of rural life and the embellishment of villages.

Section II.—Improvement of Public Services from a Rural point of view.

1. Railways, light railways, tramways.
2. Roads.
3. Postal, telephonic and telegraphic services.
4. Lighting.
5. Public hygiene.
6. Public relief.
7. Village amusements, games, fêtes, etc.
8. Village inns.
9. Fire brigade service.
10. Security of rural districts.

Section III.—The Embellishment of Villages.

1. Rural æsthetics of a by-gone day.
2. Good taste as applied to farmhouses, rural buildings, enclosures, etc.
3. Good taste as applied to public buildings, schools, churches, cemeteries, etc.
4. Good taste as applied to small towns and villages.
5. Good taste as applied to road making.
6. Good taste in relation to forest and garden.
7. Good taste in relation to clothing.
8. Good taste in rural festivals, etc.

Section IV.—Improvement of Rural Life.

(Writers of papers in this section are asked to treat questions from the point of view of the former and from that of the agricultural labourer.)

1. Food.
2. Labour and how to save it.
3. Small rural industries.
4. What primary and technical instruction may do to inspire a love of home.
5. Agricultural libraries.
6. Moral standard, thrift, habits of luxury, alcoholism, etc.

7. Family life.
8. Relations of farmers with one another.
9. Relations of farmers with their labourers.
10. Relations of farmers with landlords, etc.
11. Conditions favourable to the development of various kinds of association.

The Congress in thus handling comprehensively and systematically, the question of rural life, its drawbacks and possibilities, should be in a position to offer, in its findings, a valuable contribution to the solution of one of the most pressing and complicated problems of to-day.

What the Farmer Gets and What the Consumer Pays.

The following are extracts taken from a recent number of *The Irish Homestead* :—

The American Department has been investigating the percentage of consumers' prices received by the farmer. The investigation covered 78 cities of the Union, and on the whole it appears to us that the farmer in these countries receives about the same percentage of the prices the consumer pays as the American farmer. In America the farmer receives a bare 50 per cent. of the retail price of milk. That is, the price he gets is doubled before the public can touch it. The average cost of freight is about 7 per cent. and the retailer gets the remaining 43 per cent. The farmer receives 55 per cent. of the consumers' price for poultry and 69 per cent. of the retail price of eggs; 55 per cent. for apples sold by the bushel. In the case of oranges sold by the dozen the farmer received only 20 per cent. of the retail price. When considering prices from the consumers' point of view it was found that the price paid by them for cabbages per head was 135 per cent. over the price received by the farmer; for oranges sold by the dozen 400 per cent. The price of meat retail was 38 per cent. over the wholesale price. The net result of the investigations was that the consumer had no ground of complaint against the farmers. The latter nowhere were extortionate. On the whole the railway char-

ges added little to the farmer's price. The waste came in the retailing, where the overlapping was great, where the organisation was bad. There are too many people in the retail business. Too many expenses have to be paid. There are no storage facilities, and tons of produce are often carted out of the market as refuse simply because the whole system of retailing having grown up haphazard, being very costly, bears so many unnecessary expenses, that it cannot afford necessary expenses. If the distribution of food was municipalised or was entirely co-operative in a town, does any body believe for a moment that waste would be allowed, that cold storage would not be available always and that every bit of food brought would not be utilised some how. At present the farmers have to endure low prices and the public high prices because of this preposterous method of bringing the food of the world to the people of the world.

Distribution of Wealth

An old fallacy concerning the distribution of wealth was revived, the other day, by Lord Esher, who, in a letter to the *Times*, sought to show that Mr. Lloyd George's "Broad Back" Budget would do more harm to the poor than it would do good. Lord Esher argued that the imposition of the Super Tax—or indeed any taxes on the rich—would ultimately be borne by the poor. In proof of this assertion, he instanced his own case. He has a fixed income. One-eighth of that income is disbursed in insurances over which he has now no control. Of the remainder, half is absorbed by allowances and pensions, presumably to his relations and dependents. The other half is spent in luxurious living; the main outlay upon which is in the form of wages to the producers of the aforesaid luxuries—that is, to the men who make the motor cars, print and bind the books, etc., and again in wages and food to his domestic servants, gardeners, coachmen, chauffeurs, keepers, and the like.

These various charges and payments, he says, leave him with absolutely no margin, so that in order to pay the extra tax asked for by the Chancellor of the Exchequer, he has no alternative but to dismiss from his service some of the gardeners or servants who now do his pleasure. The result to him, he says, will merely be a few more weeds in his garden, which will not affect his happiness; but the result to the men dismissed will be serious. They will not have the wages which hitherto supported them, but will be thrown into the already large army of the unemployed, to make the struggle for employment still more severe.

To do Lord Esher justice, he is not blind to the possibility that in the long run the money taken from him in taxes may find employment for others; but in the meantime he urges the hardship of those whom the taxes will throw out of employment, and asks what Mr. Lloyd George proposes to do for them.

Now we will at once admit that hardship may be inflicted in individual cases upon gardeners or other servants whom Lord Esher will dismiss as a result of the Budget. It is an unfortunate truth that you can never right a deep-seated economic wrong without hurting someone in the process. But the underlying fallacy of Lord Esher's argument is that money spent by the rich on luxuries is as productive of employment as money spent by the poor on necessities. We contend that this is not so; but that money spent by the poor on necessities is productive of more employment than an equivalent sum of money spent by the rich on luxuries. Let us examine this point. The expenditure of the rich on luxuries certainly gives employment in the first instance. If a rich man builds a fine mansion containing a hundred rooms, there are employment and wages for the men engaged in building them. But these men, in producing a superfluity, are in the ultimate analysis so many men removed from growing food. For that is what expenditure

on luxury comes to in the long run. And it is the food producers, or at least the producers of surplus food, who are the real creators of that general demand for commodities which is necessary for industrial employment. The unequal distribution of wealth, by creating a purely artificial demand for luxuries, really curtails employment by discouraging agriculture; and the agricultural surplus, as Mr. H. G. Wells points out in his last great novel, is the foundation of all civilisation.—*The Mill Gate Monthly*.

Future Prices of Commodities and Materials.

Mr. Alex. Del Mar, late of the Bureau of Commerce in the United States, claims to have hit upon the true cause of the rise in prices, which has been markedly noticed since the beginning of the present century all the world over. But Mr. Del Mar is aware of its having occurred only in the Western Hemisphere. The Eastern Hemisphere, he says in an article contributed to the *Scientific American Supplement*, is not being at all affected by it. His solution lies in the velocity theory of money, which, quickened by the improved methods of distribution, has practically multiplied capital without increasing the number of coins.

He dismisses the causes of the rise in prices generally adduced, namely, the increased supply of gold, the disproportion between agricultural production and consumption, the exhaustion of natural resources, the higher standard of living, civic congestion, monopolies, wages, rates of discount, demand and supply, as not satisfactorily explaining the rise of prices in the United States.

The cause, says the writer, is the telegraph and telephone lines, which, owing to their enormous and exceptional increase in the country, have multiplied the means of communication between distant persons in business, enabled a single dollar of money or of credits reduced to the velocity of money, to do as much work in making payments as formerly one and a third,

or one and a half, dollars could do : thus rendering dollars superabundant and begging for exchange or investment at necessarily enhanced prices for commodities. For be it observed that not only have commodities risen: so also has the rate of interest for permanent loans of money.

If we divide commodities, proceeds the writer, into ten classes, arranged in the order of their marketability, it will be found that they do not rise simultaneously, but one after another, somewhat as follows. (1) shares in industrial enterprises, with international market; (2) shares with national market; (3) shares, with local market; (4) staples, cotton, wool, tobacco, etc.; (5) merchandise, contractors' materials, etc.; (6) fabrics, machinery, etc.; (7) real estate, (8) skilled labour; (9) unskilled labour; (10) professional services.

The writer concludes :—The stage coach and post office began it; the railroads continued it; the general introduction of steam increased it; the bank check, the clearing house, the telegraph and telephone lines have enormously augmented it; and the auto and flying machine may still further enhance it. In the Western World money is no longer pieces of gold or silver to be weighed in the balance. Like Icarus, it has taken wings: it is now a mechanism which operates with the speed of lightning, electrifying and vivifying everything it touches. Such is the evident cause of the rise. Nor has it yet expended its force.

Check of Usury.

The following are the more important portions of the circular letter addressed by the Government of India, Home Department, to Local Governments and administrations on the subject of the feasibility of preventing the use of Civil Courts as an agency for the realisation of usurious demands by money lenders.

The letter sums up the history of past endeavours in this connection, and shows in what respect such legislation as has been attempted

from time to time has fallen short of expectations. The Government of India desire a practical discussion of the subject.

The theoretical and economic arguments on the subject of usury are already on record, and the present reference is not intended to result in the mere repetition of them. The important issues are firstly whether the courts are as a matter of fact at present compelled to give effect to unconscionable contracts, and to enforce the payment of inequitable and extortionate demands; secondly, whether, if the answer is in the affirmative, this abuse of the authority of the courts has attained such dimensions that it is expedient to take steps to remedy it; and thirdly, in what manner it can be prevented without engendering consequences more prejudicial to the interests of those concerned than exist at present. The main remedies usually suggested for the suppression of usury are perhaps the following. (a) The fixing of a legal maximum rate of interest recoverable; (b) the determination of a legal maximum amount of interest recoverable, commonly known in India as the rule of Damdupat; (c) the bestowal of authority on the courts to go behind a contract, reopen a transaction, and reduce the rate of interest to what is thought to be equitable.

THE REMEDIES.

The first of these solutions has the authority of various foreign precedents and of certain special local laws in this country, but the Government of India are willing to accept the adverse opinion of the Select Committee of the Houses of Parliament on moneylending which reported in 1898.

After giving the Select Committee's remarks, the letter continues :—The rule of Damdupat has the advantage of being already in force in parts of the country, as between Hindus in the Presidency town of Calcutta, in Berar and Bombay, and in certain Native States, and it has the authority of the early Hindu law-givers,

But in speaking of the rule, it is important to define what is in mind. To be fully efficacious the rule should restrict the total sum recoverable altogether as interest to the amount of the principal, but as interpreted by the courts this limit is only applicable to the amount recoverable at the time the suit is brought without allowance for previous sums thus paid. At best, however, the rule is a rough and ready remedy, perhaps more suited to the simpler times in which it originated than to the more complicated stage now reached, when more carefully constructed laws are called for.

In the case of *Ram Connoy Audicary vs. Johur Lal Dutt* (Calcutta 867) Mr. Justice Wilson speaks of this law of Damdupat as a rule of limitation, but the limitation is one which only affects the accumulation of interest, and then the suit is delayed until the interest at the stipulated rate exceeds the principal. This rule also indirectly controls the rate of interest. It is possible that the rule would not in many cases work equitably, and one result of it is that it forces creditors to sue for their money in some cases rather than they would have done in other circumstances. Such merits as the rule possesses are simplicity and automatic action, and it is in consonance with Hindu feeling, while not insisting upon it as the appropriate course to be generally adopted. The Government of India would be glad to be specially informed as to its actual working, where it is in force, and particularly how far it is successful as a protection to honest debtors, and how far it is evaded or otherwise fails of its object.

"The third line of action is that which has been embodied in the English Money-lender's Act of 1900, and it was defined by the Parliamentary Select Committee, to which reference has already been made, as follows :—"That the courts should have power to go behind any contract with a money-lender, to enquire into all the circumstances of the original loan, and

the subsequent transactions, and to make such order as may be considered reasonable."

THE ENGLISH ACT.

After giving the Select Committee's remarks the letter continues :—"As at present advised the Government of India are disposed to think that legislation on the lines of the English Act offers the best chances of success from any definition of money lenders, banks, co-operative credit societies, and provident societies, etc., would, of course, be expected, but the essential feature would be that the courts should be authorised in suits for the recovery of money by money-lenders when in their opinion such a course was necessary, to re-open the contract between the parties and reduce the amount of interest if it appeared to be extortionate or unconscionable in the circumstances of the case. It is possible that supplementary provisions might be required, rendering it obligatory upon all money-lenders to keep written accounts of their transactions, and also to give counterfoil receipts for all moneys repaid. The stock arguments usually advanced against any such plan are, firstly, that it would interfere with private contract. Secondly, that it would increase litigation. Thirdly, that it would leave too much to the personal opinion of the Judge. Fourthly, that it would harass and confuse the ordinary operations of trade. Fifthly, that it would tend to raise the rate of interest paid by those who do not resort to the courts. Sixthly, that it would be ineffective. On the other hand, it is to be remembered that opinions as to the sanctity of contracts have altered appreciably since last century. With reference to the second and third objections, there is the probability that in a short time the reasonable rates of interest in certain conditions would be defined by rulings and practice and become well-known to all. Moreover, in certain circumstances, where no rate of interest is agreed upon the courts do at present ascertain and award reasonable interest on money decreed. Undue

stress may easily be laid upon the fourth and fifth results apprehended, which do not, in themselves, seem certain to ensue, and while it is known that attempts to evade any usury law will be made, the question is whether a certain amount of good will not be effected, which at least would make it worth while, failing any preferable alternative, to attempt this remedy. Doubtless, the cases of debts which come into the courts are merely a fraction of the total monetary transactions entered upon, but no creditor is certain that a particular loan may not form the subject of a suit, and the pressure of any legal change might be expected in time to exercise a controlling influence. The Government of India are pledged to no particular method of approaching the problem, and reserve an open mind in respect of any criticisms that may be offered. Their desire is to evolve a practicable scheme by which the courts can be saved from all necessity of helping the usurer and the extortionate to fleece and ruin the simple and the imprudent. It is not possible to devise any scheme to which some objections cannot be taken, but when the evil to be overcome is one of such magnitude, the aim should be directed towards evolving a remedy, the objections taken to which are, at any rate, less weighty than the abuses which it is sought to combat. The Government of India have further no wish to argue that everything is the fault of the money-lender, and that the debtor is always a blameless and injured innocent.

This is notoriously not true, but the courts, if vested with a wide equitable discretion, can be trusted to discriminate between the honest and unscrupulous, whether they be creditors or debtors.

CO-OPERATIVE CREDIT.

"Finally the Governor-General in Council would only remark that while he fully recognises the benefits which have resulted from the extension of Co-operative credit and the potentialities for good inherent therein, he does not consider that the progress made in this direction affords in itself an adequate remedy of the state of affairs which it is desired to alter. Co-operative credit is no doubt, a most valuable ally in attacking the problem of indebtedness, but if it can be supplemented in other ways there is little reason to neglect these latter. It would suit the convenience of the Government of India if your reply could reach them not later than November 1st, 1914."

Bullion and Money.

Karl Marx has the following to say regarding bullion and money:—

(1) Bullion and money are but commodities. (2) Functions as the medium of exchange. (3) Universal, equivalent, always as the means of purchase. (4) Flows in opposite direction to commodities. (5) The starting point of M. C. M., money, commodity, money. (6) The result of the circulating process, C.M.C. commodity, money, commodity. (7) Has use value in its circulation. (8) Performs the function of the realization of prices. (9) The only real commodity on consideration that commodities are only imaginary money. (10) Material form of abstract wealth. (11) Satisfies every want, as it can be converted into the object of any want. (12) Bodily representative of material wealth. (13) The universal form of labour in the capitalist system. (14) Effects separation of purchase and sale. (15) The basic factor of crises, as these cannot occur without money circulation.

The Financial World.

Indian Currency and Exchange Standard.

In the June issue of the *Economic Journal*, Prof. Nicholson writes an interesting article criticising the Final Report of the Royal Commission on Indian Finance and Currency. He first describes the recent history of the Indian Currency.

From the beginnings of the depreciation of silver since 1873, the Indian Government was troubled with the instability of the gold exchange value of the rupee; and British trade with India was also troubled with it. By 1893, the attainment of stability of exchange seemed necessary to the Indian Government and very desirable to the British trader. The Indian Mints were closed to the coinage of silver; and since 1893, the policy pursued has been successful in maintaining the normal gold value of the rupee at 1s. 4d. No one will dispute that this has secured stability in foreign exchange. But Prof. Nicholson puts the question—"Does it follow that because the stability of the gold price of the rupee has been established for the purposes of foreign exchange, that therefore it may be taken for granted that all other functions of good money are fulfilled by this rupee as so 'managed'?"

In answering this question, he states that the primary value of good money is to provide a medium of Exchange not merely for foreign payments but for purposes of internal trade as well; and adds that in order that the money may be a good medium of Exchange, it should have several requisites.

The first requisite is that it shall be universally accepted. The rupee with its commodity value less than the nominal does not meet with such universal acceptability. We have authority to say that the confidence in the rupee is partly lost. Under the old system when the

metallic value of the rupee corresponded with the legal, the Indian hoarded rupees. But now he hoards in gold. According to Gresham's Law, gold is withdrawn from circulation. The rupee therefore does not provide a good store of value.

The second and most important requisite of good money is that it should be readily adapted to the demands of trade. The volume of currency should be capable of automatic increase and decrease. Such automatic adjustment is possible when the principal currency is interchangeable at once with the metal of which it is made. Such was the case with the rupee under the old system. But it is not true now of the present. For the first 7 years after the closure of the Mints, there were no new issues at all. But from 1900, the needs of the market led to the issue of new rupees. These have been largely increased. The point is the amount of rupees issued depends partly on the demands for remittance in London, partly on the offer of gold in India to be converted into rupees, and partly on the estimates of the Government as to the Indian needs for trade and banking. The amount issued is not automatic. The Report meets this objection by saying that "it is not in fact possible for the Government to manipulate the currency for their own ends and they cannot add to the active circulation except in response to public demands." As to the first part of the answer, we know that the Government started the system and maintain it in order to secure stability of foreign Exchange. The rest of the functions of good money have not been considered at all. Then we are told that the rupees are issued in response to public demands. How to gauge the public demands? or supposing they can be gauged, how to know that they are well-founded? In case the necessity arises for

Withdrawal or contraction of the currency, can the Government do so? If rupees could be converted into gold readily enough, then the contraction would be automatic. The crux of the matter is the difficulty of doing so. The result is that in the absence of automatic adjustment, the system might lead to over-issues with the consequent depreciation of the currency and inflation of prices.

In conclusion, Prof. Nicholson says that the over-issue of rupees has, as a matter of fact, led to a great rise in the rupee prices. In such a country as India with imperfect credit and banking and with an immense area and population, additions to the currency operate more readily on prices than in Western countries. If the inflation of the currency has begun to operate, the rise in the near future will be more marked. He adds that this possibility is serious. Some of the highest authorities have given the rise in prices as one of the causes of Indian unrest. Further in such a rise in prices, the mercantile classes gain at the expense of the masses. After a certain point is reached in the inflation, the general depreciation of the rupee may be followed by specific depreciation as regards gold which means that the main object of the whole policy is defeated.

Indian trade and Gold supply.

The *Statist* of 6th June has a leading article on the subject of the Foreign trade of India in the course of which our contemporary draws special attention to the tendency of imports of goods into the country to expand and of the exports to remain stationary. While in 1911-1912 the net amount of gold absorbed by India was £25,000,000 and in 1912-13 it was nearly £28,000,000, in 1913-14 it was only £15,550,000. The exports of gold from the country consists mainly of the raw gold produced in the mines of India, the annual output of which is about £2,400,000. In the past year the amount of the world's supply of gold

absorbed by India has been reduced to £18,000,000, still a very large sum. If the value of goods imported into India shows further expansion in the current year, while the value of exports from India remains stationary, India will, the *Statist* observes, not be in a position to absorb as much as £18,000,000 of gold in the current year, and a larger quantity of the metal will become available for use in the international markets. The question appears to depend upon the course of prices for the produce of India.

Investment of British Capital.

In an interesting article in the '*Financier*' on the advantages of investing British capital in the Colonies and Dependencies of the British Empire, a writer points out that in India and Ceylon the total investment of British capital amounts to £378,776,000, or over £37,000,000 less than the sum sunk in Australasia.

Railways in India and Ceylon carried away about two-thirds of the capital invested in India by British investors.

For tea and rubber plantation enterprises, about £30,000,000 of capital has been provided. The great success of the tea growing industry is mainly due to the generous provision of capital by British investors.

To-day the rubber plantations constitute one of the most profitable investments. A fair amount has been sunk in mines, tramways and oil ventures but that employed on industrial undertakings is very trifling.

India has been fortunate in obtaining capital for railways and other public works at a very low rate of interest.

The writer observes:—"Indian investments have attracted capitalists less than other securities yielding a higher return. On the other hand, her ability to borrow cheaply has spared India the burden of interest charges greater than she can reasonably bear."

Indian Railway Problems.

The relations existing between the Indian

Railway Companies and the Indian Government are discussed in *The Times Financial Supplement* of May 2. Evidently the path of the railway directors is not an easy one, for they say "that they have about come to the end of their resources of energy and ingenuity in regard to finding fresh methods of pressing upon the Secretary of State and the Government of India their views with regard to the necessity of reforms, particularly in the matter of the authorisation and the means of raising new money for capital expenditure on improvements and extension. It is impossible to study the subject without being impressed with this pervading feeling of weariness—almost of despair—and especially because it is no mere case of City opinion against bureaucracy, officialdom, or the traditions of a Government Department. . . . Commissions have sat, conferences have discussed, deputations have expounded and declaimed, and at last directors declare that the proved needs of the country and the companies are unsatisfied and themselves are exhausted; and in the meantime so acute had become the relations between the companies at large and the Railway Board of the Government in India that at a conference in Calcutta two years ago . . . it was agreed that both the Railway Board and the companies' representatives should in future refrain from attack on each other in public, at any rate until all recognised methods of settling differences had been exhausted."

Travels of Silver.

A recent issue of the *Financial Times* contains an interesting account of the distribution of silver over the world.

For facility and cheapness of transport, the ore is melted at the mine and wherever possible, also refined.

The United States which produced 62,000,000 oz. of silver in 1912, i.e., about a quarter of the world's total output, have some of the largest melting plants. Some mines of

Canada and Mexico therefore send their ore for treatment there.

Electricity has been brought into use for refining in recent years and this has served to raise to a remarkable degree the quality of the silver refined. After refining silver is melted into bars, about 1,000 troy oz. in weight.

With lapse of time these bars grow dirty and are indistinguishable from lead except by experts.

London is the world's silver centre and from there it is sent out to meet foreign demands.

China and India are the largest white metal consumers. In the former country, this circulates as ingots weighing about 5 lbs. troy shaped like the deformed Chinese woman's foot.

Coins were unduly sweated by the authorities in the provinces where they were minted and hence were not very much trusted by the people. Therefore, till very recently the Spanish "pillar" dollar tonse was in general circulation and now has been superseded by the Mexican dollar.

In India the coinage has been for 400 years or more the rupee with $\frac{3}{8}$ of an oz. of fine silver. The greater part of the silver is utilised in the arts—namely for manufacturing jewellery and utensils. The average imports for industrial purposes is 50 millions oz. per annum but within the last 25 years large consignments of curiously shaped silver are arriving periodically from Peru. Before the opening of the Suez canal silver was sent in tin lined boxes well-soldered from London. But now they travel naked in strong rooms of liners throughout the whole journey and occasionally there are losses too as there was when 550,000 lbs. of silver on board the '*Oceana*' sank with it.

The following statement shows the world's production of silver for a series of years:—

World's Production of Silver.

(In ounces and sterling.)

Fine Ounces.	United States	Mexico.	Australia.	All other Producers	Total.	Total Values.
	Ounces.	Ounces.	Ounces.	Ounces.	Ounces.	£ (a)
1891	58,330,000	35,719,237	10,000,000	33,916,175	137,965,412	25,900,270
1892	63,500,000	39,504,800	13,439,011	36,496,175	152,939,986	25,370,513
1893	60,000,000	44,370,717	20,501,497	41,228,063	166,100,277	24,655,510
1894	49,500,000	47,038,381	18,073,440	53,140,696	167,752,517	20,226,410
1895	55,726,945	46,962,738	12,507,335	53,983,231	169,180,249	21,059,416
Total	287,056,945	213,595,873	74,521,283	218,764,340	793,938,441	117,212,123
1896	58,834,800	45,718,982	12,238,700	40,268,888	157,061,370	19,959,882
1897	53,860,000	53,903,180	11,878,000	44,431,992	164,073,172	18,865,500
1898	54,438,000	56,738,000	10,491,100	51,560,764	173,227,864	19,488,135
1899	54,764,500	55,612,090	12,686,653	44,161,000	167,224,243	19,161,112
1900	57,647,000	57,437,808	13,340,263	44,413,892	172,838,873	20,344,575
Total	279,544,300	269,410,060	60,634,716	224,836,446	834,425,522	97,839,204
1901	55,214,000	57,656,549	10,230,046	49,910,688	173,011,283	19,598,934
1902	55,500,000	60,176,604	8,026,037	39,060,842	162,763,483	16,318,731
1903	54,300,000	70,499,942	9,682,856	33,206,394	167,689,192	17,292,944
1904	57,682,800	60,808,978	14,558,592	31,144,596	164,195,266	18,044,172
1905	56,101,600	65,040,865	12,561,600	35,884,774	169,588,839	19,652,873
Total	278,798,400	314,182,938	55,059,431	189,207,294	837,248,063	90,908,654
1906	56,517,900	55,225,268	14,237,246	39,660,226	165,640,640	21,308,978
1907	56,514,700	61,147,203	19,083,031	48,269,689	185,014,623	23,271,622
1908	52,440,800	73,664,027	17,175,099	59,906,444	203,186,370	20,636,116
1909	54,721,500	73,949,432	16,359,281	66,185,417	211,215,633	20,846,543
1910	57,137,900	71,372,974	21,545,828	72,822,660	222,879,362	22,926,393
Total	277,332,800	385,358,904	88,400,488	286,844,436	987,936,628	108,989,652
1911	60,399,400	79,032,440	16,578,421	69,362,583	225,372,844	23,094,847
1912	63,766,800	74,640,300	14,737,944	71,165,610	224,310,654	26,198,751
1913	67,601,111	60,600,000	14,000,000	70,000,000	212,101,111	24,358,487

(a) Values of silver in this table are commercial values and are computed on the average price each year of silver as given by Messrs. Pixley and Abell, London. Value of £ in this table \$4.8665.

Gold Absorption in Madras.

Some interesting facts as regards the circulation of gold coins in the Madras Presidency appear in Mr. Datta's review of the resource operations in 1913-14. The absorption of gold coins is increasing for the last five years as shown below :—

1909-10	...	128,000
1910-11	...	1,352,000
1911-12	...	1,579,000
1912-13	...	1,575,000
1913-14	...	2,127,000

The rise of 83 lakhs in the gold absorption of 1913-14 as compared with 1912-13 has told

on the absorption of silver which has fallen by 101 lakhs and the circulation of small notes which has fallen by 7 lakhs. Gold takes the place of currency notes in Travancore, Cochin and Malabar which adjoin each other. Most of the gold from Europe and Egypt for the Madras Presidency is brought by rail from Bombay.

Issue of Bearer Bonds.

It is understood that the question of the issue of Bearer Bonds in connection with the loan which is to be raised in India is under the consideration of the Government of India. The experiment was tried some years ago and was unsuccessful, but conditions have so altered that it is felt that the issue might now be successful.

The Educational World.

Agricultural Education.

Writing on secondary education in agriculture, Dr. Colman of the Mysore Agricultural Department states that the question of the establishment of Vernacular Agricultural Schools is one that should receive careful consideration. It is a question that might well receive the attention of District Boards. In order to make such schools a success, local interest is absolutely necessary, and this can be gauged perhaps in no better way than by ascertaining whether such schools could be partially supported by local contributions or a small local levy. In this connexion, it is worth recalling that for the congressional schools in Georgia, the buildings and land are supplied by the locality where the school is situated, the annual cost of upkeep alone being met by Government. In Wisconsin, the schools are largely supported by the counties in which they are situated. The question of establishing an agricultural school in each district in the Madras Presidency and in Mysore has come up for discussion more than once; but it is hard to tell to what extent this represents a real demand on the part of the agriculturists concerned. Such schools if they are to be a success must be able to provide instruction at a cheap rate.

Textile Scholarships.

At a recent meeting of the House of Commons Mr. King asked whether the technical scholarships given to Indian students by the Government of India for studying textile manufacture in Europe were intended to promote the factory system and to assist joint stock companies in competing with the indigenous hand-weaving industry in India; and whether the course of study prescribed for these scholarship holders in English technical colleges tended in that direction.

Mr. Roberts replied that "the technical scholarships awarded by the Government of India are intended not to prejudice any existing industry, but to qualify the holders, on returning to India, to promote the improvement of existing native industries or the development of new industries, as in particular circumstances may be most advantageous to the country."

Mr. King further asked whether any scholarships had been given to sons of Indian hand-weavers or others to enable them to study recent developments of hand-weaving in Europe, especially the successful creation of village industry by the Congested Districts Board in Ireland; and whether the Government of India had considered the feasibility of applying the methods followed in Ireland; on a large scale for reviving the weaving of common fabrics in Indian villages.

Mr. Roberts said: "I am not aware that any technical scholarships have been awarded to the sons of hand-weavers in India. With reference to the second part of the question, the various Governments in India have already taken action similar to that of the Congested Districts Board, with a view to improving the looms of village weavers and organising their methods of business; and a textile expert has recently been selected in this country, and will proceed to India in the autumn with the object of prosecuting this work in the Central Provinces."

Agricultural Education in the Punjab.

In his Agricultural Notes for May, the Punjab Director of Agriculture and Industries states that a radical change in the college course will be introduced from the session beginning in July. It has been found that the general education of the entrance passed students who have come to Lyallpur is not sufficient to enable them to assimilate the highly

scientific course which has hitherto been provided for them. Accordingly in future the diploma course will be divided into two parts each of two years. The first two years will be occupied chiefly with practical agriculture, with a certain amount of scientific explanation and with general English and mathematics. This two years' course will be sufficient for men to be employed in the lower grades of the Agricultural Department and for land owners who wish to improve the cultivation of their own lands. The second two years will be devoted to the scientific study of agriculture and to Chemistry and Botany and only after this course will a diploma be given. Men who have been through this second course will be qualified for the higher grades of the Department. It will be started only if and when there is a demand for it.

Technical Education.

Writing on this subject in the *Highway* for May, Mr. Arthur Greenwood of the Leeds University says :—

From two points of view technical training is of very great importance. In the first place, those who direct and organize our industries should understand the industries in which they are engaged in all its bearings, and its relations with other industries, and they should be familiar with industrial organisation generally. In the next place, a high standard of training is needed for the discovery and application of new processes, which should lighten the lot of the worker. Of this kind of technical education there is far from sufficient; yet, in the last resort, the efficiency of industry depends upon this kind of education.

Some of the points touched upon by the writer may be summarised thus—(1) Owing to the form the modern organisation of industry has taken, in many trades there is no need of specialised training. (2) In some trades the need exists, but mainly for the few, though there are trades where specialised training

would be advantageous to a large proportion. (3) Technical education pre-supposes secondary education, and cannot be successful apart from it. As a general rule it should not begin before the age of eighteen. (4) The establishment of definitely vocational schools, following on the elementary school, is undesirable, unless these schools can be converted into places of general education. (5) The highest type of technical education, concerned with the larger questions of industrial organisation and development, is inadequate. In these days, when the problem of "industrial supremacy" looms large, the above are suggested as worth thinking over. The great fact which must be borne in mind is, that however much technical training may be humanised, and however important it may be as a means of material progress, it is no substitute for that general education which lifts all men to the same level.

Agricultural Demonstration Trains.

The question how best to educate the Indian ryot in modern methods of agriculture is being debated every year at the annual meeting of the Board of Agriculture and we draw the attention of that body to what appears to be a very suitable method of carrying up-to-date knowledge to the farmer. The agricultural demonstration train seems full of promise and the go-a-head Americans are very largely using this method with great profit. We read in a contemporary that "Agricultural College demonstration trains will be run over the lines of both the Canadian Pacific and the Canadian Northern Railway lines, leaving Winnipeg about the middle of June. The trains are being equipped by the staff of the Manitoba Agricultural College, who will also give the lectures and make the demonstrations. Three meetings will be held each day at the various stopping places, but the programme for this year will be quite unique in that it is being prepared specially on behalf of young men and women. The older portion of the community

will be invited to attend, but the lectures and demonstrations will specially appeal to the younger people who are anxious to improve their knowledge. This will be the first occasion on which trains have been run in North America with a programme of demonstration work designed for the instruction of young people in knowledge relative to farm life and to country homes. An interesting feature of the programme will be the moving picture apparatus, including films showing the germination of seeds, growing of plants, the raising of poultry, bee-keeping, and the development of farm machinery. Last year it is estimated by those who accompanied the demonstration trains that they reached indirectly 35,000 people. Thus is the Dominion Government striving to educate the farming community in order that success may be assured on the land." Why not the Government in India try this method?

Education in Bengal.

The following Resolution on the report on Public Instruction in Bengal for 1912-13 is published :—

The report deals with the Province of Bengal as constituted on 1st April 1912, the total area being 78,699 square miles with a population of 45,488,077. There was a decrease of 36 educational institutions and an increase of 20,909 pupils.

The total number of pupils was 1,718,623 distributed as follows :—Collegiate Education, 15,738; School Education (General), 1,549,449; School Education (Special), 97,578; Private Institutions, 55,858.

The total expenditure increased by 22 lakhs as compared with the previous year.

PROFESSIONAL AND TECHNICAL EDUCATION.

The subjects of mechanical and electrical engineering have been separated at the Civil Engineering College at Sibpur and are now taught by different professors, while the physical subjects have been distributed among

the departments of electrical engineering, chemistry and mining. The special mining scholarships were discontinued at the beginning of the year.

The Survey classes in the Dacca School of Engineering are being transferred to Comilla under the Superintendent of Provincial Surveys. A second storey is being added to the hostel building, and new laboratories for the Overseer course in mechanical and electrical engineering are under construction.

Technical and Industrial schools are losing students in the sub-overseer classes, a fact which is said to be due to the superior attractions of the University courses. The Rangpur Technical School was provincialised, and sanction was accorded to the provincialisation of the Chittagong School. The future of these schools in both East and West Bengal will, however, have to be carefully considered before any further steps are taken in this direction.

The ex-students of the higher classes of the Serampore Weaving Institute have been generally successful in obtaining employment and their employers give very satisfactory reports of their work.

The popularity of the City and Guilds of London Technological Examination is increasing, and altogether 69 candidates offered themselves for examination in 1912 at the two centres, Calcutta and Serampore.

The Commercial Institute of Calcutta has been greatly encouraged by a circular of the Bengal Chamber of Commerce recommending that passed students of this institute should be given preference by commercial firms when making clerical appointments. The committee appointed by Government to consider certain questions connected with technical education sat during the early part of 1912. Its main recommendations were the removal of the Engineering College from Sibpur, the establishment of a Technological Institute in Calcutta and the creation of a separate Residential Civil

Engineering College. The proposal for a Technological Institute in Calcutta has since been worked out in detail by Messrs. Nathan, Kuchler and Everett in consultation with employers of labour and others. All these important questions are still under the consideration of Government.

Industrial Education in Madras.

A largely attended Meeting of gentlemen interested in industrial education was held at the office of the Director of Industries, Madras, on the 7th and 8th July 1914. Those present numbered over forty, and included representatives of twenty-five different bodies. A considerable number of questions connected with Industrial Education were discussed and the following resolutions framed :—

Resolved that we express our appreciation of the courtesy of the Director of Industries in inviting into Conference with himself so many men and women from all parts of the Presidency, who are keenly alive to the needs of thorough Industrial Education and deeply in earnest in the desire to co-operate with the Government in carrying it through. We believe that a very long stage toward the realising of this end has been traversed by this Conference.

That we approve of the plan that each Society or organisation that maintains such work be asked to appoint a representative, authorised to stand for its aims and methods, in a Council for Industrial Education; that from this larger Council a smaller Sub-Committee for administrative purposes be elected at its first Meeting.

Resolved that a Sub-Committee of the Council to be formed be requested to draw up a syllabus for the course required in the training of foremen and journeymen: this syllabus to be discussed, amended if necessary, and adopted by the Council and Director of Industries.

Resolved that the Director of Industries be requested to establish a Central Industrial

Normal School, to train teachers for Industrial Schools.

Resolved that the Director of Industries be asked to gain assurance from the Director of Public Instruction that a maximum of six hours a week will be devoted to manual training, to be counted as school time, supervised and reported on by the Director of Industries and eligible for grants-in-aid.

Resolved that we consider the Government Technical Examinations, as at present carried on, are unsatisfactory. We, therefore, recommend that these examinations be abolished completely, and that the Director of Industries be asked to arrange a more satisfactory and useful plan for registering the progress of industrial pupils.

Resolved, in view of the extreme importance of cash-keeping, in all classes of the manufacturing industry, that provision be made for training in works accountancy.

Resolved that the Director of Industries be requested to prescribe the forms of accounts to be maintained by the Managers of Industrial Schools.

Commercial Education.

Rao Sahib S. Vaidyanatha Iyer, who is among the pioneer workers in the field of Commercial Education in this presidency writes an interesting article on "Commercial Education," in the columns of the "*Commonweal*."

After emphasizing the necessity of Commercial Education for India he defines its scope by distinguishing it from industrial education. He points out that the function of Commercial Education is limited strictly to securing the efficiency of the personnel of business, by business being meant the machinery that handles and distributes produce, whereas industrial education, on the other hand, has for its function the efficient training of the personnel engaged in the production and manufacture of commodities.

The writer then deals with the three broad stages of Commercial Education, observing that sound general education is essential for an young man who desires to pursue a commercial course. Without general education, the writer fears that an young man may turn out a failure.

The three stages of Commercial Education, in the opinion of the writer, are as follows :—

In the first stage, Commercial Education seeks to train the subordinate personnel of a business office. As modern Commercial practice is very complex, even junior clerks must receive good training of a technical character with a good grounding in general knowledge. In the writer's own words, the trained subordinate worker is as necessary to the business leader and to the captain of industry as is the trained soldier to the commander on the battle-field.

In the second stage, Commercial Education is designed for men who are ambitious to fill superior and responsible positions as Assistants or Managers of departments. The second stage must cover a wide range of subjects as to make the man a practical commercialist.

The third stage is of a greatly advanced type, the training being meant for those who aspire to higher and more responsible business vocations such as employers of labour, traders, merchants, bankers and managers of business undertakings. The general education of the student at this stage must be of a very high order as the success of the training at this stage will be in proportion to the calibre of the student and his power of grasping the intricate points in Commerce.

Though the subjects taught in the three stages have not been detailed, the description of the three stages of Commercial Education given above will convince the reader how the commercial practice of to-day is more complex and varied when compared with the past when business careers admitted of being successfully followed without special training. Long ex-

perience coupled with a specialised course of training will make a man a practical man in business.

Talking about the practical value of Commercial Education, the writer says :—Its primary advantage undoubtedly is that it facilitates and renders less painful and less costly the acquisition of experience, and among its numerous other advantages are that it begets the love of order, method and precision, develops self-reliance, trains the thinking, observing, and reasoning faculties, inculcates the valuable habits of caution, discipline and looking ahead, awakens, nourishes and keeps alive the spirit of enterprise and the finer qualities of professional dignity and independence, that are all so essential to anything like an enviable measure of success in a realm of human activity wherein, as has already been remarked, competition is terribly fierce and Nature's relentless law of the survival of the fittest manifests itself with truly superlative relentlessness.

Finally the writer deals with the prospects of those who have undergone the Commercial Course and thinks that on the whole they are good.

Rural Education.

A nation's potential wealth, if not its actual wealth, may be measured by the number of healthy individuals that go to make up the nation. Environment plays a major part in determining the health of a man. We need men strong in mind, muscle and nerve.

The nations of the world realise this important need; consequently we find a rapidly growing mass of legislation, the purpose of which is sound health. A part of this legislation is directed to the maintenance of a maximal rural population. The reason of this is obvious; a country that has a large, healthy, agricultural population has a reserve of strength that will enable it to weather disasters that would wreck a community that was chiefly composed of town-dwellers. The physique and unshaken

nerve of people that live in the open air give lasting power and resilience.

Further, agriculture will always play a great part in the commercial prosperity of many countries; amongst such countries India stands prominent.

Experience shows us that in every country of the world elementary education brings one serious disadvantage along with its many blessings: the farmer's son does not, as a rule, take gladly to farming, when once he has received a smattering of learning. The same holds true of the son of the farm-labourer. The latter is the more serious danger, as we shall show in the course of this article. It is not difficult to find the cause of this unsatisfactory result of elementary education. Agriculture, as at present understood by the vast majority of people, is an art with very little science behind it, an art that is to be learnt almost entirely by direct imitation. In the eyes of such people time spent at school is time-wasted; as no doubt it would be were agriculture what they imagine it to be. There is just that grain of truth in the argument which makes it dangerous; the mental viewpoint of the farmer can only be acquired in youth, and elementary education as it now stands is inimical to that mental attitude. Moreover agriculture does call for a knowledge of, and familiarity with, certain animals; and these are best acquired in childhood.

There is, however, a deeper and more serious cause for the townward movement of the boy who has been to school; our educational systems have been devised for town-dwellers, chiefly by town-dwellers. This means that the product of the school is designed especially to take its place in the commercial and industrial system. Commerce and industry alike need a large number of men who will toil at clerical or mechanical work calling for a minimum of intellectual effort, and showing to its doer a minimum of result. Such toil can never give the true pleasure of achievement, therefore the

worker must look elsewhere for his relaxation. City life gives him this in a restless form. Education designed to develop workers of this sort, cannot be expected to produce the worker on the land, whose pleasure must largely be found in the sense of results following upon work done, food and rest following on healthy fatigue, and the simple amusements and interests of village life; the whole being made possible only by the absence of restlessness. The mental indigestion that so often follows an unsatisfactory form of education begets restlessness and a scorn for country life.

The total result of all this is a steady movement of boys and young men towards the towns; moreover those who stay behind on the land are the dullards; thus country life becomes more despised than ever and a vicious circle is established.

Here we are faced with a problem as old as Rome, as old as Athens. The solution seems as far away as ever. It is ridiculous to suppose that we can find a remedy in Nature-Study. The English Board of Education tried it, with no success. Even in its best form it can never take the place of a childhood spent in the open among crops and cattle. The only other remedy usually suggested is technical training in agriculture. This is, on the face of it, a sounder remedy than the former, and the suggestion consequently has a larger number of supporters. Chiefly because of the expense, it has not been widely applied. This is probably a fortunate chance, for the study of agriculture as a science can only have a very limited scope of useful application, in this country at any rate.

As agriculture becomes commercially successful it tends to become a capitalised industry; more and more land will pass into the hands of rich men and companies, with the consequent increase of hired labourers as opposed to men farming their own land. This process does not interest us as educators except in so far as

it influences educational problems. It increases the difficulties of rural education considerably. From an educational point of view it is chiefly important because it decreases the possible scope of the utility of a specialised agricultural education. When a good proportion of men are farming land for themselves, obviously an agricultural course of study may be profitable for them. But for the man who is working as a labourer on another man's land such a course of study is of little or no use. On large farms a scientific manager is needed, while the labourers require chiefly that kind of skill which is acquired by work on the land at an early age. Generally speaking, the more successful, from a commercial point of view, agriculture becomes, the smaller will be the proportion of agriculturists who can profit by a technical course of study.

An inherent conservatism is another stumbling block in the way of scientific instruction. The boy who has learnt modern methods of work in an industrial school generally falls back on the traditional methods of the blacksmith and carpenter when he takes up work in his village. This is a very discouraging feature of work in industrial schools. The same result too often follows a training in farming.

We need to change our outlook upon some educational questions. No one will deny the advantages of education for all men, but we must look without prejudice at the other side of the question. The difficulty of what type of education may suit the worker on the land has yet to be solved. Meanwhile the type of education that we have to offer him at present is likely to send him to be an underpaid worker in a crowded city. We have healthy men occupied in useful healthy work; men who can bring up healthy children that have every chance of being useful contented men like their fathers. Is it any kindness to such men to take them from their natural environment, and put them in surroundings that must impair

their health and happiness, giving them in return only an education that in the vast majority of cases must of necessity be a poor education?

No doubt we shall ultimately evolve a type of education suited to the needs of such men; then education may become universal. At present to force education on them is to do them a wrong.

We are apt to gird at our educational organisation and talk much about the need of an educational ladder. This is a fallacious point of view; the ladder is there, but we fail in helping on the climbers. We do not show them how to climb on the lower rungs, with the result that they stick half-way up. To drop the metaphor, the organisation of education is not so bad, but much of its value is lost through bad teaching. The point of view of the teacher is often wrong and his methods unsound. It is with the teacher that reform must begin.

When the number of enthusiastic devoted men, who know that true education aims at the happiness of efficient doing, and not at the memorising, of meaningless words in the hope of defeating an examiner, is sufficient to educate all our boys, then the difficulties of rural education will solve themselves.—*The Punjab Educational Journal*.

State Technical Scholarships.

The Government of India have this year sanctioned the award of ten State technical scholarships to the following candidates for a course of training in Europe in the subjects noted against each:—(1) Mr. D. M. Amalasadwala, Sizing and Weaving. (2) Mr. P. R. Udawadia, Architecture and Building Construction. He will undergo a training for two years in India and then proceed to Europe for a third year to complete his training. (3) Mr. Upendra Nath Banerji, Mechanical Engineering. (4) Mr. O. L. D'Souza, Electrical Engineering. (5) Mr. Bashirud-din Ahmad, Municipal and Sanitary Engineering. (6) Mr. Arjan Dass, Textile Industry. (7) Mr. W. Sorby, Mechanical and

Electrical Engineering. (8) Mr. Baidai Saran Bhargava, Mining. (9) Mr. Kasinath Saikia, Paper Pulp Industry. (10) Mr. Abdul Ghafoor Khan, Electrical Engineering.

New Technical Institute.

The Amar Singh Technical Institute built in memory of the late Raja Sir Amar Singh was opened at Srinagar on 29th May, at the request of the Maharaja. The building has been constructed at a cost of Rs.67,000 including equipment while Rs.38,000 has been provided for additional buildings and Rs. 30,000 for maintenance. Mr. Andrews, formerly Principal, Mayo School of Arts, and Lahore, later on Head-Master of Battersea School of Arts who has been appointed Principal of the Institute said that something like 1,500 applications for admission to College had been received but it was a pity that majority had to be disappointed.

Agricultural Education in Kent.

A report recently issued by the Kent Committee of the experiment which has been carried out of teaching lads of the county some of the fundamental principles of farming, shows that a course of daily lectures on "How Plants Live and Grow" was given, and these lectures were made the starting point of all the practical work undertaken. Practical work included thatching, carpentry, forge and farriery work, field draining, knotting and splicing, pruning, general farm arithmetic, and cottage gardening. From an educational point of view the committee are of opinion that the experiment has been an undoubted success.

Pattern Books on Brass and Copper.

The Government of Madras have arranged to distribute copies of the pattern book on brass and copperware free to *bonâ fide* artisans and to art and technical schools, museums, public libraries and other educational institutions and also to officers of Government and others interested in the publication. The preparation

of a similar book on cotton-printing will also be put in hand and Mr. Hadaway, the Superintendent of the School of Arts, Madras, has been requested to undertake it.

Scholarship in Sizing and Weaving.

A Madras Government order states that the Government of India have sanctioned the award of a State technical scholarship to Mr. Dinshaw Merwanjee Amalasadwala to enable him to pursue a course of study in sizing and weaving. The Secretary of State has been asked to select the institution at which he should prosecute his studies and to arrange for the supervision of these during the period of his scholarship.

Present Day Education.

At a recent prize distribution celebration, H. H. the Yuvaraja of Mysore, in a brilliant speech said that the needs and opportunities of agricultural life along with the industrial struggle that is coming into existence all round must mould into shape to a large extent, our educational policy and programmes, or, in other words, our public instruction must be directed with conscious and careful regard to the probable future careers of those we are educating.

Dairy Instruction in Ontario.

The rapid growth of the dairy industry in Ontario is said to be largely due to the excellent system of dairy instruction maintained by the Government. The Provincial Department of Agriculture bears the expense of a staff of 35 dairy instructors, whose functions relate both to producers and manufacturers, and whose duty it is to see that a uniform high quality of dairy material goes on to the market.

Industrial Schools in Madras.

The control of the thirty-nine industrial institutions in the Madras Presidency has been transferred from the Director of Public Instruction to the Director of Industries with effect from the 15th April 1914.

The Scientific World.

The Value of Tropical Rains.

From a systematic analyses of the nitric and ammoniacal nitrogen in the rainfall carried out at Hanoi, Tonkin, during the eight years 1902-1909, the total nitric nitrogen brought down by the rain was found to vary considerably from year to year, the two extremes being 14lbs. of nitric acid per acre in 1908 and 64 lbs in 1902, with a mean of 43 lbs. over the whole period. The average for each month was closely associated with the average number of days on which thunderstorms occurred. The nitric acid content of the rain water was also found to be higher in the lighter thunder showers than in the heavy downpours, and lowest of all in the winter rains. The annual rainfall over a longer period varied from 39.4 in. to 103.4 in. with an average of 66.9 in. Monthly averages reached a maximum during the summer months, July and August, at which time the maximum amounts of nitric acid were also brought down.

The ammoniacal nitrogen also varied within wide limits, not only with regard to the total amount brought down per acre per annum, which showed a maximum of 17 lbs. and a minimum of 4.5 lbs. but also in the various samples of rain water in which the content of ammonia oscillated between 0.1 and 1.8 parts per million.

How Incandescent and Arc Lights Work.

The arc light and the incandescent light work on totally different principles. It was noted many years ago that when an electric circuit was broken, the current jumped across a slight gap, producing a brilliant flame. The shape of this flame was roughly an arc from one conductor to the other; thus the word "arc" was adopted. All arc lamps burn in the air and not in vacuum. The light is produced by the current leaping across a small air gap between

the two electrodes, or carbon pencils, and heating the tips of the carbons white-hot. Floating particles of white-hot carbon also add to the brilliancy. A mechanism is necessary to "feed" in the carbons as fast as they burn away, or otherwise the gap would increase until the current could not jump across and the light would go out.

The incandescent lamp, common in most homes and offices, is obtained from a piece of white-hot wire, heated by the passage of an electric current. The wire must be enclosed in a glass bulb from which the air has been exhausted, otherwise it would quickly be burned up and consumed. The wire filament is now made of tungsten, which resists the flow of electricity with so much vigour that the current, in working to get by the obstruction, heats the wire to incandescence, hence the name.—*Science Siftings*.

Lubricating Oils.

Attention is being directed more and more closely, to the matter of the oils employed in lubrication. There are a very large number of sources of oil; but they may be divided into three main branches; viz., mineral oils, vegetable oils, and animal oils. The properties of the different oils and greases, obtained from the three kingdoms, are quite different; and the properties of the various oils obtained from each kingdom are quite different. In mineral oils, for instance, there are two main branches again, those which have an asphaltic base and those which have a paraffin base. The oils with paraffin base are most suitable for lubrication in the great majority of cases.

The oils and greases obtained from all three kingdoms are also subject to one very serious drawback; viz., dirt. Mineral oils come up out of the ground, heavily charged with foreign

matter of all kinds, which has to be taken out of them before they are of any use for any purpose. In the extraction of vegetable oils, there is apt to be left a considerable quantity of fibrous matter; and in some cases, of acids. Acids are fatal as a rule to lubrication. Somewhat similar difficulties are present in the matter of the preparation of animal oils. But there is one rule, or there should be one rule, in all chemical preparations, and the purification of oils is really a chemical process; viz., the greater the amount of money spent upon it, the better should be the oil. Whether a particular kind of oil is suitable for a particular kind of work is one thing; but the very best oil, the most suitable oil, the very best blend that can be imagined for any particular work, may be spoiled by the presence of some of the foreign matter referred to.

A Discovery about the Brain.

No one can move a muscle except through the nerve which runs to it, and if the nerve be cut, or torn, or poisoned by lead or alcohol or if a germ has attacked and spoilt the nerve cells in the spinal marrow, or in the brain, from which the nerve fibres run to the muscle, then we can use it no longer.

But it has long been known that nerves could be mended when they were cut or torn. So long as the nerve cells in the brain or spinal cord were all right, the whole nerve would surely recover when the cut ends are joined, and the muscle which had been useless would come into use again.

But very often the nerve cells, of which the nerves are merely the living "wires," are ruined, and then we had always thought that nothing could remedy the paralysis of the muscles which those nerve cells should have supplied with orders and with life.

Now, suppose the muscles thus paralyzed are those which bend the elbow. What would happen if the surgeon were to connect the useless nerves running to such muscles with

slips from the nerves of the muscles which straighten the elbow? This would mean that the elbow-bending muscles were now supplied by slips of nerve from the parts of the brain which have the business of straightening the elbow! You would suppose that the result would be worse than useless!

But it is not. Professor Kennedy, in Glasgow, has proved that the brain can learn, in such cases, and the limb can be made to do what the will requires, though certainly it may need many weeks or months of practice. This means that surgeons may hope to cure many cases of paralysis of certain muscles, even by connecting them with nerves that were running to muscles acting in the opposite direction! And it also means that the brain does not act merely like a machine, made to do certain things with certain parts. Behind the brain is the invisible, spiritual will; and the will can use the brain for its purpose, even making parts of the brain meant for bending give orders for straightening. The ordinary students of the brain will have to change their teaching now, and cease to think of it any longer as an automatic machine.—*Little Paper.*

Electrified Children.

Sir James Crichton Browne's reference to the application of electricity to child culture made in a speech at the Child Study Association's Conference in Edinburgh, has drawn attention, says the *Times*, to a very interesting subject.

There are probably two different ways in which the electrification of children could be carried out; in one case they would be placed in a room, which might be a school-room or nursery, electrified either by means of a network of insulated wires attached from the ceiling and charged with high tension positive electricity, or by a coil of heavily insulated copper or aluminium wire wound round the entire room. In the latter case a vacuum tube containing neon or helium gas would be render-

ed luminous if held anywhere within the room. The alternative method would be to place each child separately in a high frequency "cage" of wire, such as is now used for the treatment of neuritis and other complaints.

The positive electricity for charging a whole room would be supplied from an induction coil, the current being rectified by such a vacuum valve as is already in use by Sir Oliver Lodge in agricultural work. The electro-magnetic oscillations set up within the large helical coil would appear, however, from the results obtained with animals, to produce the most satisfactory results.

A POSSIBLE DANGER.

Caution was urged by Sir J. Crichton Browne who suggested that in the present state of our knowledge babies and children might be injuriously affected by electrification. The difficulty in studying the effects of high-frequency electricity or of positive electrical discharges upon children is that many years must elapse before the after-results can be determined. But as the results of bacteriological experiments on animals are useful in investigating human disease it is not unlikely that useful data will be available from the work now in progress with chickens. Young chickens which have been made to grow 35 per cent. heavier or 35 per cent. more quickly by electrical stimulation have shown no evidence of detrimental effects. Some of the earlier batches experimented with were sent to a farm and turned out to be exceptionally fine layers, and in all respects healthy birds.

The most important aspect of these experiments, from a medical point of view, is the fact that very young, weakly chickens, which would have died in the ordinary way, received sufficient extra vitality, when electrified, to take their food, pick up strength, and become normally healthy birds. If similar results could be obtained with weakly children—and some of the Swedish experiments give every indication that this is the case—effects of the

highest importance in child culture would be secured.

It has now to be determined whether any forcing of the intellect or of development in the child will be attended by reaction after the treatment has been stopped. The electro-culture of children will inevitably be a very prolonged study for this reason, but it is to be hoped that, by some suitable co-operation between the pure physicist and the medical man, the all important question of the correct type of current, its intensity, and dosage may be expeditiously determined.

Response of Plants.

Professor J. C. Bose lectured on May 28 at the Royal Institution, London, on plant autographs and their revelations. If, he said, we subjected plants to blows, they responded either by electrical or mechanical movements, and that taking the mimosa we found at the joint of the leaf, a cushion-like mass of tissue, which under excitation contracted and caused the leaf to fall down. Professor Bose then proceeded to describe the delicate apparatus known as the resonant recorder, which he had invented for registering the response made by plants to excitation. Comparing the sensitiveness of mankind and plant, he said the average European would perceive by his tongue an electric current as feeble as six micro-amperes. The tongue of the Celt was no doubt more excitable. The plant *Biophytum* was eight times more sensitive to an electrical current than a human being. As to sleep the mimosa was found to keep late hours, to fall asleep only in the small hours of the morning and to get up late, gradually waking up by noon and remaining in a condition of uniform sensibility all the afternoon. As to darkness, with the passing of a cloud the response of the plant diminished. The cloud gone, the response became normal. It was supposed that plants flourished in carbonic acid gas. His records showed that under the gas the plant was suffocated, and that a

For the conservancy of all rural villages there are at present neither adequate funds nor competent administrative machinery, but in many such villages the people have shown a desire for better sanitary conditions and the Government are anxious to assist such instances of self help. In many districts, for example, a piece of communal land away from the village-side is set apart for the storage of manure; in others, areas are set apart for use as latrines, to prevent the indiscriminate fouling of the whole surroundings of the village; in some districts, voluntary "sanitary associations" have been in existence which administer a voluntary cess raised by the people themselves for maintaining scavengers; in others, the villagers have subscribed regularly towards the cost of pumping water from protected wells to raised cisterns.

All Presidents of District Boards have accordingly been requested to consider and report on what principles such examples of voluntary effort in the cause of sanitation might be encouraged by being assisted with grants of Government waste land or money, the grants being restricted entirely to villages which have already made a beginning in such matters and are willing to co-operate and contribute money or labour in bringing about a higher sanitary standard.

Professor Geddes and Town-Planning.

The Government of Madras has had for some-time past under consideration the question of improving town planning and sanitation in the Presidency. The necessity of educating the public in the principles of town-planning has been realised by Government and it was decided to arrange for lectures and demonstrations on town-planning. In this connection, Professor Patrick Geddes of Edinburgh, a well-known authority on town-planning, will visit Madras in the next cold weather and will deliver lectures and give a demonstration on matters connected with town-planning. The local

Government was in communication with the Bengal and Bombay Governments in this matter and Professor Geddes after his work in Madras will go to Calcutta and Bombay. These lectures and demonstrations will be of extreme importance to Chairmen of Municipal Councils and other local bodies and others interested in civic affairs and we hope they will be practical and take into account Indian conditions. We draw attention to the requirements as to practicability and suitability to Indian conditions because as pointed out in a recent issue of the *Indian and Eastern Engineer*, there is one important difference between a great Oriental city like Calcutta, or Bombay, and the cities of the West, which is almost always overlooked by Town-Planners who are not at liberty to dip into the central exchequer to pay the piper, and that is *the capacity to pay*. It is usually assumed that, being a great city, a large Indian city is therefore wealthy. The converse is really the case. The average wealth of the units comprising such a city is very low: absurdly low on a Western basis. In Calcutta, for example, the average yield per inhabitant for municipal purposes may be placed at about Rs. 9 per head, while in London it is more like Rs. 82½ per head. Yet the requirements, per individual, in the matter of water-supply, roads, etc., are no less, and in the case of cities subject to tropical rains, the drainage provision must be enormously greater, while the demand upon the sewers in faecal matter is twice as much per head for a rice eater than it is for a meat eater. Again, the Rs. 9 per head, although greatly less than the Londoner's contribution, is an infinitely larger proportion of the average individual wealth. This bed-rock question of "ability to pay" is one that greatly affects the possibility of carrying out costly ideals.

The Dust Danger.

One of the chief questions which engage the investigators of industrial conditions and

their relation to disease is the problem of dust. "Civilization," says Sir James Crichton Browne, "is one vast grind. Attrition is almost synonymous with progress, and in the process of attrition many noxious kinds of dust are generated."

How closely the dust problem is allied with industrial health is shown by the comparative figures of dust and soot settlement in an industrial area such as London and in a country or agricultural district such as Sutton, in Surrey. Experiments were carried out some time ago in these two areas to measure the soot and dust and it was found that per square mile per year 650 tons settled in London, while 195 tons settled in Sutton. Side by side with these figures may be considered the death-rate from respiratory diseases in agricultural and industrial areas:—

		Deaths per 1,000 living.	
		Age 50.	Age 60.
Agricultural area	...	3.25	4.75
Industrial area	...	8.75	12.75

Although we cannot attribute the whole of this difference to the influence of dust, it may yet be accepted, in the words of a high authority, that "Dust is a very big determining factor."

It is a problem of city streets and country roads—and in both cases there is considerable opportunity for most effective cleansing of these

streets and far more stringent restrictions against the deposit of dust and refuse. Further, streets which are used by horse and motor traction indifferently are sufficiently strewn with refuse which contains disease germs. The motor-car with its pneumatic tyres and its rapid movement effectively sprays the dust of the streets into the air and into the mouths and nostrils of all who use the streets. The sedentary habits of most city workers do not make for a healthy and regular chest expansion, and the inhalation of dust of any kind has not the counteraction of a proper filling and emptying of the lungs.

All streets should be thoroughly washed and cleansed at night. More attention should also be paid to the most suitable road surface for modern heavy and fast traffic. Writing on this subject, the author of a special report to the Bombay Corporation says.—"There can, I think, be no doubt that bituminous macadam surface, which can easily be swept, is much less liable to produce and retain dust than any other formation, except tarred wood paving. Surfaces of this description are being formed by degrees on all more important roads. When this process is completed and the water-supply improved, there is every reason to hope that we shall be in a position to abolish any permanent nuisance from dust." Meanwhile he strongly recommends the treatment of roads by a chemical dust layer.

USEFUL MEDICAL AND SANITARY NOTES.

Measuring Heart-Beats.

Dealing with the heart department, a recent Report of the Governors of the London Hospital states that certain alterations and extensions are required. The department had to be placed underground, as the slightest vibration would affect the extremely delicate instruments used in recording heart-beats. By certain of these

instruments various forms of heart disease had been diagnosed long before they could have been heard by the stethoscope. When the heart beats, it has been found that it gives off minute electric currents, and by proper arrangements these currents are made to cause a fine hair of glass, coated with silver, to vibrate. These vibrations are made to take place in front

breath of fresh air brought a whiff of relief. Sulphuretted hydrogen? No response. Alcohol? Responses became rickety. Too much water? The plant grew lethargic. All plants alike were sensitive. Even the carrot was very excitable. If over-excited it would lose its head and give perverse responses. The "latent period" of a mimosa—that is, the time-interval between the application of and response to excitation—was about a nine-hundredth part of a second, or about six times as sluggish as the latent period of a frog. After the application of cold the conducting power of a plant would become paralysed, but could be restored quickly by submitting the paralysed portion to a moderate dose of electric shock. There was an extraordinary parallelism between the effects of poisons on the beat of the human heart and the pulsations of the Indian plant *desmodium*, those poisons which assisted the beat of the heart by contraction or expansion affecting the plant-pulsation in a corresponding way. As in man so in the plant at the supreme crisis of death, a great contractile spasm took place throughout the organism.

Science in India.

Prof. Arthur Smithells, F.R.S., speaking at a lecture on the place of Science in national life expressed a great deal of misgiving about the Science now being taught, which, he said, was not likely to result in anything really intellectual. The demand at present in this country for the highest science, the demand for the scientific expert, is limited. It must grow. It will only grow in proportion to the industrial development of the country. In England science was widely taught. The result was that when they began to teach, science industries were already waiting for it. But if at present attempts were made to train a large number of men in the highest kind of special science in India, there will be difficulty in giving them employment.

What is needed now, according to the Professor, is the sound teaching of the very

elements of science and the dissemination through the school of a realisation of what science is and what it can do. Until that knowledge is diffused, until the rising generations of India realise very clearly what science is, what it has done, what it can do, what it may do for this country, the demand will not arise for the highly-trained scientist who is to take his place in the development of Indian industries.

Space Annihilated.

M. Bachelet, an electrician, has invented a railway in which the car is lifted into the air by an electric current and runs above the rails through the air, thus minimising friction. He has been exhibiting a model car to select circles of experts, and has reached a speed of 300 miles an hour; a small boy was taken as passenger in "the flying train," and enjoyed himself hugely, and already people are talking of the possibilities of the journeys of the future. Experiments are proposed with a full-sized car on "real railway lines."

Germ-free Milk.

A new German invention for producing germ-free milk is said to be in successful use at dairies in Leipzig and Dusseldorf. The advantage claimed for the new process, as a substitute for the ordinary methods of pasteurization and sterilization, is that while it insures the destruction of pathogenic germs, it produces no change whatever in the chemical composition of the milk. The latter retains all the properties of raw milk, and can be used for cheese making, besides keeping much longer than either raw or pasteurised milk.

Substitute for a Leather Water Bucket.

The British Indian Association of Lucknow have offered a prize of Rs. 1,500 for the best substitute for the leather water bucket which combines cheapness with efficiency. The Deputy Director of Agriculture, Cawnpore, will receive the exhibits.

The Sanitary World.

Tropical Hygiene.

The delegates attending the International Congress of Tropical Agriculture at the Imperial Institute, in London, on the second day (June 24th) under the presidency of Sir Ronald Ross discussed the question of sanitation and hygiene on tropical estates, and later, Sir Ronald Ross suggested that the Congress should appoint a Standing Committee to consider the whole question of sanitation and hygiene on tropical estates.

A Resolution giving effect to the suggestion was carried.

Mrs. Besant and Vaccination.

Mrs. Besant is evidently a strong "anti-vaccinationist" for she writes of compulsory vaccination that it is a medical tyranny polluting and devitalizing healthy bodies. Compulsory vaccination has been abolished in England by the patient suffering of those who went to gaol in order to save their children from the danger of the injection of foul diseases, but it appears to exist in India. Medical persecution, she observes, is no more respectable than religious persecution, and the plea that it is justifiable in order to save bodies from disease is no more valid than the plea that the other was necessary to save souls from damnation.

The Production of Papain.

The *Indian Trade Journal* of 3rd July 1914 contains a detailed discussion of the production of papain which is prepared from the *papaya* fruit and is used in medicine. It is a white, tasteless and odourless powder.

About Rs. 72,000 worth of this drug was exported from Ceylon to America in 1913. Besides Ceylon, the chief source of supply for the American trade is the West Indies. It seems the *papaya* is also grown in the Hawaiian Islands. A pamphlet recently issued by the

Hawaii Agricultural Experimental station contains some instructive suggestions for the manufacture of this powder. Usually only the fruits are tapped. Very shallow incisions not over one-eighth of an inch are made half an inch apart, lengthwise of the nearly mature green fruit. This tapping ought to be done by a non-metallic instrument. The liquid is caught in a porcelain, glass or earthenware vessel. It is then dried in the sun or in artificial heat. In the powdered form or as dried flakes, it is exported to America and Europe where it is further refined and sold as a powder or in tablets or other forms under various trade names as "Papoid," "Caroid," "Papain," "Papayotin," etc.

Village Sanitation.

A Madras Government Order of last month states that they are anxious to further in every way possible the desire for a higher sanitary standard which has in recent years found such clear expression in so many ways in this Presidency, and in municipalities and unions they have been able to do much by grants-in-aid towards schemes financed in part from local taxation and administered by municipal councils and union panchayats. In rural areas, however, where specific taxation for sanitary purposes and systematic machinery for the expenditure of sanitary allotments scarcely exist, progress has been much slower.

A beginning has been made in G.O., No. 2247 L., dated 18th December 1913, with a scheme for providing every village of over 500 inhabitants with a good well, but almost equally important is the conservancy of rural villages and the removal from the village-site of the night-soil and rubbish which encourage the prevalence of flies and in other ways spread disease.

of the lens of a powerful arc lamp and to throw a shadow on to a sensitized film. When this film is developed a tracing is obtained caused by the shadow of the hair, and from this shadow, valuable inferences can be drawn. The apparatus is connected by wires to some of the beds in the hospital.

Sobriety and Infant Mortality.

One of the most remarkable factors in reducing the rate of infant mortality, according to Dr. A. Robinson, Medical Officer of Health for Rotherham, is the increasing sobriety of the people. He declares:—When we get the doctors, midwives, nurses, and newspapers to point the moral and adorn the tale of the advantage of temperance in the father—because it does not make the wife miserable, and she does not fly to drink as an alternative to her husband's bad temper—we shall make still further progress. The increase in temperance will result, not only in the enormous reduction of infant mortality, but in giving the mother a happier, pleasanter, and less worried time before the child is born, and after the baby arrives.

Youth and Tobacco.

The Government of Mysore, as is well-known, long ago issued regulations to prevent smoking by school boys. Similar orders have been issued by the Government of Madras also.

The habitual use of tobacco in early life tends to retard the development of mind and body. The growing and maturing body cannot tolerate any such disturbances of nutrition as are brought about by tobacco smoking. In the body we find this habit disturbing digestion, causing the heart to beat violently and preventing oxidation of the blood, interfering with assimilation and deranging the nervous system. The habit of smoking should never be commenced at least until manhood is reached. The youth who takes to it is both mentally and physically at a disadvantage compared with

non-smoking youths; he, by smoking, decreases his mental and physical powers.

Beneficial Exercise.

Exercise to be beneficial must do these things: (1) It must slightly increase the strength and force of the heart beat, so as to improve the circulation and do away with any tendency to sluggishness. (2) It must slightly quicken and deepen the breathing rate so that more pure air is drawn into the lungs and less impure air is left behind. (3) It must stimulate into normal activity the myriads of glands in the skin whose duty it is to rid the body of a part of the poisonous substances constantly being formed within us. Practically any exercise, if carried out with the correct degree of moderation, will accomplish these results and so deserve the term "beneficial exercise."

Epilepsy.

A fit may occur without any warning. Usually the patient gives a cry, and falls down in convulsions, frothing at the mouth. The froth may be stained with blood from the patient biting his tongue. Lay him on his back, with his head slightly raised, and, if the teeth are not too firmly locked, put something between them to prevent him from biting his tongue again. Loosen his neckband; do not try to restrain his movements, but simply prevent his injuring himself in any way. After the fit is over, the patient may appear drowsy, in which case he should be encouraged to lie down and sleep. No stimulant must be given, nor, indeed, anything to drink.

Foreign bodies in the Ear.

Except in the case of an insect getting into the ear, nothing can or should be done without a doctor. In the case of an insect, to drown it, fill the ear with oil or water, after which it will generally float out. Syringing of the ear afterwards is often necessary. The entrance of an insect into the ear may cause intense agony.



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The Wealth of India.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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Current Topics

BY ECONOMICUS.

Nations of the world, however separated they may be geographically, no longer live in isolation from one another, but are knit together by financial and commercial ties in a close association of common interests. This interdependence and solidarity are exemplified by the disastrous effects of a financial crisis, say in America, or England and India. War is the negation of civilization and the destruction of the triumphs of peace, and if it is a war like the titanic struggle now being waged in Europe, its consequences are naturally most disastrous. The present war is the most stupendous among the conflicts that have taken place in Europe within the memory of those living. The very rumour of war threw the continental bourses into confusion, stock-exchanges were closed and the consequent panic sent crowds of frightened men and women to the banks to change their notes into gold. Stocks and securities come down with a thud and the oldest man alive declared that there was nothing like it in his experience. It is well-known that all commercial and other transactions are carried on in western countries more by means of bank notes and cheques than of specie and it was natural that every one was in a hurry to convert his paper into solid gold. The Bank of England had, of course, to apprehend a drain of gold and promptly brought

its usual weapon into play to stop it. The drain of gold was arrested by a high bankrate which was immediately raised to 10 per cent. This unprecedented rise was the index of the seriousness of the situation. All the money markets and banking institutions were similarly affected and the failure of a few houses was reported. Shipping was disorganized and insurance stopped and thus the course of commerce was blocked. As a result prices rose as if in concert and the financial and economic outlook was the most gloomy.

The financial and economic pinch will, of course, be keenly felt by all the powers engaged in the war and will not, to an inconsiderable degree, influence the issue of the conflict. Fortunately for the Government of Great Britain, the position of the British Empire could not have been sounder than it is. The resources of the Empire are plentiful and are freely at the disposal of the Government. Britain's mastery over the seas is a priceless asset guaranteeing as it does the safety of her commerce and communications. The British Government took prompt measures and boldly faced the situation created by the outbreak of the war. War estimates to the extent of a hundred millions were passed in five minutes. The sea-girt isle is so fortunately situated and so splendidly served by its matchless fleet that an invasion of its coasts has been ever regarded as lying beyond the pale of practicability. This feature of Great Britain was the despair of Napoleon and his weapon of the famous 'continental system' recoiled on his own head. A war on the continent has failed to stop England's industrial activities, though they may be a little affected by so many outlets for her goods being temporarily closed. A few days after the outbreak of the war, the British Chancellor of the Exchequer was in a position to say that despite the war it would be possible to keep the

mills and factories going. The fact that the bank rate had been reduced to six per cent. showed that the panic had considerably subsided and that public confidence had been restored. This improvement in the financial situation has continued and instead of witnessing an outflow of gold, the Bank of England is securing a counter flow of that metal.

Under the extraordinary circumstances of the war, one apprehended that a suspension of specie payment would become necessary as it had been a hundred and twenty years ago. The gold reserve of the Bank of England was never conspicuous for its strength, and latterly complaints were heard about its inadequacy. 'Twice already, through unwillingness to suspend the law, in 1890 and 1908, it has had to fall back on the kindly offices of the Bank of France'. In 1890 the Bank of France sent over £3,000,000 to the Bank of England and in the latter year, it simply discounted over £3,000,000 of foreign paper which the Bank of England could not discount. To provide against war other European nations have accumulated large reserves. England has taken no such precautions and relies upon her power to attract gold to her shores in times of need. With the whole of Europe in the grip of the war conflagration, a resort to this measure is not however likely to be very effective. There is still much gold in the United Kingdom which can be made available in a period of financial stress. With the restoration of public confidence and the awakening of the patriotism of the nation, the stringency will not be felt. As Mr. Lloyd George said in the House of Commons, 'any one holding gold assisted the enemy and did not benefit himself'. He did not propose to suspend specie payment, but, with a view to economising gold and maintaining the integrity of the gold standard, he proposed to issue pound and ten-shilling notes;

New Paper Currency.

Effects and Mea- sures against Them.

convertible at the Bank of England. The extensive demand for currency caused by the war is thus met by the issue of a new paper currency; but even the latter must ultimately be based on public confidence because the new notes are made convertible at the Bank of England. It is the patriotic principle enunciated by Mr. George that is the chief safeguard and bulwark of the financial position.

Another extraordinary measure was also necessitated by the circumstances of the case. If all debtors are to meet the demands for payment made on them at the time specified in their contracts, accommodation and specie would be necessary. But when credit is difficult to obtain and specie is at a premium, contracts cannot be fulfilled and bankruptcy and financial disasters are bound to follow. Such a crisis can be staved off by the Government stepping forth to declare a general 'moratorium' for a specified period.

A 'moratorium' is the delay or period of grace accorded by law passed in times of emergency, postponing for a specified time the due date of bills of exchange and other obligations. During the Franco-German war of 1870-71 moratory laws were several times passed by the French Government. Their validity, which was doubted, was discussed at length and was upheld in the case of *Rouquette v. Overmann* (1875) L.R., 10 Q.B. 525. Their international effect too was a subject of much controversy which now seems to have been set at rest. It is, of course, of the essence of a moratory law that it should be enacted to meet some special political or commercial emergency. A permanent enactment, for instance, like the Bank Holidays Act which makes all bills maturing on a bank holiday payable on the succeeding day cannot come under the category of a moratory law. It is obviously an extraordinary measure called for by the present

dire emergency, and it is to be hoped there may be no occasion for its re-enactment. Wages and Government payments are not affected by the moratorium as there can be no suspension of these. Postponing of the payment of wages and the dues of Government would be simply unthinkable.

One of the first effects of the outbreak of war in England was a sudden rise in prices. This rise was the result of panic. It was naturally apprehended that the supplies of food stuffs would be cut off by the activities of the hostile fleet and merchants and shop-keepers were anxious to husband their resources. Many of the latter must also have thought of making capital of the embarrassment and of securing high profits while there was an opportunity. But it became soon clear that the seas were comparatively safe and what was of greater importance, the country had abundant provision of food stuffs. There was, therefore, absolutely no reason for any rise in prices and particularly when the Atlantic was clear of the enemy's ships. Large supplies could be procured from America and Canada and the latter decided to make to the mother country a gift of a large quantity of flour. Prices consequently came down immediately and normal conditions began to prevail. Another bold and timely measure taken by the British Government was the declaration of its readiness to assume a large measure of insurance risk. Insurance of shipping and of cargo in time of war is a tremendous responsibility which no companies would take and the commercial outlook was black. Exports and imports would be stopped and the worst effects of war would be experienced. The situation was, however, materially relieved by the assumption of risk by Government, though it is too much to expect that normal conditions should be restored.

The political and financial association of India with Great Britain being what it is, it was no wonder that this country soon felt the effects of

Rise of Prices.

A General Mora- torium.

Effect on India.

the war into which the Empire has been unfortunately plunged. As in England, the bank rates had to be raised here, though, as we shall presently see, the monetary position in this country was peculiarly strong. There was the same panic and similar rise in prices. If even in intellectually and economically advanced countries like England and France, people hurried in thousands to convert their paper into gold, what wonder is it that the ignorant people of India should have crowded currency offices and banks to demand specie and deposits? Though in recent years note circulation has considerably expanded in India, the bulk of the people are still unaccustomed to the use of paper money. They have always preferred the precious metals and it is only lately that they have begun to take kindly to notes. But the position of Government is perfectly sound and they can cope with the demand of the public with ease. As to the rise of prices, that was mainly artificial and much of it the work of selfish-minded merchants. As regards food-grains and other necessities of life, India is abundantly provided, and though there may be a shortage in articles that are usually imported from the European continent, for some time to come, even in this matter there need be no anxiety. Government have done well in taking prompt measures to prevent an artificial and unjustified rise in prices which must have hit the poor hard. In spite of all such measures the pinch of prices is bound to be felt and the people of India are certainly prepared to share the responsibilities of British citizenship. What is required is that Government and leaders of people should strive to protect the masses from any avoidable hardship that may be caused to them.

One serious cause for anxiety to Government so far as the financial and currency situation of India is concerned, is the effect of the war on the exchange. The maintenance of the gold value of the rupee is the avowed pivot of the whole

currency policy of the Government of India. Hardly had exchange emerged out of the ordeal of the crisis of 1907-08 when once more it is on its trial. In that crisis the balance of trade was unfavourable to this country, exports fell off owing to the failure of rains and the Secretary of State could not sell his Councils. The Government of India had to issue gold and then to sell sterling bills on London. The gold reserve there had to be drawn upon and was depleted. That experience taught a lesson which was recently emphasised by the Chamberlain Commission. The lesson was that no limits could, for some years to come, be set to the size of the gold reserve and a larger quantity than now of that reserve must be held in a liquid form. The Secretary of State has begun to act up to the recommendations of the commission, though it must be some time before that ideal—inadequate and unsatisfactory as it is,—can be reached. In the meantime unless the war is concluded in a few months' time as every one will hope it should, the strain upon the gold reserves must be very heavy. As soon as the war broke out in Europe, offers for drafts upon India practically stopped. There are the usual requirements of the Secretary of State in England which must be met, and in the absence of Councils, they can be met either out of gold reserves in London or new loans. The latter being out of the question, the Secretary of State must fall back upon his reserves and direct remittances from India are not to be thought of. To add to this, there are the demands in India for gold for remittance purposes on private account. In a country like India the gold exchange standard can be easily maintained in normal times when the balance of indebtedness is in our favour. But the situation begins to cause anxiety the moment adverse conditions supervene. This is exactly what has occurred now and the exchange being shaken has to be supported by the Government of India coming forward to sell sterling drafts

on London where they will be met out of the Indian gold reserves.

At the beginning of this month, the gold standard reserve in India and in England amounted to £25,726,132 of which the bulk was in the latter country and in securities, the liquid portion amounting to about £4½ millions. Besides this there was the gold belonging to the Paper Currency Reserve amounting to more than £6 millions. In India Government held 18 crores worth of gold in the same reserve. As these figures indicate, the holdings of gold are pretty strong and the future may be faced with calm confidence, though none can foresee how long the efforts to prop up exchange will have to be continued and how they will bring success if the war is prolonged. At the outset, the Government of India decided to issue gold in pretty large quantities but rather too freely. But it was at once perceived that this way of releasing gold would unnecessarily drain the stock in India only to the benefit of speculators in bullion. The idea was therefore given up and it was announced that every week sterling bills and T. T. S. to the extent of £1,000,000 would be sold on certain conditions and at the first allotment, only £813,000 was applied for and fully allotted, more than half of it falling to Calcutta's share. The rates for bills and transfers were 1s. 3 29-32d. and 1s. 3 27-32d. per rupee respectively. The monetary condition of India at the moment is most satisfactory, the aggregate balances of the Government of India being 7 crores higher than the original forecast. The reserves of the Presidency Banks are exceptionally large, totalling about 27 crores of rupees, the Bank of Bengal alone having more than 16 crores. The floating of the Rs. 5 crore loan and the small council drawings have combined to send Government balances very high and the lateness of the jute season and slack export trade account for the reserve of the Bank of Bengal. The stock of rupees with Govern-

ment is plentiful and the monetary situation need cause no anxiety.

That there is considerable capital in the country which would be made available for productive purposes if the sources are properly tapped now requires no demonstration, and if any proof were needed it is furnished by the way in which the recent five crore loan was taken in India. There were offers of more than double the amount, and thus the confidence of the Finance Member in deciding to raise a larger loan this year in India, has been amply justified. There are similarly pretty large loans which are going to be floated by Corporations and Trusts, and no doubt is felt about their being readily taken up. The policy of limiting India's sterling obligations and trying to raise the necessary capital in India as far as practicable is a wise one and ought to be pursued in the future. Another illustration of the capital potentiality of India is furnished by the increase in the Postal Savings Banks deposits which has taken place recently as a result of the new facilities which have been granted as to the maximum annual amount that a depositor may put into the bank. Apart from this fresh concession to depositors, it was anticipated that the recent financial failures and the consequent loss of public confidence in the ordinary banking institutions would divert the current of public money to the Postal Savings Banks. These latter had not, during the past few years, shown any satisfactory increase in the average of the amount at the credit per depositor and this was accounted for by the tendency of middle class people to deposit their savings in the Joint Stock Banks which offered higher rates of interest than the Postal Savings Banks could afford. This tendency must have received a check and stimulated the flow of people's savings towards the postal institutions where their money was quite safe though it multiplied rather slowly. The fact is an interesting economic phenomenon the significance of which lies in the growing tendency

of the Indian public to bank their money instead of allowing it to lie idle or using it in other less beneficial ways. The industries of India are suffering from a lack of capital, the available supply of which can increase only by the concentration and accumulation of numerous small amounts representing the savings of middle class people. The Co-operative Credit

Societies are also drawing tiny amounts from people whom it would, but for them, have been difficult to reach and in this way new sources of supply are being tapped. Of course, the capital potentialities of India are not very great, but whatever potential capital there is ought to be drawn out and not allowed to go to waste.

Special Articles.

THE PROPOSED STATE BANK.

By W. F. SPALDING, CERT. A.I.B.

In their Report, the Indian Currency Commissioners stated their inability to report either for or against the establishment of a State or Central Bank for India. They are of opinion that the subject is one which deserves early and careful consideration, and suggest the appointment of a small expert committee to examine the whole question in India, and either to pronounce against the proposal or to work out in full detail a concrete scheme capable of immediate adoption. We may therefore expect to hear more of the project in the near future, and it may perhaps be not out of place to examine as far as is possible within the limits of this small article, the tentative proposals put forward by Mr. J. M. Keynes, one of the Commissioners.

At the outset it is presumed that if the Indian State Bank is to be of any great utility the management of the Government balances and of the note issue should be vested in it, but while acknowledging that to be essential, the question naturally arises whether it would not be better to leave well alone. Rightly or wrongly, the Commissioners have decided that there is little ground for the adverse criticism levelled against the India authorities in these matters, and on perusing the Report one concludes

that it is more advisable to await the improvements which it is hoped will result from the suggested administrative changes, than to launch out into other enterprises the effect of which can be only hypothetically estimated. However, the point is, that with the establishment of the State institution, India would have a great Central Bank worked for India, in India, and managed by officials located in India. This being so, would its operations be to the advantage of the community, national, banking and commercial?

Let us examine the suggestions set forth by the author of the State Bank scheme.

I might say, in passing, that it is not proposed to discuss at length the suggested personnel of the Bank, since that is a matter which can only be decided when the project has taken practical shape. It should be noticed, however, that it is not recommended that the control of affairs be in the hands of any member of the English or Indian Civil Services: indeed, Mr. Keynes inclines to the opinion that public confidence might be increased if it were definitely laid down that such were ineligible for appointment as officers of the Bank. He recommends that the supreme direction of the Imperial Bank of India be vested in a Central Board of three

members, the Governor of the Bank, Deputy Governor, and a representative of Government, together with three or more Assessors. The representative of Government appointed by the Viceroy, should be the Financial Member of the Viceroy's Council, or similar official, and the Assessors, the Managers of the three Presidency Head Offices, and of such other Head Offices as might be created later, or their deputies. Further, it is advocated that a middle course should be steered, in that the Bank, while ultimately dependent on the State, would really lie outside the ordinary Government machine, its executive officers being free on the one hand from the administrative interference of Government, and on the other hand free from too much pressure from shareholders. This reads well enough on paper, but it is difficult to see how the Board is to be free from State officialism with a member of the Viceroy's Council taking a leading part in its most important deliberations, although, admittedly, the Government must have some voice in the directions of affairs if the Note Issue be placed under control of the Bank: but, in the light of present day experience we might expect friction from the association of the two elements. Mr. Keynes, presumably, has the constitution of the Bank of England's Government in view, and though I grant the cases are not parallel, there does seem to be no reason why a board on India's Bank should not be similarly constituted. Still, as I say, the formation of this Council or Board is a matter for the future, and at present we must leave it in the hands of the powers that be.

If and when the Presidency Board of the State Bank is formed, it is proposed that it shall have entire discretion to transact on its own authority all business of the following description:—

(1) To discount Indian (rupee) trade bills, maturing within a maximum period of six months, subject to a minimum rate arranged

from time to time in consultation with the Central Board.

(2) To re-discount sterling trade bills, bearing the endorsement of another bank, subject to a minimum rate arranged from time to time in consultation with the Central Board, and subject to daily report to such Board.

(3) To make interest bearing loans (subject to a minimum rate, etc.) for periods not exceeding six months, against such kind of security as is permitted by the Bank Act.

(4) To buy and sell in India, subject to daily report to the Central Board, gold bullion and such bonds and securities as may be dealt in according to the provisions of the Bank Act.

(5) To provide trade remittances for customers to all parts of India, and private remittances to London subject to certain conditions.

(6) To accept interest and non-interest bearing deposits, subject to a maximum rate, etc.

(7) To accept valuable goods for safe-keeping.

(8) To open, staff, and control branch banks at any place within the Presidency Board's sphere of influence.

These transactions of course cover a wide field, and if it be found possible to frame an institution capable of carrying out efficiently the business embraced therein, one readily recognizes that there would be full employment of India's money for India's people.

The proposal regarding branch banks is one which should commend itself to Indians: branch banking has done much for Great Britain and France, and although there is of necessity no comparison between the relative size of the countries and the operations involved, yet it must be admitted that if the branch system can be extended in India the benefit to the community at large would be very great, particularly if it be found possible to further the opening of banks small enough to bring them within the category of people's banks. A State Bank of the kind proposed by Mr. Keynes, might, as

he implies, get the best out of two principal spheres, *i.e.*, the domain of private banking and that of the Government. It is agreed that the advantages of a State and private establishment may be found in a combination of the two interests, but it is an acknowledged fact that in similar institutions elsewhere one generally finds public interests having the larger control. However, in any State Banking system of the present day, it will be difficult to so divest the Government institution of its monopolistic rights that the business of banking may be carried on free and untrammelled by political influences. Even in democratic France the Government cannot resist the pressure brought to bear on it to interfere with the great Bank of that country, and even the greatest advocate of State-banking will agree that the system by which the Bank of France is forced to pay taxation to the State—I have seen the gain to the French Government estimated at 17 millions of francs per annum—while immediately favourable to the country, may work to the disadvantage of the commercial community and so prove ultimately an economic loss to the whole country. In fact the amount of money withdrawn from commerce by this taxation in France a few years ago amounted to 100,000,000 francs. This money was to be diverted to the furtherance of government schemes for agricultural credit, but as showing the futility of such proposals, it may be noted that farmers and others had availed themselves of the benefits offered to them, to the extent of only 42,000,000 francs, and this despite the most tempting baits held out to likely borrowers. I merely mention this to show that with the Government having a hand in the business of banking, there are possibilities of schemes being mooted which in their execution may bring ultimate economic loss.

True, Mr. Keynes says, that the public interests may not invariably be at one with those of the share-holders. He thinks that on

the whole, however, the share-holders must benefit largely by their connexion with the State, and on the other hand the alliance of the State with private share-holders will serve to keep the executive of the Bank in close touch with commercial opinion and introduce that element of commercial self-interest, from which in the present economic arrangement of affairs, a State Bank, as well as private institutions, may derive a real advantage.

It seems evident that the nucleus of the proposed India State Bank should be obtainable from the amalgamation of the capital and reserves of the three Presidency Banks. As far as can be judged from European systems, it would be inadvisable for the Government to subscribe any part of the capital itself, and, assuming that the Bank can be started, there is no apparent reason why the Government should provide capital.

The proposal to pool, so to speak, the assets and reserves of the three existing Banks will, I suppose, give rise to all sorts of difficulties. The suggestions set forth are (a) that the existing assets of the Banks be accurately valued, since as they stand at present in the books of the Banks they are probably under-valued, (b) the reserves of each to be levelled, so as to bear the same ratio to their respective capitals, by reducing reserves and paying away the excess to the share-holders, or by increasing the reserves out of earnings as may be determined hereafter, (c) one share in the State Bank to be issued to share-holders for each share held in the Presidency Banks.

These seem fairly equitable proposals, and as there is at present not a very wide margin between the quoted prices of the various shares, some such scheme of equalisation ought to be possible without inflicting undue hardship on the three sets of share-holders, but whether the latter will be unanimous on the point is a horse of another colour, and if the proposals do take definite shape, it will be for the more reasonable holders to bring the recalcitrants to reason.

It is thought to be neither desirable nor expedient to increase the capital of the State Bank when the scheme has been finally adjusted, and this disposes to some extent of the theories which were discussed when proposals for a State Bank were on the tapis some years ago.

The question of a just apportionment of profits is a rather more difficult question, and in the writer's opinion, Mr. Keynes very fairly solves the problem by suggesting that as the proposed Bank would obviously benefit by its keeping of the Government balances, management of the Note Issue, prestige, etc., the State is entitled to some set-off. Everyone in banking circles knows that a bank which has in its keeping large amounts of Government funds is frequently able to obtain excellent returns by utilizing the surplus as call money and in other loans. In return for these advantages the Imperial Bank of India, it is thought, might perform various services without special remuneration, such as purchasing the gold bullion, managing the Note Issue, making Government payments, managing the Government debt in India, and also pay to the Government annually a sum equal to the present income from the sterling investments now in the Paper Currency Reserve, etc. When these and other payments are made, the profit is to be allocated on a set scale to share-holders, and to the reserves, with a final proportion to the Government after the various deductions, all of which appear equitable enough on the surface, but are of course, in the present stage, purely hypothetical.

Various principles are set forth as being desirable for the regulation of the Note Issue under the State Bank's control, and a perusal shows that the author had well in view the required elasticity of the currency. The proposed rules for the Government of the Indian Note Issue are on the whole well-framed, and their adoption should certainly do much to obviate the essential wastefulness of the present system. Quite naturally, Mr. Keynes turns his attention to

elasticity based on the discounting of trade bills, and remarks that in all European countries bills are the pivot on which the whole meaning and utility of Note Issue turns. In his opinion it would be a matter of time before the right kind of trade bills were forthcoming, and in discussing the bills suitable for the Bank's portfolio, the relations with other banks are touched upon, it being advised that the State Bank should endeavour to take trade bills bearing the endorsement of another bank, which obviously is a wise precaution and requires knowledge of the standing of the other banks to enable the State institution to discriminate against undesirable paper.

As regards the London office of the Bank, it is candidly admitted to be a debatable part of the scheme. The undesirability of entering into competition with the exchange banks by purchasing trade bills or remittances each way is noted, and Mr. Keynes thinks no good purpose would be served by such action: he thinks, however, that the Bank should be allowed to carry on unfettered the remittance of the Secretary of State's funds in the most economical way, and to hold balances in London for use on the London market, if necessary. If, as is stated, this London Office would have no direct dealings with the public, there is little to grumble at from the London Bankers' point of view, and if the London operations of the State Bank can be effectively restricted to dealings with the Bank of England and other Banks, particularly as regards its London rediscount business, there should not be much harm done to the business of the existing exchange banks. In fact from the point of view of economy, there are many points which commend themselves to one in perusing the suggestions regarding the management of the Council remittances.

There are many other points in the annexe to which we should like to have referred, but limits of space preclude our touching on little more than the fringe of this burning question. However, sufficient has been said, it is hoped to enable the reader to judge for himself whether or no the proposed State Bank will bring increased stability to the Indian Banking system.

ORGANIZATION OF MILK-SUPPLY.

BY A. SWAMINATHAN, B.A.

It is a matter of common experience that owing to the rapid growth of population the supply of milk is becoming insufficient for the needs of the people with the result that the price of the commodity has increased considerably. An indirect result of this state of things is the large import of sterilized and condensed milks from Europe. As apparently the use of the imported milks can serve only a limited portion of the population assuming that they are good, the bulk of the people must of necessity depend on local supplies for their daily requirements. The rapid movement of the population from villages to towns in recent years has rendered the problem of milk-supply one of considerable importance. Milk is largely adulterated in order to meet the growing demand, with decidedly evil results. The rate of infantile mortality is appallingly high, and Health Authorities tell us that impure milk is also a fruitful source of disease such as typhoid, cholera, dysentery, etc. Milk is one of the most delicate of articles known to us; there is nothing that is tainted so easily as milk which is also extremely susceptible to contamination by disease germs. It has been found that the number of bacteria in freshly drawn milk will vary with the conditions prevailing in the dairy. To begin with, the bellies and udders of the cows may be soiled with dung, fragments of which might fall in the milk. Again the hands of the milker, if unclean, may introduce numerous germs. The milk pails may be responsible for many more as they are often washed with water rich in bacteria and the air of the cow house may also make its contribution. The chief sources of milk bacteria are thus the cow itself, the milk pail, the milker and the cow house. Passing from these general considerations to the conditions prevailing in the milk trade of the city, it will be observed that the cows are invariably stalled in the filthiest imaginable surroundings. I have seen milch-cows crowded together near gutters and cesspools without regard to the health of the cows or that of the consumers. In the busiest parts of the City of Madras, Georgetown and Triplicane, for instance, conditions are even worse. Cows which are dirtied with dung and mire are taken out for milking and the milkman is no better. Persons suffering from elephantiasis and skin diseases are allowed to milk. The milkman's clothing is often dirty. The conditions under which milk is produced and handled are thus very primitive and insanitary. The greatest ignorance possible prevails among the people as to even the most rudimentary ideas of sanitation and before any improvement can be effected in the matter of milk-supply, the intelligent co-operation of the consumers is required. It is not enough to see that the milk is not adulterated; the consumers must also insist that the cows which supply the milk are housed in healthy surroundings, that they are properly fed and that the milking is performed in a clean manner. In other words, the supply of milk to Cities like Madras has to be organized. We are rapidly passing from the period of domestic to that of organized professional milk-supply, and the organization of milk-supply depends on the intelligent co-operation of both the producers and consumers. Attention on the part of the consumers to the proper way of producing and handling milk is bound to result in great improvement in the supply of this most important article of food. Laws may do a great deal to prevent fraud, but consumers who know exactly what they want, how to get it and how to care for it, will have much greater effect on milk producers and dealers than any possible laws. The transportation of milk in some of the European and American Cities is a large business as the milk has to be brought

from considerable distances. Special milk trains are employed for bringing milk from farms situated from 50 to 100 miles. Almost the entire supply of New York is the so called "Railroad Milk" and practically all of this is brought by trains. The provisioning of London is a gigantic task. At least nine-tenths of the milk supplied to London consumers is brought from considerable distances, in some cases 150 miles. All this milk is brought to London by special milk trains. In actual practice, a dairy farmer contracts to sell all his milk to a wholesale dealer, who may receive thousands of gallons of milk a day from many different sources, and disposes of it to retail vendors who in turn take it round in their milk carts to the householders. The wholesale dealer acting as middleman in passing off the milk from the farmer to the retail dealer, fixes the price he is prepared to pay to the one and the price at which he is prepared to sell to the other. In some instances, a large wholesale dealer will sell to a smaller one who again will sell to a still smaller one until there may be as many as five distinct profits made after the milk leaves the producer and before it reaches the consumer. If there should be real benefit both to the producers and consumers, it must come mainly through co-operative effort in which the middleman has no part. In co-operative dairying, Denmark occupies a prominent place and the success of co-operative effort as applied to milk-supply in that country is attributed largely to the fact that Denmark is a nation of small-holders. The success that has so far been attained by co-operative organizations in this country encourages the hope that other forms of co-operation than those intended for providing cheap credit and directed to the production and distribution of

commodities will succeed. Coming again to the conditions prevailing in the city, we find that the present supply of milk does not depend on the proprietors of large herds of cattle, but that it is entirely in the hands of petty owners who have obviously neither the means nor the desire to aim at anything beyond immediate profits. From a report recently published by Capt. Russell, the Health Officer of the Corporation it appears that of the 531 licensed milch cattle-keepers in the city who own 1,248 cows and 2,339 buffaloes, only one keeps 50 animals, and another 33 animals; of the rest 9 persons maintain 20 to 30 heads of cattle each, 111 persons 10 to 20 each, and 134 persons less than 5 each. The conditions are thus not unfavourable for a co-operative organization to deal with the milk-supply of Madras. The problem of milk-supply really is to provide wholesome milk at a reasonable price. If it is possible to run an oil society as a business concern, it should equally be possible to run a milk or a *ghi* society as a co-operative concern. We have the example of the Visveswar Co-operative dairy at Benares, which was started and is worked by *Ahirs* and not by capitalists. Perhaps the society is not yet a brilliant success but it has solved the problem of the supply of wholesome milk at a reasonable price and it seems to me that with better organization it ought to have a successful business enterprise.

I have so far dealt with the conditions as they obtain in Madras which I know best. Co-operative effort may not succeed as a matter of course anywhere and everywhere, and it is important to remember that a study of local economic conditions should always precede the organization of any Co-operative Industry as indicated above.

Book of the Month.

Industrial Evolution.

One striking feature of present-day literature is the increasing volume of books on economic and social topics. The forces which have been shaping the development of society under the new industrial regime, ushered in by the use of machinery, accumulation of capital and large scale production, are attracting the attention of thinkers and workers who are impelled to search for principles and devise remedies. It is an undisputed fact that the production of wealth is steadily increasing in all progressive countries and there are complaints that this wealth is not properly distributed among the different classes of society. Diffusion of knowledge and the progress of democratic ideas have made the lower classes conscious of their rights as citizens and contributors to wealth-production as also of the unsatisfactory conditions of life which modern organization of society has given birth to. Questions of wages and strikes, of rent and taxation, of unearned increment, of poverty and health are assuming greater importance every day. How to remedy social injustice and inequalities, how to make the nation strong and healthy and how to elevate the masses economically and socially—these are the problems which confront the politician and the student today. Most of these problems are old, but they are assuming a fresh importance owing to the keenness that is generally felt for social and economic reform in several directions.

Many Indian students of the progress of this socio-economic movement are not probably aware of the excellent work that economists and sociologists are doing in America in this rich and extensive field. If England has her peculiar labour problems, the United States have to tackle monopolies and trusts, banking and currency, railways and concentration of wealth and such other subjects. Notable contributions to economic and social thought are being made in America and people interested in this line of literature will greatly profit by a study of some of these works. One such work* we would refer to here and it is "Evolution of Industrial Society" by R. T. Ely. Prof. Ely is the editor of the Citizen's Library of Economics, Politics and Sociology, and the book under review is a volume in that useful library. The field the author traverses 'belongs largely to that general borderland where econo-

* "Studies in the Evolution of Industrial Society" by Prof. Richard T. Ely, Ph. D. New York: The MacMillan Company. Cash price in Great Britain 2/- Net

mics, ethics, biology and sociology meet,' 'but he never forgets that he is writing as an economist. Though it is the aim of the Library to popularise Economics and Sociology every care is taken to see that the interests of science are not sacrificed to popularity. The first part of the book, as its name indicates, traces the evolution of society through the various economic stages, the pastoral, agricultural and so on, and points out recent tendencies of industrial evolution. The second part takes up and elaborates some special problems of this evolution such as competition, social progress and race improvement, monopolies and trusts, concentration and diffusion of wealth, inheritance of property, the evolution of public expenditure, industrial peace and industrial liberty. This enumeration is enough to show the range and importance of the topics discussed by Prof. Ely, and the author is aware that 'there is scarcely a chapter in the book which could not be expanded into a volume.'

Though it may appear to people in this country that they are not concerned with such questions as industrial peace, trusts and marriage laws in India, it must be said that they underestimate the urgent importance of the underlying principles of socio-economic development. The Study of Industrial Evolution and of social problems is of extreme importance in India in as much as this country is passing through a transitional stage and will soon be confronted with several of those socio-economic difficulties which are be-setting the countries of the west. Poverty, ignorance, disease, indebtedness, insanitary conditions, a low standard of life are all serious evils which we have to fight and the question of race improvement is paramount. Western nations have made long strides and India is lagging behind them at a distance. From the material and economic point of view, India is pronounced by foreign observers to be a country of inferior civilization and even the most zealous patriot cannot resent this description. Under these circumstances, a careful study of the principles of economic and social development in the light of the history of western peoples is imperative and we may confidently recommend in this connection, a close study of Prof. Ely's work. The author's method of treatment of even the most complex subjects is calculated to interest the reader in the discussion of those subjects and the book is highly suggestive throughout. The Indian student of economics and sociology will derive much profit from Prof. Ely's book.

The Agricultural World.

Physiological Action of Spraying Mixtures.

Apart altogether from the fungicidal action of spraying mixtures, the idea is current in some quarters that spraying has a direct influence on the plant. On the one hand this influence is regarded as beneficial and is looked upon as a stimulant while by others it is considered to be of a baneful nature resulting in a diminution of the plant's vigour. Those who favour the first-named idea explain the beneficial action of the spray in various ways. Thus it has been supposed that a certain amount of iron, frequently present as an impurity in copper sulphate, is absorbed by the foliage which thus becomes greener and more efficient in manufacturing plant-food. Again, it has been asserted that particularly in hot bright summers the coating of spray on the foliage acts as a protective screen and prevents the destruction by the sun's rays of some of the green colouring matter of the leaf. Of course, says a contemporary, the deleterious action of the spray if it exists can be explained by assuming the absorption of small quantities of poisonous soluble copper salts by the living cells of the leaves, or by the blocking of the leaf pores by the spray or in some other such way.

Rice Industry in Philippine Islands.

In the *Philippine Agricultural Review* we read that for the past five years an average amount of £14,000,000 has been sent out of the Islands each year for the purchase of rice. This large and steady drain on the resources of the country for the purchase of food that could be produced in the Islands constitutes a most serious menace to the establishment of a condition of stable and permanent industrial prosperity. We believe that the development of the rice industry to at least that point where the Islands shall produce sufficient rice for local consumption is

the most important work of the Bureau of Agriculture at the present time. We are told that a rice campaign has therefore been organised and local officials throughout the principal rice-growing provinces have been requested to lend their support and aid to this work. It is said that a special force of Bureau employees will be detailed on this work, and every possible effort will be made to promote the production of more and better rice in the Islands.

Seed Farms.

The maintenance of seed farms is one of the most important branches of work done by the Agricultural Department. They play a prominent part in improving the quality of crops in the province concerned.

In the Central Provinces, a most interesting experiment is being made. While the Agricultural Department has its own Government seed farm, in which the cultivation and selection of seeds receive scientific care, the department is attempting to bring a number of private seed farms under its supervision by offers of free advice and co-operation in the sale of seed. It appears to be the general rule in regard to these latter farms that the proprietor of each does his own cultivation. He obtains seed in the first instance, from the Department of Agriculture. His farm is placed under the close supervision of one of the officers of that department, and, in return, the owner agrees to give it the first refusal of the surplus seed. First of all the land has to be approved, then the proprietor has to agree to carry out certain simple rules with regard to the growth, harvesting and storage of the crop. So far, wheat seed appears to have been the chief object of attention and there are now thirty-six wheat seed farms in the Central Provinces.

A Valuable Orchard Discovery.

"The newest leaf of an old tree is not really new at all" is the observation of a writer, in the *Popular Science Siftings*, who quotes Prof. H. W. Benedict at length. The professor, following the belief of nursery men, finally proved it beyond dispute and he could tell the grower of fruit trees whether a branch was a cutting or a seedling, whether it was really young or old. If the fruit grower possesses a magnifying glass, he will no more purchase cuttings when he desires seedlings.

"Practical fruit-growers have," says Dr. Benedict, "for some time insisted that cuttings do show relation to the age of the parent tree. They observed this in the bearing qualities of the tree. But botany has always said this was impossible. Now we are able to prove that the practical nurserymen are in the right! The principle involved is that of senility, or the gradual loss of power, even when all external things are favourable. Senility applies to youth as well as age in this connection; in fact it is most marked in the earliest stages of some animal forms, especially human beings. In plant life the embryonic tissue, whereby the plant grows partakes of the age of the plant itself. This is the point which contradicts formerly accepted botanical principles. In other words, the new twig, which presents itself on the older branch in the springtime, is not a new growth, as has been thought; it is as old as the tree from which it springs."

Testing Seeds

The simplest form of tester for small seed may be made from a sheet of ordinary white blotting paper, ten inches long and five inches wide, one-half of which is marked off into one hundred small squares.

To make the test, the sample should first be thoroughly mixed so that when one hundred seeds are counted out they will fairly represent the entire lot. They should be taken as they come, large, small, shrivelled, and smutted, and

one seed put in each square on the blotting paper, which has first been moistened, until the one hundred have been selected. The pupil should note at the same time something as to the uniformity of the sample, whether or not the seeds seem to be of the same size, shape and colour.

After all the seeds have been put in place, the unmarked section of the blotter is folded over them and a strip of cloth about ten inches long placed between to act as a wick.

A dozen or more tests may be prepared in this manner and piled up on each other, all of the cloth wicks leading to a glass of water.

It will require from five to seven days to secure a good germination of these samples of seed. When, upon examination, it is found that both the root and stem portion of the majority of seeds have a good start, a count should be made of those that germinate. This count should not only include those that actually grow, but should lay emphasis upon those that send up a strong growth. Those that are weak would doubtless be smothered out in the fields.

An Exhausted Soil.

Each time a crop is taken off the land, it takes with it all the ingredients which have built up the plants. If these materials are not replaced in some way or other, it is clear that, after a time, longer or shorter, according to the natural fertility of the soil, the whole of the plant-food which the roots can reach will be carried away, and the land becomes unproductive; but, in reality, there is no such thing as an exhausted soil, observes the *Queensland Agricultural Journal*. The plant-food is there, but it is out of the reach of the roots of the plants, and requires to be brought up in some way or another to become available. Constant cropping has certainly removed the fertilising matter from the surface, and, such being the case, good crops cannot be produced, and in this sense, too, land is said to be exhausted.

Experiments carried out by the Bureau of Soils, U. S. A., indicate that the difference of yields between fertile and what was popularly regarded as "exhausted" soil was not due, to a difference in the supply of available plant nutrients. The suspicion was born that the unproductiveness of so-called worn-out soils was due, not to the absence of anything necessary to the plant's growth, but to the presence of something deleterious to its growth.

Further experiments forced the bureau to the conclusion that the unproductivity of the soil was due to the presence of a poison. That these poisons render the soil unproductive, or, to speak more accurately, prevent the full and healthy germination of a seed, the bureau found out, determined their qualities, and identified them. Tyrosin, which is a substance found in green manure, is the name of one of them and cumarin that of another. It was found that pure water, when impregnated with tyrosin, even to the small degree of 50 parts to a million of water, killed wheat seedlings outright, and that they thrived in the ratio that the quantity of tyrosin was diminished.

The question whether the soil can be cleansed from these poisons in some other way than the use of fertilisers is answered by the American scientists in the affirmative. It can be met by a systematic rotation of crops, and this, they think, is the true remedy.

Improvement of Cereals.

Referring to the investigations and experiments which are being conducted in almost every tropical country with a view to the improvement of cereals, a writer in the *Tropical Agriculturist* points out that the key note of modern methods in the improvement of cereals is selection. Mass selection is already practised in the case of rice in some countries. In Japan, the upper third of the head is gathered for seed because the grains at the top are the heavier. And elsewhere the heaviest grains are selected

by placing the seed in water and in solutions of greater density. But these mass methods do not lead to permanent improvement as the seed so selected is always a mixture and deteriorates by crossing.

The writer goes on to say that the earliest efforts in the selection of wheat, oats, etc., were made by individual farmers, more or less as a hobby. Single ears of marked quality were selected, and from these plants were raised, until sufficient seed had been obtained. This phase appears, on the available evidence, to be lacking in the case of rice. In recent times, selection and improvement by crossing has become the special work of professional seed growers, with the consequent production of strains which are household names among agriculturists.

Thanks to the investigations and discoveries of the experimental station at Svalof in Sweden, a great stimulus has of late been given by the introduction of the method of pure line breeding—a method in which pedigree races are raised—a method which is not a new one in itself as it was practised in Scotland nearly a hundred years ago by the originator of the famous Sheriff oats, but which in its modern developments, is the creation of the Svalof station. This method is the only one of the kind which gives lasting results and sufficiently rapid to be adopted by commercial enterprises. Similar to the Svalof station which is a private one despite the fact that it receives grants from the State an institution has been established in France by a private association.

Experiment stations for rice in the Tropics are following the Svalof methods with promising results. In Java, a variety which yields 2½ tons of rice per acre has already been raised at the experiment station at Buitenzorg. That Ceylon rices will lend themselves to improvement by this method is evident from the fact that the best variety now under cultivation in British Guiana was obtained by selection from a Ceylon consignment.

the animal has not been pregnant, for there are many cases on record of the mummified remains of a foetus having been found in the uterus of a cow killed fat by the butcher, or on *post mortem* examination when death has taken place from accident or disease entirely unconnected with gestation or parturition. They will also know of other cases in which cows have been most unexpectedly found with a calf at foot or discovered in the act of presenting it when their pregnant condition was not even suspected.

SOME SIGNS.

The sign chiefly relied upon by the cow-keeper is the continued absence of oestrus subsequent to service, the cow not coming into season at the usual period, and refusing to take any notice of the bull, and he of her. Implicit confidence in this often leads to error. In the other direction, the appearance of oestrus at the usual recurring period is equally inconclusive of the cow not being in-calf. In the cow, as well as in other animals, oestrus may recur not only once but several times after conception. Cows have been known to appear at oestrus regularly, and to accept service within a month of parturition, although the rule is that the bull refuses to consort with such animals. The cessation or non-appearance of oestrus subsequent to service may, of course, be taken generally as an indication that the cow is in-calf, and its re-appearance as evidence that impregnation has not resulted, but the exceptions are so numerous that the absence or recurrence of oestrus cannot be regarded as absolutely a safe guide, either one way or the other. Another rational or subjective sign is a considerable improvement in condition or a tendency to fatten. Cows are not usually vicious, capricious, or "jady," as are many mares, which often become completely changed in character when in-foal; but to a limited extent an improvement in the temper of "wicked" cows have been observed,

and the in-calf cow early becomes more tranquil in disposition, and takes a great deal more rest. Taken with other signs, an improvement in condition a greater evenness in temper, loss of vigour, and a greater tendency to rest may assist the observant owner in coming to a conclusion as to the state of his cow. As the foetus gradually grows in the uterus its capacity increases, and becomes visible externally, especially on the right side of the cow, but the abdomen also enlarges generally, and towards the end of gestation it becomes pendulous, and the flanks hollow. The spine appears to drop, while the lateral portions of the croup sink so much as to make the sacrum and haunches towards the root of the tail look more salient. Increase of weight is a physical sign, and it has been proposed to weigh animals from time to time to demonstrate the presence or absence of a foetus, but either weighing or measuring must be an extremely fallacious test as to the pregnancy of any animal. An empty cow may increase in size and weight by slow degrees as readily as the man who weighs her, or a pregnant cow may lose flesh faster than the growth of the foetus would compensate for.

IMPROVEMENT IN CONDITION.

There is generally a rapid improvement in condition during the first period of gestation, and often a loss of it during the last. The enlargement of the udder is a material sign of pregnancy, but one that varies very much in different animals, and it is reliable only in the case of heifers carrying their first calf. In heifers the mammary gland begins to undergo development soon after conception, or towards the second or third month, but when we remember that virgin animals can, and frequently do, produce milk, it will be seen that absolute reliance cannot be placed on this. Changes in the milk do not become apparent until quite late in the gestation period, when in the majority of cases at least, there will be numerous other and more reliable signs of the con-

dition of the animal; and they are not always reliable.

SIGNS OF PREGNANCY.

The sensible signs of pregnancy do not begin to be apparent until the fourth or fifth month, when the contractility of the foetal muscles begins to be developed. These movements are feeble at first, but towards the end of pregnancy become, in the majority of cases, vigorous and unmistakable. The milker recognises them readily as he leans against the cow with his head while milking her, and it is during this act that he frequently becomes aware of the cow's condition by feeling the calf "kick." In many cases these foetal movements can be distinctly seen as well as felt, and various experiments, as barbarous as they are stupid, are resorted to determine the presence of a foetus in the uterus by exciting its movement. A favourite one is to give a drink of cold water after heating the cow by driving her round the pasture or yard—a test that may demonstrate the animal's condition by causing her to abort. The only really useful and practical means of detecting the sensible signs is to combine the senses of sight, touch, and hearing. What can be seen of the foetal movements is not very reliable until the closing days of gestation, when other signs will probably be equally apparent, and it must always be remembered that the fact that the calf has at no time been seen to "kick," and that movements cannot be detected by employing the sense of touch, is never reliable evidence that the cow is not in-calf. It is said that the beats of the foetal heart can be detected by auscultation in front of the symphysis pubis, but the part is an awkward one to get at in the cow, and the inexperienced may easily be confused by other sounds. The indications obtainable by manual exploration are through the abdomen, the rectum, and the vagina. Exploration by way of the two last is a method of examination which should be confined to the veterinary surgeon, but the farmer

and dealer commonly undertake the abdominal examination with success, and, if ordinary care be exercised, it may be employed with perfect safety. In the case of the cow, it is about the fifth month when the foetus can be detected by manipulation of the abdomen. The cow should be standing up when examined, as the signs are not so easily perceptible when she is recumbent. The examiner stands on the right or milking side of the cow, with his back towards her head, and applies the palm of the left hand against the abdomen, pressing it firmly, the right hand resting on her back. The movements of the foetus can then be detected as it stirs at regular intervals. These movements are generally strongest in the morning, and while the cow is feeding.

BUYING COWS IN CALF.

In buying a bunch of heifers for feeding or of barren cows to go on grass, mistakes are commonly made, and quite a number of them are found, after they have been kept for some time, to be forward in-calf. This mistake neither skill nor care can always guard against. In buying cows alleged to be in calf, or as due to calve on a certain day, it is always wise to take a warranty where this is obtainable. Unfortunately, it is not always obtainable, and at cow sales, sometimes with the connivance of the auctioneer, cows are sold as to profit on a certain date, the purchaser being allowed to assume that they are in-calf, and will calve on a date corresponding with the date of the alleged service. Very often the cows have not been near a bull, and in other cases the date of the alleged service has been so antedated as to lead the purchaser to conclude that she is weeks nearer to calving than she really is, if in-calf at all. There seems no remedy in such a case, for a calf is not guaranteed, and the statement that the cow was to profit on a certain date means nothing. It is a trick often practised by the seller at the expense of the buyer, a trick that many dairymen consider

It is now generally agreed, says the writer, that mass selection though provisionally beneficial is not permanently efficacious. The hope of permanent improvement and increased production lies in the adoption of pure line breeding, and the regular distribution of pedigree seed.

Agricultural Organisations.

The *Morning Post* recently published a series of letters from well-known men on this subject. Among them was one by Mr. W. Fitzherbert-Brockholes, who has done so much for agriculture in Lancashire. This letter deserves to be read by all who are interested in agricultural organisation in India. The letter is as follows :—

The relation between the various other kinds of agricultural bodies and Co-operative Societies is a very important matter that has not yet been dealt with in your series of interviews, and it is this branch of the subject to which I wish now to draw attention. Agricultural societies other than co-operative may be roughly grouped into the following three types : (a) Show Societies, whose main, if not sole, business is the holding of an annual show; (b) Chambers of Agriculture, whose main, if not sole, business is the holding of meetings periodically to discuss matters of current interest and pass resolutions with the view of drawing attention to farmers' grievances and bringing pressure to bear to get them removed; and, lastly, (c) Protection Societies, whose great work lies in the direction of organising groups of agriculturists to band together for their mutual protection and assistance in their business.

The first-named type of agricultural society is unable to deal satisfactorily with matters that are outside its province as a Show Society, but the spheres of work open to the second and third types are not only perfectly compatible, but are really better when combined in one society for both purposes. I think I may point to the Lancashire Farmers' Association as an

object lesson of a society combining satisfactorily the two types (b) and (c). Now it is absolutely impossible for a society of any of the foregoing three types to undertake co-operative business, no matter how sympathetic the members may be to agricultural co-operation. A large membership, a good subscription list, and a healthy balance sheet and reserve fund for emergencies, coupled with capable common-sense management, are the chief factors requisite for a Farmers' Protection Society, but there are other factors that are absolutely necessary for the success of a Co-operative Trading Society.

One most important difference is that whereas in a Protection Society as long as a member pays his five shillings, or whatever other amount may be the annual subscription of his society, and so becomes entitled to the benefits afforded by it, neither is he involved in any further liabilities to his society nor is his society involved in any further liabilities to him beyond giving him the specified benefits to which he is entitled. It is very different with a Co-operative Trading Society where trading and financial liabilities are concerned. In this case the financial stability and sound business character of members are of more importance than mere numbers, and care has to be exercised in admitting none but reliable persons as members. Further, it is necessary to safeguard the interests of a Co-operative Trading Society by constituting it into a registered society with carefully thought-out rules of a far more elaborate and technical description than are necessary or would be suitable for a Chamber of Agriculture or a Protection Society. And finally, those who are responsible for the management of a Co-operative Trading Society must possess technical trading knowledge and experience that are quite unnecessary in the case of the other types.

Experience has proved to the hilt that it is

a cardinal mistake to attempt to combine trading with the duties that fall within the sphere of any of the other types of agricultural societies. But if I consider Agricultural Co-operative Trading Societies should be kept quite distinct from other forms of Agricultural Societies, you may ask me what should be the proper relations between the latter and the former. The answer seems to me very simple and obvious. All agricultural societies of every kind are out to benefit farmers in one way or another, and consequently assuming that Agricultural Co-operative Societies are in the best interests of farmers, as I am convinced is the case, then the duty of all other kinds of societies is to encourage and foster the formation of properly constituted and registered Agricultural Co-operative Societies in any suitable centre within their sphere of influence. I may say this policy has been carried out by the Lancashire Farmers' Association for some years, with the result that half a dozen or more Agricultural Co-operative Societies are now established within its area, all of whom owe their existence to a considerable extent to its consistent advocacy of co-operative methods as applied to the farming industry. . . .

I should like to add that though it is necessary to run a Co-operative and a Protection Society absolutely independent of each other as far as their respective business spheres are concerned, this does not mean that the same individuals may not take an equally prominent part and keen interest in both; in fact, it is most desirable that a certain number at all events of the same people should take leading parts in the administration of each kind of Agricultural Society that may exist in the same area, as it is only in this way that the work of the different societies working in any given area can be so managed and harmonised as to afford the greatest possible benefits to the farming community. . . . Unless they do so there will be a want of co-ordination and a

great risk of misunderstandings between the various other Agricultural Bodies and Agricultural Co-operative Societies, to the serious detriment of the farming industry generally.

. . . Moreover, the more flourishing the farming industry may be in a district the better for the labouring classes in it, and consequently a landowner by helping forward co-operation in agriculture is benefiting every class interested in agriculture, whether as owners, farmers, or labourers. Not only so. Whatever benefits any industry, especially a food-producing one, confers is a material benefit to the nation at large. On every ground, whether that of duty to the nation or duty to his neighbours, or from mere self-interest, every landowner should support the cause of agricultural co-operation by word and by deed, in no half-hearted way.

It is also one of the few things that can and must be kept out of the turmoil of party politics if it is to flourish, and it should afford a great bulwark against the agricultural industry becoming the sport and tool of the party politician. Anything that tends to do that is rendering the greatest service to agriculturists and to the nation at large.

Is the Cow in Calf?

The following extract from *Farm and Home* is surcharged with a good deal of information which will repay perusal :—

'Is the Cow in Calf?' is a question which often perplexes the dairy farmer, and it is a very important matter for him to decide aright. There are many signs relied on, but none are infallible, and even experts are occasionally mistaken. There are absolutely no "sure" or "certain" indications and there are cases in which the condition of a particular animal has remained undetermined right up to the time when the offspring was produced, or until the lapse of a period long beyond that of normal utero-gestation had practically settled the question. We say practically, because the failure to give birth to a calf is not positive proof that

smart when they successfully practice it on a fellow farmer, but which they call by another name when they themselves are the victims of the fraud. The only thing, where a warranty is not obtainable, is to rely on personal skill and judgment as to whether the cow is in-calf, and, if so, how far advanced; and, in those cases where the signs are wanting, to leave the animal alone.

Success in Farming.

Writing in the inaugural issue of a new monthly the *Indian Agricultural World*, Mr. D. T. Chadwick, I.C.S., Director of Agriculture, Madras mentions some simple lines on which farmers in India could increase their profits. They are:—

1. Reducing the seed rate, when sowing rice;
2. Preserving their cow-manure on the box system;
3. In some places, cultivating green-manuring crops in their wet land and ploughing them in as green-manure;
4. Using selected seed for cotton;
5. Picking their cotton clean and selling the produce pure and unmixed;
6. Alternating their groundnut crops with a cereal, e.g., cumbu or tenai;
7. Drying their groundnut crop thoroughly before sale;
8. Soaking cholam seed in copper sulphate solution before sowing, to stave off disease;
9. Using the iron mill for crushing sugarcane and the improved furnace for making jaggery; and
10. Those who possess wet land and are willing to risk more in the way of experiment can very well try phosphates or fish-manure as a fertilizer for their rice crop.

Rice Yield.

Preliminary experiments conducted during the past two years in respect of rice in Burma go to show that the effect of the character of the soil is probably all important in the produc-

tion of good yields. Pure line bred seed is not necessarily a good yielder unless the soil be suitable, nor does the land which produces the richest crop for the market necessarily produce the best seed grain. Again the problem of the breakage of rice grains during milling, the most serious difficulty at present confronting the milling industry, is almost entirely a chemical question.

Roots of Fruit Trees.

Nothing, says the *Agricultural Journal of Egypt*, can be more strongly emphasized than the necessity of injuring the roots of fruit trees as little as possible, and of shortening their stems and branches at the time of transplanting. It is always better, if possible to take up deciduous trees with naked roots, but a "ball" is sometimes necessary. Mango trees are most sensitive to root injury; and require the greatest care in handling. When trees are removed with a ball of earth, the ball should be wrapped with the leaves of sugarcane or some other suitable material.

Planting Cocoanuts.

The question as to the advisability of planting cocoanuts obtained from young trees has often been raised. Most growers are in favour of retaining seeds only from fully matured trees with which to establish plantations although often good reasons for this cannot be given. The influence of the age of the parent tree on the character of its offspring is of interest although it is probably an unanswerable question at the present moment. Nuts obtained from trees five to seven years old, however, do not appear to possess the same vitality as those obtained from mature trees.

Chemical Fertilizers or Maize Crop.

A test of fertilizers with maize made by the Agricultural Department of the Philippines seems to indicate that it would not be profitable to apply chemical fertilizers to the maize crop under ordinary conditions.

The Co-operative World.

Co-operative Life Assurance.

The *Irish Homestead* points out that among the applications of the co-operative idea, one of the best heard of recently is the scheme for collective life assurance promoted by the Co-operative Insurance Society, which it recommends all Co-operative distributive societies to adopt. By this plan, without making any inquiry as to age or state of health, a single policy is issued to a Co-operative Society assuring all its individual members and the lives of each married couple, whether each is a member or only one of them, who die within the term for which the premium is paid, provided purchases to some extent have been recorded in the member's name in the year ended by the death of the assured person. The Co-operative Society pays a premium equal to one penny for every pound of all individual members' purchases recorded in the term included in its last balance sheet, in return for which premium the Insurance Society will pay on death to the representative of deceased member a sum equal to five shillings, per pound of average purchase, the limit of claim being £50. There are variations of the scheme for husbands and wives but the principle is the same. Now, Co-operative distributive societies every quarter pay to their members a dividend on purchases varying from one shilling to two shillings and six pence in the pound. Under this scheme the penny per pound of that dividend would be retained for the purpose of the collective insurance of the members. It is certainly cheap. By using the society as agent, all the expense of agents dealing with individuals is done away with. These expenses in the ordinary insurance often absorb forty per cent. of the premiums. Such a scheme would undoubtedly be a great benefit to the working classes, who form so large a part of the

membership of distributive societies. The insurance could not be effected so cheaply if there was no co-operative organisation to pay the premium on behalf of its members. Already over one million members of more than four hundred societies are so insured, and forty thousand claims, amounting to £250,000 have been paid under the policies. We recommended the scheme to Co-operative distributive societies.

Agricultural Co-operative Societies.

For some time past, there is a growing feeling that too much attention has been devoted to spreading the Co-operative *Credit* movement and that *Agricultural* societies should be organised all over India if the movement is to yield its full benefits. With the recent amendment of the Co-operative Societies' Act, the movement in favour of Agricultural Co-operation has received an impetus and various proposals will doubtless be forwarded based on experiences gathered in countries abroad. It is well therefore that Mr. Wolff drew attention in the January issue of the *Wealth of India* to a condition precedent to starting agricultural societies, namely, the "need experienced for co-operative action."

We are glad that Mr. D. T. Chadwick, I.C.S., Director of Agriculture, Madras, elaborated this idea in a paper which he contributed to the Coimbatore Co-operative Conference. Mr. Chadwick, emphasised the importance of ascertaining local conditions before any agricultural Co-operative Society could be established in any place.

He pointed out that it is fatal to imagine that Agricultural Co-operative Societies can with any advantage be spread broadcast throughout the country, without a detailed knowledge of the local conditions in every case. Agricultural Co-operative Societies do not

possess the same fairly general applicability as do credit Societies; and in making a start with any new work or method, it is only wise to choose the most promising localities. He suggested, before any proposals are made for starting an Agricultural Co-operative Society, that the following fundamental questions should be answered:—

(1) Do the farmers in that locality, in producing the main crop of the tract, labour under certain definite disabilities, either in supplying their agricultural needs or disposing or handling their produce, and can those disabilities be removed or appreciably lessened by association amongst them?

(2) Are there men amongst them with business knowledge of the work required, competent to attend to the management and such as will ensure honest control?

There should be, he said, nothing of speculation in the proposals for an Agricultural Co-operative Society and it ought to be organised in direct reference to work with which all the members are familiar. Thus, some of the villages may be under a difficulty due to the high price of cattle, but it is not as a rule a sound proposition to propose in order to relieve this disability, a Cattle Breeding Society in a village, the members of which have really very little familiarity with the details of cattle-breeding and in which facilities for cattle-breeding are deficient. That as a rule savours of speculation. But where for the production of the chief crop the agriculturists purchase manure or fodder, which are usually brought from a distance and pass through the hands of several middlemen before they reach the cultivator, then there is usually an opening for co-operation and a properly managed Co-operative Society will be able to get that manure or feeding stuffs whether it be fish guano or oil-cake, more cheaply and of better quality than the cultivators do, buying independently. There are openings for such Societies, openings which

will increase in time, but in every case before proposals can be made it is necessary to obtain an intimate acquaintance with the conditions of the local trade.

Co-operation in Dairying.

The Board of the Irish Agricultural Organisation Society have communicated the following to the Board of Agriculture:—

The question of the production of pure milk is one of the most important agricultural problems of the present day, and it is a matter that can best be dealt with in connection with the organisation of the dairy industry on co-operative lines. Many methods have been suggested from time to time to solve the various related problems, but these have usually involved the application of compulsory measures which would in many cases be distasteful to those principally concerned. Improvements can be effectively and economically carried out by the milk producers voluntarily co-operating to comply with conditions necessary to ensure the supply of milk which is pure and free from contamination. Considerable progress has been made in other countries in obtaining a pure milk supply, especially in Denmark and America. In this country much attention has already been paid to the organisation of dairy farmers to ensure their produce being dealt with in the best and most economical ways, and considerable progress has been made.

CO-OPERATIVE DAIRYING.

The most important feature of the work of many of the societies affiliated to the Agricultural Organisation Society, consists in the disposal of dairy produce on co-operative lines, and there were at the end of March 1913 about thirty societies who regard this work as their principal object. The amount of milk dealt with by these societies is estimated at about 55,000 gallons daily, or about 20,000,000 gallons per annum.

METHODS OF THE DAIRY SOCIETIES.

The methods adopted by the societies vary

largely according to local conditions. Where there are good transit facilities to markets and consuming centres the usual procedure is to dispose of the members' produce so far as possible as whole milk, and thus continue on co-operative lines, the practice previously followed by the individual farmer. The chief difference is that, by reason of the larger amounts being dealt with by a dairy society, it is possible to regulate to a considerable extent the amount of milk which is being sent to the consuming public, and thus avoid overloading the market with supplies and causing a fall in prices. Where a number of individual farmers are supplying a consuming centre with milk it is not possible for each profitably to convert any surplus milk he may have into a product which would relieve the congested state of the market and so prevent a fall in the price. On the other hand, the combined surplus milk of these farmers can profitably be dealt with through a co-operative depot, and this constitutes one of the advantages of these societies. Another important advantage is that the farmer is relieved of the trouble and expense of marketing, and can devote his whole time and knowledge to the actual farming operations necessary for production. He is not troubled with bad debts and other similar drawbacks, the Co-operative Society undertaking all the work in connection with marketing through a responsible and efficient manager. The society can also make inquiries as to the financial stability of customers with much greater ease and certainty than an individual farmer. A further great advantage, however, is that the farmer, through his society, retains that portion of the profits which formerly was secured by unnecessary intermediaries, these men being dispensed with on the advent of the society, the object of which is to place producer and consumer in the closest possible touch. After the necessary deductions have been made for the payment of interest on capital and to cover working ex-

penses, the profits are returned to the members in proportion to the amount of trade done by each. Interest on share capital in Co-operative Societies registered under the Industrial and Provident Societies' Act is limited—usually to about 5 per cent. This fact, in conjunction with a provision of the Act that no share-holder can hold more than two hundred pounds' worth of shares, prevents a Co-operative Society becoming a capitalistic concern.

It will be seen from what has been said that the principles of co-operation can be readily adapted to meet the conditions which pertain to the dairying industry in various parts of the country.

A New Development in Co-operative Credit.

In a letter to a recent issue of the *Morning Post*, Mr. Moreton Frewen gives an interesting account of a new phase of co-operative credit which appears to be very successful in the United States, and should be worth the attention of the Registrars who have charge of the movement in this country.

Mr. Frewen states that the reason why young men of ability, and often of character are looking hopefully to some form of Socialism is because, turned out of the State schools tolerably educated and with proper youthful ambitions, they find it almost impossible to get a start in life. Considering a man's productivity, the fact that, given the raw material on which to work, he can add to its value at least £80 a year, is not his ego his manhood, good security for a loan? The better his ego, in the form of credentials which will secure endorses the more valuable should be his security. In short, is he not entitled to capitalise himself at fifty, or even a hundred pounds? As the late Mr. J. P. Morgan said in the very last days of his life. "Character is the basis of credit." During the past five years a plan of credit finance which, it is interesting to notice, has been actually copyrighted by its inventor, Mr. Arthur J. Morris of Norfolk, Virginia, has come into successful

operation in a number of States of the American Union, at Atlanta, Baltimore, and St. Louis at Richmond, Memphis, Charleston, Springfield (Mass) and Denver. The latest and largest of these Morris Banks was launched last autumn, and a large proportion of its share capital of five million dollars was subscribed by Mr. Carnegie.

THE MORRIS PLAN.

In brief outline, the Morris plan is this. A bank is established not on the lines of the Raiffeisen system of unlimited liability, but as a commercial bank, paying its profits to its shareholders. Anyone wishing to borrow up to £10 gives his or her promissory note to the bank, with two endorsers. The bank thereupon loans £10 less 6 per cent. discount (12s.), and the borrower repays this by fifty weekly instalments of four shillings each, out of his wages. It will be noticed that this is clever banking for the bank has charged 6 per cent. interest on the loan for a whole year and on the whole sum, while the sum borrowed is itself being reduced each week at the rate of 2 per cent. Thus the rate of interest, which looks like 6 per cent., is really considerably higher. Now, the mechanism of the instalments is as follows: The borrower agrees to purchase at the rate of four shillings each week a Class "C" certificate of investment. At the end of fifty weeks he has paid £10 and is the owner of the certificate. Two weeks later his original loan shall be due; he can then draw the £10 paid for the certificate, pay off his loan note, and the transaction is closed. But let us suppose he is earning good wages and does not want to pay off the loan, and that he is content still to pay four shillings weekly. In that case he exchanges his class "C" certificate for a Class "B" certificate of investment. These "B" certificates earn 6 per cent. interest, the interest payable each six months by two coupons attached. The bank further agrees to cash these "B" certificates, not at sight but when given 30 days'

notice. At least no machinery could well be simpler than this. Any ex-schoolmaster can carry on a bank business on lines so precisely defined. Mr. Bagehot once said: "The whole art of banking is to say 'no,'" and the agency to carry on the Morris plan can be found in every village. The borrower who at the end of the year converts his "C" certificate into a "B" certificate is allowed by the bank to deposit this "B" certificate as security for a fresh loan of £10. With the new loan he pays off his old loan, and this time his loan requires no two endorsers of his note because the "B" certificate is adequate security for the loan.

It appears, of the ten Morris institutions in operation now for over five years not a dollar has been lost. It will be recognised that a group of good working bucolics in any village who would club together and endorse each other's notes for the purpose of any needed village development could use the machinery of the Morris Bank to secure the capital they require.

The writer concludes that to India, where three hundred millions of very poor people are fleeced by local usurers as nowhere else on this earth's surface, such a very simple, almost automatic, scheme of co-operative credit might be as the dawning of a new day.

Control of Industry by Co-operation.

In summing up the present operations of the Co-operative Societies, the *New Statesman* says:—

"Of the goods purchased by the stores for sale to their members, some five-eighths are bought from the English and Scottish Co-operative Wholesale Societies, to which the separate societies bear the same relationship as individual members do to the stores. The Wholesale Societies themselves manufacture goods to the value of about ten millions per annum. They have their own textile, clothing, boot and shoe, blacking and other factories;

they own and farm nearly five thousand acres of land in England; while the English and Scottish Societies combine to conduct tea plantations in Ceylon."

The President of the Societies at the Dublin Congress said they were not merely "tinkering with social problems, for co-operation stood today as the grandest and most promising social reform movement of our time. Hitherto the activity of co-operators had in the main been called to the question of distribution. The time was ripe for heroic advance into the field of manufacture. The control of industry in the interest of the workers had always been an article in the co-operative creed, and they appealed to the powers that be, to adopt a more courageous policy along the lines of productive and agricultural enterprise."

THE TREND OF THE TIMES.

And this is what the Fabian journal has to say on this point:—

"One of the most remarkable features of the evolution of this vast economic organisation is the way in which the societies, beginning by merely selling a few classes of goods in a humble shop, find themselves going back, step by step, from retail trade to small-scale production, to co-operative wholesale buying and selling, to large-scale manufacture, and, finally, to the control of the extraction of raw materials from the earth itself. This development of voluntary collectivism seems to embody the trend of an inevitable economic movement corresponding to deep-seated human necessities in the sphere of economic organisation."

DEMOCRATIC CONTROL.

In dealing with the obvious question, "How does the co-operative organisation of industry differ in actual practice from its control by the Joint-Stock Company?" it is argued that the two most important principles on which the business is conducted are "the dividend on purchases and the preservation of democratic control by the consumer." The simple device

of dividend on purchases prevents capital from ever obtaining more than its fixed return of 4 or 5 per cent. The results of any improvement in organisation or cheapening of the cost of production within the sphere of the co-operative organisation inevitably find their way wholly into the pockets of the consumer, either in an increase of the dividend or in a reduction of price.

The preservation of democratic control is secured by the fact that voting power at meetings of the individual societies does not depend upon the number of shares held. Each shareholder is only entitled to one vote, and shareholding is bound up with active membership of the society as a purchaser.

WHAT VOLUNTARY COLLECTIVISM HAS PROVED.

Does the association of consumers offer any contribution to the solution of the problem of the organisation of industry in such a manner as to secure better and more human and independent conditions for the great mass of the producers engaged therein? We think that the voluntary collectivism of the co-operative movement, while not offering any complete solution of the problem of the position of the worker, has at least been able to further certain lines of advance. So long as the co-operative stores have to exist in the face of the competition of the private trader, it is not possible to raise the standard of life either of their employees or of those engaged in the Wholesale Societies' productive undertakings far above the level of the workers engaged in corresponding occupations in the outside market. But it is possible to conform to the standards of the best private employers, and that, with few exceptions, has been done. And the movement is distinguished by the degree to which it has diminished the discrepancy between the salaries of its most highly paid officials and the wages of its humblest workers.

Still, it must be admitted that voluntary

collectivism offers in itself nothing in the nature of a complete solution of the problem of the status of the workers.

Co-operation in Europe.

DENMARK.

Writing about the co-operative advance in Denmark in 1913, the *Co-operative News* points out that the visible tokens of the steadily advancing face of the movement in Denmark are the 70 million kroner sales (=about £3,000,000) of the distributive Co-operative Societies and the increase in their number. The Danish Wholesale has also its successes to record, one of them being the establishment of an agreement with the Danish Agricultural Society to supply agriculturists with seed, the society undertaking the production and the Wholesale the distribution. In other directions the establishment of new enterprises in the co-operative sphere—the co-operative bank, the co-operative cement works (which have leapt into fame at a bound), and the recently founded coal business in Aarhus which has caused a local reduction in prices—all these, combined with the increased sales afford substantial evidence of the increasing growth.

NORWAY.

In Norway in 1913, the number of societies belonging to the Co-operative Union has increased from 110 to 137, and the collective sales from about £108,572 to about £135,392 the increase amounting to 24·7 per cent. more than the sales of 1912. In the Savings Bank department the business of the Norwegian Co-operative Union shows a steady development, the deposits for the last three years having been as follows:—1911 about £1,944; 1912, about £10,550; 1913 about £16,111. Amongst co-operative developments during the past year the establishment of a new ironware department may also be mentioned. With the beginning of the new year, "*kooperitoren*," the organ of the Union,

has changed its form to a sixteen-page periodical, the change having been necessitated by printing press developments.

GREAT BRITAIN AND IRELAND.

At the recent annual meeting of the Co-operative Congress held in Dublin, the President gave some statistics showing the progress of the movement. He said the total volume of their trade for the year 1913, amounted to £130,011,066, which was an increase of £7,125,655 upon 1912. Their share capital for last year was £41,119,373 and their loan capital, two-thirds of which was held by members was £13,800,000. In the former there was an increase last year over 1912 of £2,705,410, and on the loan capital the increase was £1,120,167. The trading results had been magnificent. The profits for the year had amounted to £14,260,414, an increase of £971,108 on the previous year. Their membership had increased to 3,011,390, which was an advance of 134,498 over 1912. The reserve now stood at £5,819,123. To carry on its business the movement employed 145,774 persons, and the wages bill for 1913 was £8,491,448.

Co-operative Banks.

A Bombay Government press note states:— "The Provincial Co-operative Conference last year adopted a resolution asking the Government to authorise District Co-operative Banks and Unions to raise the limit of shares sold to one individual from one thousand to three thousand rupees, as Co-operative Unions and Banks were handicapped in the work of collecting capital at the one thousand rupees limit. The Government agree with the principle contained in the resolution, but do not consider it necessary or advisable to issue a general authorisation. Instead, they prefer to invite applications for authorisation from societies which desire that the Rs. 1,000 limit should be raised. Before permission is given the Government will require to be satisfied that the society's by-laws are so modified as to prevent

undue power falling into the hands of a large share-holder. This can be secured by a scale allowing proportionately less voting power to a large than to a small value of Rs. 3,000 to one individual. Section 21 of the Act, which protects shares in Co-operative Societies from attachment, will be declared inapplicable to the particular society authorised, as its members are likely to be well-to-do men, and capable of protecting their own interests."

Co-operation for the Army.

The *Pioneer* learns that the co-operative credit system is spreading among regiments of the Indian Army, and especially among the cavalry. The men find in many an instance that they save two or three rupees monthly by the operations of this system and that they can avoid running into debt which may cripple them for years. The time, then, would seem to have arrived for full official recognition of the movement at Army Headquarters.

Grain Banks.

The Government of Madras note with interest the existence of three grain banks, a class of institution which would prove of great use and it is possible that a combination of the ordinary credit society with a grain bank would be well adapted to the needs of this Presidency.

Agricultural Credit in Ireland.

On the 15th January 1912, a Departmental Committee was appointed by the Department of Agriculture and Technical Instruction for Ireland to inquire into the existing system of credit available for the rural classes in Ireland, to suggest what improvements, if any, not involving financial assistance from the Exchequer, should be made in the system and to consider generally the form of agricultural credit most suitable to the requirements of the occupiers of land affected by the Land Acts in the western districts and throughout the country generally.

The Committee, in its report, concludes

strongly in favour of the institution of Co-operative Credit Societies, holding definitely that "the credit needs of agricultural labourers are not met by the Joint Stock Banks." The Joint Stock Banks, the Report observes, have undoubtedly done much to adapt their methods as far as possible to the credit requirements of small farmers, but the joint stock banking system has been evolved mainly to meet the need of the commercial and business world, not of agriculture. Various characteristics of agricultural credit—such as the length of the term of loans, the reasonable nature of the returns, the risks peculiar to the agricultural industry, the uncertainty of the security offered by land, the lack of farming accounts and the frequent absence of touch between the Banks and the small farmers—render it difficult for the Banks to deal on commercial lines with small agriculturists. The Banks do not desire to undertake the dealing in advances of very small amounts, which are troublesome and unprofitable business nor can they take into account, as a rule, the object for which the loan is required. Thus their loans have not the educative influence which is exerted upon the borrower by the supervision exercised by a well managed Credit Society. The operations of Co-operative Credit Societies, concludes the Report, will in the end assist rather than compete with those of the Joint Stock Banks, for the two institutions, broadly speaking, do not deal with the same class of credit.

Co-operative Progress in India.

The Co-operative Credit Societies Act (Act X of 1904) was passed on the 25th March 1904 to "encourage thrift, self-help, and co-operation among agriculturists, artisans, and persons of limited means." In March 1912, this act was repealed by the Co-operative Societies Act (Act II of 1912). There are two classes of societies distinguished as non-agricultural and agricultural: a *non-agricultural society* is defined as a society in which not less than four-fifths of

the members shall be non-agriculturists, and an *agricultural society* as a society in which not less than four-fifths of the members shall be agriculturists. Each society consists of ten or more members above the age of eighteen years residing in the same town or village or in the same group of villages, or belonging to the same tribe, class, caste or occupation.

The following table, prepared by the Department of Statistics, India, will give our readers an idea of the position of registered societies in 1912-13 and in the four preceding years in all the Provinces in British India except the North-West Frontier Province and Baluchistan. In the former the movement has made very little progress while in the latter the act has not yet been applied.

	1908-09	1909-10	1910-11	1911-12	1912-13
Number of Societies—					
Central	15	31	59	120	224
Agricultural	1,738	3,106	4,894	7,562	10,966
Non-agricultural	210	291	368	495	582
Total	1,963	3,428	5,321	8,177	11,792
Number of Members	180,338	224,397	305,058	403,818	543,388
Capital—	Rs.	Rs.	Rs.	Rs.	Rs.
Loans	40,80,436	64,87,315	1,12,81,153	1,98,87,310	3,24,08,064
Share capital	13,71,123	21,49,644	31,59,595	50,58,037	79,05,935
Deposits by members	16,05,237	24,93,015	41,83,979	65,07,698	91,26,809
State aid	6,85,493	7,20,493	7,28,455	9,34,668	9,43,308
Reserve	1,90,929	3,30,620	5,51,320	9,92,454	15,55,622
Total	79,33,218	1,21,81,027	1,99,04,502	3,33,80,162	5,19,39,738
Disbursements—					
Deposits repaid to members	7,39,227	10,29,115	20,45,671	40,39,974	92,40,608
Loans repaid	23,98,625	28,48,465	41,08,588	96,86,223	1,61,10,337
" issued	77,08,347	1,03,89,114	1,69,72,824	2,58,92,879	4,14,87,282
Interest paid on loans and deposits	2,27,584	4,59,889	7,82,508	13,10,193	21,92,458
Dividends and bonus paid	45,309	63,325	1,14,182	1,41,701	2,02,113
Estimates and contingencies	75,139	1,10,440	1,58,135	2,60,652	4,25,379
Other items	10,26,807	9,05,553	14,15,086	13,73,783	26,83,824
Total	1,22,21,038	1,58,05,901	2,55,96,994	4,26,55,405	7,23,41,496

The Industrial World.

Industrial India.

At a meeting of the Indian section of the Royal Society of Arts held in London recently, Mr. E. A. Gait, C.S.I., C.I.E., read an interesting paper on "The Indian Census of 1911." Referring to the Industrial Census, Mr. Gait observed that there were in the whole of India 7,113 factories as defined at the census—i.e., places in which at least twenty hands are employed—which gave employment to 2·1 million persons, or seven in every thousand of the population. Of these persons 704,000 were employed in the tea-gardens, 148,000 in collieries, 29,000 in gold-mines, 308,000 in cotton-mills, and 222,000 in other textile industries. The number employed in coal-mines, according to this special return, was only three-fifths of that indicated by the general occupation table. The latter table gives the number of persons who derive their livelihood from each occupation, whereas the former shows only the number actually at work on the date of the census; wages being high, the colliery employees work very irregularly. Mechanical power is used in about two-thirds of the total number of factories. Usually it is obtained from steam, but in some of the smaller factories internal-combustion engines are coming into vogue. The great majority of the larger industrial concerns are financed by European capital, and these are generally under European management. But in Bombay, where Indians own most of the cotton spinning and weaving mills, most of the managers are Indians. According to a special return prepared departmentally, about 1·3 million persons were actually employed on the date of the census on the Indian railways and irrigation works and in the post and telegraph depart-

ments. Of these the railways claimed nearly two-thirds, and the irrigation works three-quarters of the remainder.

Setting Diamonds.

Setting diamonds is one of the troublesome jobs that fall to the lot of a machinist or grinder at more or less frequent intervals. The method in general use consists of drilling a hole for the diamond, and after placing it within the hole, closing the metal in about the stone as far as possible, and then pouring molten spelter to fix the diamond in place. The chief objection to this method is that the spelter will not flow evenly around and beneath the stone; consequently the stone is not supported at all points, and quickly works loose.

The following method of setting diamonds described in the *Machinery*, has been found to be superior to the method just described:—First drill the hole for the diamond to the usual depth, a little deeper than the greatest dimension of the stone. The drilling should be done without lubricant, as oil of any kind tends to prevent the spelter from flowing smoothly. This being done, the hole should be closed in slightly, just enough to make it out of round. The spelter is now poured into the hole, filling it completely, and the diamond, held in a pair of tweezers, is pushed into the liquid spelter in the hole until it strikes the bottom. In doing this, an amount of spelter equal to the displacement of the diamond is pushed out of the hole, and when this drop of spelter makes its appearance it is certain that there are no vacant spots under the stone. After the spelter has cooled, the end of the rod in which the diamond is located can be shaped up in the customary manner. The fact that the hole is slightly out of round prevents the core of spelter from working out of the end of the rod.

USES.

The various products of this industry are used for the following purposes. Decoration of idols, ornamentation of caps, turbans, jackets, saddles, belts. Embroidery work, perhaps, is the greatest use for these wires and tinsel. Embroidery in silk fabrics is much prevalent in India and Benares is noted for the same. In marriages, embroidered ribbons and crowns are worn on the head. We find that even the hooka-pipes are adorned with gold and silver wires.

The writer also mentions the manufacture of gold and silver leaves.

The writer notes with sorrow the decay of this industry in Bengal. Western competition has come to play in a curious way even in the matter of this insignificant and humble industry. Says the writer :—

There were about 9 big shops at Machua-bazar, each shop having 20 to 25 expert workmen who earned from Rs. 2 to Rs. 5 each per diem. A German manufacturer however came to Calcutta about the year 1877 and took away samples of each of these products. From the very next year after that German products began to pour into Calcutta.

We may however note this fact that the Indian wires retain their color and lustre better than the western ones as was testified to at the Dublin Exhibition.

The Sizes of Businesses.

The *Journal of the Royal Statistical Society* for April contains an interesting thesis by Messrs. S. J. Chapman and T. S. Ashton on the subject of "the sizes of Businesses mainly in the textile industries." It is a realistic study dealing with the sizes of businesses, the laws of their growth and variation. We may first state their definition of business. A business is "broadly speaking, any productive group or groups functioning under one direction in a district which may be more or less limited." The paper then deals with 'the sizes and types of

businesses found in various branches of industry. Their conclusions may be summarised as follow.

THE COTTON INDUSTRY.

COTTON SPINNING.

Lancashire.—1. There was a dominant type of business with 10 to 20 thousand spindles which is now tending to pass into one between 20 to 30 thousand.

2. There was a type of business (mainly joint-stock) of a 70-80 thousand spindle size. This has grown in importance and has passed into a 90-100 thousand spindle size.

3. About the types there is a not irregular, though frequently topsided, dispersion of business magnitudes. For parts outside Lancashire in the British Isles, the small type is outstanding. This is explained by the increased facilities, commercial and geographical, possessed by Lancashire.

United States.—Small types prevail. It appears that 2,500-5,000 spindle is the dominant type.

Europe.—7,500-10,000 would seem to be the type in Europe.

WEAVING.

Lancashire.—In the case of private firms, there is a maximum of 100 to 200 looms; the chief maximum for companies is 300-400 looms. In the case of joint stock companies the outstanding maximum is 500-600. Outside Lancashire the maxima are 100-200 and 400-500 looms.

United States.—The striking thing is the small type of 1-25 looms. The firms are most of them not really small, since many of them have other machines, such as braidiers.

Europe.—The small firms with 50-100, 100-150, and 150-200 looms largely preponderate in Europe taken as a whole.

COMBINED SPINNING AND MANUFACTURING.

This combination is not at present most common in England. In *Lancashire*, less than 16 per cent. of the firms are combined. In the *U.S.A.*, the combined firm is more common.

In *Europe* a high degree of differentiation exists. The ratio between looms and spindles in a combined firm seems also to be based upon a determinate tendency. The typical ratio of looms to spindles would appear to be between $\frac{1,750}{100,000}$ and $\frac{1,500}{100,000}$. By 1911, the upper limit seems to come to $\frac{2,000}{100,000}$.

THE WOOLLEN AND WOSTED INDUSTRY.

SPINNING.

England.—There seem to be three outstanding minima, 4,000, 6,000 and 10,000.

U.S.A.—The maximum is 4,000, 5,000 spindles.

WEAVING.

Yorkshire.—The maximum is 25 to 50 looms. For *U. S. A.* it appears to be 25 looms.

COMBINED WEAVING AND SPINNING.

The maximum number of firms has 1 to 50 looms and 1,000 to 2,000 spindles. The ratio therefore tends to $\frac{15}{600}$ or $\frac{15}{500}$.

The authors after stating the facts proceed to give their conclusions.

The first generalisation regards the existence of typical firms. Generally speaking, there would seem to exist in industries of adequate size, under given sets of conditions, typical or representative magnitudes to which businesses tend to grow, typical proportions between their parts and typical constitutions. Another point is that the type varies with environment. The character of the people engaged in the industry, its geographical surroundings, and its general economic setting, all seem to contribute to the moulding of the type. Another cause may be added to explain the diversities in type, viz., the ages of industries.

The second observation concerns the dispersion of business magnitudes about these types. This dispersion is explained in part by objective forces, in part by the growth of businesses, in part by the dispersion of capacity among

industrial leaders, in part by the resistance of circumstances to people's efforts, and in part by variety in business and in methods of attaining any given end.

A New Process in Jaggery Manufacture.

Mr. A. Chatterton, C.I.E., Director of Industries, Mysore, writes thus in the columns of a contemporary :—

It is generally held that the weakness of the Indian sugar position is due to the primitive methods of cultivation, and to the wasteful and inefficient processes employed for extracting the sugar from the ripe canes. It is not, therefore, surprising that, of late years, much attention has been directed in the sugar-growing Provinces of India, to the improvement of this crop, though, so far, nothing material has been done to improve matters. The conditions under which sugarcane is grown in various parts of India differ very greatly and in this present article, I propose to deal only with one phase of the problem, and that only in so far as it relates to the South of India. The cultivation of sugarcane is a matter for the agricultural authorities to deal with. I have only been concerned with the attraction of the juice, and the manufacture of jaggery.

IMPROVED METHODS.

It is said that only rich ryots can grow sugarcane, because the crop is on the ground for a year, and it is liable to suffer from a variety of incidents which tend to reduce its value. But the main reason for the cultivation being carried on in small patches, is the difficulty which the ryots experience in getting sufficient cattle labour to crush the cane at the time of the harvest. The remedy for this would seem to be a very simple one, namely, the introduction of power-driven mills. But the powder-driven mill requires a considerable capital outlay, and can only be advantageously employed when the area under cultivation is very much larger than the ordinary ryot has hitherto been able to undertake. For a long time, I have held the view

Industries of Bombay.

In the course of a lengthy Resolution reviewing the *Land Revenue Administration Report of the Bombay Presidency*, including Sind, for 1912-13 the Government of Bombay say :— The industrial development of the Presidency, which had not been seriously affected even by the adverse conditions of the year 1911-12, maintained a steady and satisfactory progress during the year under review. Trade generally was prosperous. Prices ruled high. Wages showed no sign of falling. As in Agriculture, the most serious problem in the industrial world is the labour question. The supply is obviously inadequate and the standard of efficiency shows little or no improvement. The solution of the difficulty must ultimately be found in the substitution of mechanical labour-saving devices, and the adoption of improved methods of transport, the introduction of which is already becoming more noticeable every year. Throughout the Presidency, the cotton spinning and weaving industry had a prosperous year. The mills were working full time, and at a profit. Owing to the failure of the cotton crop in the eastern Deccan, the ginning and pressing factories in the Central division had a slack season. Elsewhere conditions were more favourable to the industry. There was a marked growth in the timber and grass trades, while among the lesser industries there is a steady increase in the number of rice and flour mills, and in the cream and milk trade along the Bombay, Baroda, and Central India and Great Indian Peninsula Railways for the supply of the Bombay market. Considerable progress has been made towards the completion of the numerous light railways which are under construction in Gujarat, and from the projects still under consideration it is clear that the enterprise of the firms concerned has by no means reached its limits. Similarly, in the Central division, attention is being directed to the possibilities for a wide

extension of such railways, and the surveys of several projects are under consideration. The sugar-cane industry on the Nira Canal, aided by the Central Co-operative Bank, which during the year under review made advances to the amount of ten lakhs, is making satisfactory progress; and with the opening of the Godavary Canals in the course of the next two or three years, a still further development of the industry may confidently be anticipated.

Revolution in Persian Carpets.

An important invention which promises to revolutionize the Persian carpet weaving industry in this country and elsewhere, has just been announced from America. A considerably large trade in the export of these carpets exists in the various centres of India, such as Mirzapur, Amritsar, Kashmir, Jaipur, Agra, Gwalior, and Warangal (Hyderabad State), and gives employment to thousands of boys and girls who knot the piles with their nimble fingers, giving the carpets the durability for which Indian carpets of Persian designs have, for a long number of years, enjoyed world wide reputation. The beautiful designs in variegated shades are produced without the help of any jacquard contrivance, simply to the dictation of a head-weaver who calls out to the boy and girl weavers the requisite number of stitches of each colour, from his ciphered scrip. So far all attempts to weave a Persian carpet on a power-loom to supersede the tedious process of hand-knotting as practised in India, Persia and Turkey, have failed, because the ordinary power-loom for weaving carpets can only weave in a forward direction, while for making a Persian knot a partial return weaving motion is required.

An American inventor, Mr. James Dalkranian, of New York, has devised a loom for weaving an oriental pile fabric having true Persian knots. The loom is wholly automatic, and at each operation a whole row of pile knots is made corresponding in colour to a predeter-

mined design. What a very industrious oriental weaver can weave in about a year this loom accomplishes in a single day and consequently the products made by this loom can be sold considerably cheaper than the hand-made product, considering the quality of the material as being alike.

The power-loom invented weaves a rug or a carpet 10½ feet wide and of any length according to the design. The loom is built by the Crompton and Knowle's Loom Works, New York, whose faith in the invention was largely instrumental in achieving success.

We consider the invention to be of special importance to Indian carpet manufacturers, and hope they will take note of this so as to be able to compete successfully in the market in the near future, by availing themselves at an early date of an invention which changes once for all the prospects of Indian carpet industry. It would greatly help the cause of carpet industry if one or two looms of this type are introduced as a matter of experiment by the Local Governments in each of the carpet manufacturing centres of India.—*Fayaji Pratap.*

Wire and Tinsel Industry in Bengal.

The July issue of the *Modern Review* contains a very interesting article on the wire and tinsel industry in Bengal. It seems that the industry is not older than the Mahomedan rule. For in Bengal the industry is mostly known only to the Mahomedan and is formed only in the old Mahomedan capitals.

The most characteristic feature in this, as in every other Indian art, is the extreme simplicity of the instruments used. There are not more than 2 or 3 instruments and they are of a very crude nature.

WIRE-MAKING.

The wires used in this industry are either white or yellow. In both cases they are made of silver, the yellow one having a coating of gold. Copper or Zinc coated with silver is often

used to produce what is called 'false' wire. The process of making yellow or white wires is thus described—

40 or 60 tolas (1 tola = 180 grains) of silver are first melted and moulded into a bar of the shape of a candle tapering at one end. The bar is next wrapped up with very thin gold leaves and tied over firmly with silk threads. It is then gently heated on fire till the gold leaves are fixed on the silver bar and the process of gilding is complete. Gold weighing 10 or 12 as. (1 anna = 11.25 grains) is used for gilding a bar of the weight referred to above. Of course, the quantity of gold used varies with the colour and quality of the tinsel to be produced. The candle-shaped bar thus produced is called 'passa' or 'kandla' which is next forced through a series of graduated holes on a stout steel plate, with the aid of a simple apparatus called 'ghawa.' When the 'kandla' is passed through the last hole, it is reduced to the thinness of a wire of a very narrow gauge. The wire thus obtained is coiled round a reel technically known as 'pairee' which is fixed by a spike at one end of a small table about a foot high. At the other end of the table is similarly fixed a larger reel called the 'Paira.' At the middle of the table is fixed firmly by means of wedges driven into notches in the table, a steel plate called *Janfar* or *Jantri* having graduated holes. One end of the wire coiled on the *Pairee* is filed down and laid through a hole in the *Janfar* and then fastened on the upper edge of the *Paira*. The *Paira* is then turned round by an iron rod and a wire of the desired thinness is coiled on it by being led through a certain hole in the *Janfar*. By repeating the process a wire of any thinness may be obtained.

The wire once prepared is put to further operations to produce other things, viz., *Salma*, *Kanki*, *Bullion*, *Kallabatoon* the last of which is made by twisting a flattened gold or silver wire round silk thread.

that the remedy was the establishment of power-driven sugarcane crushing plants to deal with the cultivation of a number of ryots; and, two years ago, the Madras Government made a grant of Rs. 10,000 for the establishment of a cane-crushing plant in the village of Singanallur, in the Coimbatore District, where there happens to be an unusually large amount of sugarcane grown. On representing matters to the Mysore Government, a grant of Rs. 25,000 was made for the establishment of three sugarcane crushing plants in different parts of the State. These were erected and set to work last year, and during that season 14,852 maunds of jaggery were made, and a great deal of experience accumulated regarding what was necessary to make them a success. I have given a fairly detailed account of these experiments in a paper on the "Sugar Industry in Mysore," which has been published as Bulletin No. 12 of the Industries and Commerce Committee of the Mysore Economic Conference.

At each installation, a 12 H. P. Hornsby oil engine was installed to drive a three roller mill, with rollers 12 ins. in diameter, and 18 ins. long. The mills were found to work very successfully, and the quantity of juice extracted from the cane was generally admitted to be at least 10 per cent. greater than that which the ryots themselves obtained with their bullock driven mills. It became evident that radical changes would be necessary in the methods of boiling down the juice to make these plants successful, and two distinct methods of dealing with the question were taken up. One was to improve the furnaces in which the megasse was burnt, and to place the open evaporating pans in series, so as to obtain a more economical utilisation of the heat from the combustion of the megasse. The other was to use the megasse for generating steam, and evaporating the juice in steamheated pans. The latter method involved the purchase of a large amount of somewhat costly

plant, and was obviously only practicable when the scale of operations was somewhat larger than seemed to be immediately possible. It was, therefore, resolved to design new furnaces, and to place the evaporating pans in series. This was done during the cold weather, and as no sugarcane juice was then available the evaporative effect was tested by filling the pans with water.

SATISFACTORY EXPERIMENTS.

The present cane-crushing season has so far been extremely unfavourable to the experiments; but the results obtained with these furnaces have been very satisfactory, and have demonstrated that the fuel problem has been completely solved. Up to date, we have made something over 5,000 maunds of jaggery, and the whole of the evaporative work has been done with megasse from the mills. The fuel burns extremely easily, and yields a very hot flame which is uniformly distributed over the bottom of the evaporating pans, with the result that ebullition takes place very regularly and rapidly. Each unit is capable of turning out about 150 lbs. of jaggery at intervals of about an hour and a half. More than half the work of evaporation is done in the two upper pans.

The method of working these installations is that the ryots bring their cane to the mill and are charged As. 4-6 a maund for the jaggery manufactured. Last year, although our receipts amounted to Rs. 4,252 there was a heavy loss as the charges for fuel alone came to nearly the whole of this sum. This year, there has been no expenditure on fuel, and as the labour charges also have been greatly reduced, the installations are working at a profit. The average output of the mills has only been about 50 maunds a day, whereas they can produce as much as 150 maunds in the day of 24 hours. Last year, there were many country mills working round our installations, but this year they have all ceased to work, and the ryots are

readily bringing such cane, as they can get to the mills paying, for the jaggery produced at the rate of As. 4-6 per maund.

Already I have mentioned that each evaporative unit can turn out about 100 lbs. of jaggery per hour, and the smallest power installation which can supply this quantity of juice is an 8 ins. by 8 ins. roller mill driven by a 5 H. P. oil engine. The estimated cost of such an installation is Rs. 2,500, and it may be installed conveniently to deal with an area of from 20 to 50 acres of cane. Installations on the same scale as those which have been established at Singanallur and Hospet, in the Madras Presidency, and at Kunigal, Haravu and Chicksagere in the Mysore State, will cost about Rs. 11,000, of which half is for machinery, and half for the necessary buildings, which include a Superintendent's office, a jaggery store and sheds to contain the engine and mill, and a set of four evaporative units.

AVOIDANCE OF WASTE.

I think we may fairly claim to have devised a system of manufacturing jaggery which is applicable to the conditions under which sugarcane is grown in the South of India, and it can be worked either by the ryots on a co-operative basis, or by private capitalists who can set up the plants and do the work for the ryots at fixed rates per maund of jaggery turned out, or who can buy up the sugarcane in the neighbourhood and make such profit as they can by converting it into jaggery. Practically, we have made a distinct industry of the manufacture of jaggery, and have relieved the ryot of the very onerous burden which it entailed upon him. In Mysore, where I have made very detailed investigations, I found sugarcane standing in the fields for more than two years and frequently for 18 months. Numerous instances have been reported to me where the ryots have had to burn their cane to clear off the fields, because, finally, it was not worth crushing. Under this new system of working, such waste should, in

the future, become impossible but experience clearly indicates that the cost of carting the cane to the mill is not a serious item, and that it requires only a little organisation to enable each ryot, as he cuts his cane, to get a sufficient number of carts. We have found it convenient to allow the ryots to remove half their jaggery at once, and the remainder when they have obtained money to pay for the milling charges by the sale of the first half. The experimental work which we have thus successfully started, needs to be gradually developed if India is to recover its position in the sugar-growing world. Next year, we may hope to have at work a steam-heating plant for which funds have been recently provided. But the scale of operations is still too small to enable us to obtain all that ought to be got out of the sugarcane, though next year we hope to be able to establish some five roller mills which should increase the percentage of extraction by at least 5 per cent.

A Man's Skill.

As a man remains in the employ of a firm, states the "*American Mechanist*," his particular skill on his job, increases. This skill does not represent an item of cost to the firm. But it does represent an asset; his skill and knowledge are direct money value to the shop where he is employed, and his departure diminishes the capital of the firm by that amount. This value can never be expressed directly in pounds, shillings and pence. If it could be, many a manager would think twice before laying off men.

A Coal Cutting Machine.

One Mr. H. A. Kuhu, a mining and mechanical Engineer of Pittsburg, is reported to have designed and invented a Coal Cutting Machine.

It is claimed, that this will attack the coal in any position and take out more than 90 per cent. of the coal from the seams, whereas the best modern methods do not extract more than 75 per cent. Ten men working with the machine will be able to produce 1,000 tons of

coal in a day. The machine will automatically cut the coal from the seams, place the same on the conveyers or load them in pit cars.

Military Dairy Farms in India.

It is not perhaps generally known that the military dairy farms in India are not dairies managed by the regimental authorities, but are dairies controlled by the military farms department. The cream separators used are mostly of the "Alfa Laval" type, fitted for driving with belt power, with fast and loose pulleys. They vary in capacity from 90 (hand power) to 440 (belt driven) gallons per hour and in price from £28 to £86. They are supplied through the Director General of Stores, India Office, on indents preferred by the military farms department.

Hides for Automobiles.

As an indication of the tremendous size of the automobile industry it is interesting to note that in one year approximately 1,000,000 hides are used for upholstery purposes. The ordinary roadster body requires little more than two complete hides, and the touring body about three hides. The average per car therefore is $2\frac{1}{2}$ hides. The average area per hide is about 50 square feet, so that 50,000,000 square feet of leather is used. From the time the hide is stripped from the animal, it requires from 10 weeks to 6 months completely to prepare it for use, the time varying with the quality of the leather. Each hide is split into four grades which are known as hand buffs, machine buffs, deep buffs and splits. The hand buffs are the best and are the part nearest the hair. This is the quality that is most used in the best motor-car factories.

Natural and Synthetic Indigo.

It is reported that a demonstration was given at the Jodrell Laboratory, Kew Gardens, London, by Mr. Alexander W. Playne, of Bedford, of the dyeing properties of natural and

synthetic indigo. It is claimed that the synthetic product contains 100 per cent. of indigotin, as compared with 60 per cent. in natural Indian indigo. In his experiments, Mr. Playne used, on a laboratory scale, the same quantities of natural and synthetic indigo, and as the result of his observations, he states that he obtained a better strength of dyeing substance out of the natural product than out of the synthetic, the tints of the yarns which were dyed with natural indigo, appearing to be much stronger and clearer. He suggests that in the supposed 40 per cent. of waste in the natural variety, there may be other colouring matter which strengthens the indigotin.

A Model Pottery Factory at Gwalior.

Mr. D. C. Muzumdar, the pottery specialist, appointed by the Gwalior Board of Commerce and Industry in 1910, having favourably reported on the possibility of profitably working a pottery factory, a scheme to establish a model pottery factory on a sound commercial footing was sanctioned last year. A furnace and all necessary plants imported from Europe are in the process of erection at present. Besides porcelain articles, tiles for building purposes for which there is a considerable demand will also be manufactured and it is expected they will yield considerable profit then.

Industrial Suburbs to Towns.

At the recent Mysore Economic Conference Mr. Chatterton said that as it was probable that in the near future factories would be started in such industrial centres as Bangalore, Mysore, and Davengere for various purposes, he hoped the Conference would strongly recommend the preparation of a scheme for an industrial suburb to each of these towns whereby the construction of such factories and other accessory buildings may be facilitated, and provision made for railway sidings. The subject being put to the vote was carried *non*

The Commercial World.

Shares in New Companies.

A point interesting to Company promoters as well as to people who are keen on taking shares in new companies was decided in the recent case of *In re* Pacaya Rubber and Produce Company, Limited, Burns application reported at page 542 Chancery, 1914. That case laid down that where a company issued a prospectus offering shares for public subscription and it contained extracts from the report of an expert headed as such as to the state of the Company's undertaking which was found to be wrong and misleading in material particulars, there being no question of fraud on the part of the Company or the expert, such statements are the basis of the contract between the Company and the applicants for shares. The applicants will be entitled to rescind the contract as on a misrepresentation on a material question of fact unless the company makes the applicants distinctly understand that the statements of the expert are not vouched to be correct by the Company.

The Trade of Bombay.

The official report of the trade of Bombay shows that there was an advance of Rs. 5½ crores in the imports of merchandise last year as well as remarkable increase amounting to Rs. 10·3 crores in the exports of Indian produce. Simultaneously, the coasting trade of Bombay port expanded by Rs. 29½ lakhs to Rs. 33·69 crores as a result of the large importations of Indian produce. The quantitative increase of trade was about 9 per cent. in the case of imports and 19 per cent. in the case of exports. The importation of merchandise into Bombay expanded last year by 10 per cent. that into Calcutta rose 16 per cent. and that into

Karachi 8 per cent. and the increase at Calcutta is chiefly attributable to the larger importations of the articles which have contributed to the advance in the import trade of Bombay. In the matter of exports of Indian produce, Bombay held its own last year by a large margin, the figures showing an advance of 17 per cent., as against only 2 per cent. for Calcutta and a decline of 18 per cent. for Karachi.

Using Form Paragraphs.

The chief correspondent in a large office employing a force of correspondents discovered that a large number of the letters which were being handled demanded answers embodying the same phrases. Instructions were given, complaints handled, questions answered over and over again, and the time of the correspondents and of the typists consumed by this routine work. However, the nature of the correspondence was such that stereotyped form letters would not do. Each letter must be a personal reply.

EFFORT SAVED AND EFFICIENCY PROMOTED.

The problem was solved, time and effort saved and efficiency promoted by the compiling of a comprehensive set of form paragraphs. Dictating machines were used, and after studying and mastering the form paragraphs the correspondents simply indicated on the record the number or letter of the proper paragraph, in connection with the portions of the letter demanding dictation. The typists also mastered the form paragraphs and were soon able to transcribe the letters with greater speed and accuracy.

The plan also insured the uniform handling of important items, without omissions or needless words.

Form paragraphs can be used to good advantage in at least some of the departments of practically all business institutions. The results justify careful study and testing. Try the plan out on your work.—*Modern Methods.*

Company Audit in India.

An editorial in the July issue of the *Accountant's Magazine* points out that with the growth of Joint Stock Companies in India, there is a promising field for the Chartered Accountant. It says that at present there are 34 Scottish Chartered Accountants in the country, about 60 English Chartered Accountants, and some 12 Incorporated Accountants. It is not possible to say how many of these gentlemen are actually practising the profession, but it is known that at all events a considerable proportion of the Scottish Accountants are doing so. There is no local Society of Accountants in India. In the Bombay Presidency both Hindus and Parsees are experts in accounts, and Parsees undertake a certain amount of audit work. Some of them have obtained certificates in Book-keeping and Accounts from London Colleges, and one or two are members of the Society of Incorporated Accountants and Auditors. The more important concerns, especially where British capital is employed, will doubtless, however, be audited by British trained Accountants. Where accounts are kept in the vernacular, native help may be required.

"It is probable that native accountants may consider themselves aggrieved by the high standard which the Government have set up, but if statutory audit provisions are to be really beneficial, it is obvious that only skilled and trustworthy persons should be employed as auditors. No doubt arrangements will be made by which native accountants answering that description may become eligible, but it must not be overlooked that the qualities which make an excellent book-keeper are by no means those which constitute an expert and reliable auditor."

Madras Groundnut Trade.

The groundnut export trade of the Madras Presidency in 1913-14, which represented 76 per cent. of the total exports of seeds, increased by 9 per cent. in quantity and 18 per cent. in value as compared with the previous year. According to the Annual Report of the Chief Collector of Customs the increased demand was due chiefly to the discovery of a new process for deodorising the oil expressed from the nut, which was considered for a long time suitable only for soap making. By this new process of refinement, the oil is freed from its original taste and smell and has become a very important article of food in Southern Europe where vegetable oils take the place of butter. It also forms an effective substitute for olive oil. The area under groundnut cultivation increased by 27 per cent. In many districts, such as Bellary, Kurnool and Anantapur, the cultivation of this crop is rapidly extending. Exports to France, which represented 90 per cent of the total exports, increased by 10 per cent. Shipments to Germany were four times greater than in 1912-13 and those to Italy more than twice as large. On the other hand, Belgium and Austria took 15 and 8 per cent. less than in the previous year. Exports from the chief port to foreign ports rose from 34,692 tons to 72,653 tons, or by 109 per cent, and the value increased from Rs 53.12 lakhs to Rs. 128 lakhs, or by 141 per cent. This heavy increase was, however, largely counterbalanced by smaller shipments to Calcutta, exports coastwise having fallen from 32,364 tons valued at Rs. 52.10 lakhs to 7,482 tons valued at Rs. 11.74 lakhs, a decrease of 24,882 tons or 77 per cent. Taking the exports, foreign and coastwise, together, the total for the chief part was 80,135 tons against 67,056 tons in the previous year, an increase of 19 per cent. The total value rose from Rs. 105.22 lakhs to Rs. 139.74 lakhs, an increase of 33 per cent. Shipments to foreign ports were as follows :—

	1912-13.		1913-14.		Percent- age of increase or decrease in quantity.
	Tons.	Rs. Lakhs.	Tons.	Rs. Lakhs.	
From Madras ...	34,692	53.12	72,653	128.00	+ 109
" Cuddalore.	77,199	130.47	48,195	85.08	— 37
" Negapatam.	33,022	53.25	32,388	57.39	— 2
" Porto Novo.	28,302	45.62	25,030	44.48	— 11
" Calinga- patam, Bimlipatam and Vizaga- patam ...	3,908	5.59	17,531	27.43	+ 348

A Stamp-Checking Machine.

Any really up-to-date office makes a point of avoiding losses by an accurate checking system, and of reducing expenses by the use of cash registers and writing calculating and manifold machines. The only service left outside of any adequate control, in spite of the not unimportant amounts often handled there, was the postal department, which so far has depended on the personal confidence placed in those entrusted with it.

This gap in modern business control has now been filled by the invention of the postage checking and prepaying machine brought out by a German firm which devised the stamp vendors now so widely used in every Post Office in Germany.

The "Poko," as the new machine is called, is fitted with rolled up tapes of stamps of all values simply fitted on bobbins provided for them. A safety lock prevents any tampering with the stamps, even the person entrusted with the replenishing of the machine being checked by automatic counters, recording the consumption of each sort of stamp.

The following operations are performed in

succession by turning the handle: Unwinding from the roll the stamp to be affixed, moistening it automatically, punching in the stamp the firm's mark, severing it from the tape, affixing it on the letter (or parcel), counting and adding it to the stamps previously used. At the same time, the total number of prepaid letters (or parcels) is counted by a main counter, and each package thus treated is discharged, ready for posting, into a basket. The packages prepaid by means of the machine may be of any size, parcels 13 inches thick being handled with the same ease as ordinary post-cards, while another pattern even lends itself to the prepaying of packages twice as thick. The machine allows any number of stamps of the same or different sorts to be affixed on a package and is so designed as to put all the stamps automatically at the proper place, as prescribed by the German Postal Department.

The machine is enclosed by a rectangular varnished sheet iron casing and contains five bobbins destined for as many sorts of stamps. By turning a handle, the stamps to be affixed are unwound, punched, moistened, severed from the tape, and by means of a lever, pressed down on the letter. The stamp tapes are kept in position by plate springs.

Five rectangular boxes above these springs contain the counters for each sort of stamp, which at every rotation of the handle are set working by releasing a pawl (similar to the arrangement used with taxi-cabs). An adjusting lever on which the figures 3, 5, 10, 20 and 50 are engraved at proper distances, allows the stamp rolls to be shifted to and fro on their shaft. In order, e.g., to prepay letters with 5 pfennig stamps, the lever should be drawn out sideways, until the figure 5 appears just outside the casing. A spiral spring then keeps the lever and roll in position, thus allowing the stamp to be supplied, at first, to the moistening roll, then to the cutting knife, and finally, to the pressing-down lever. This supply is effected by an

ingenious feeding device, comprising a row of several small steel slides, the obtuse points of which are arranged to gear with the perforations of the stamp, thus moving the tape on the length of a stamp, at each half rotation of a peculiarly shaped driving wheel. During the subsequent half rotation the driving wheel allows a spring sufficient play to withdraw the slide carriage.

The working principle of the machine is mainly identical with that of the automatic stamps vendors, and consists of driving wheels mounted on a single shaft temporarily balancing the antagonistic forces of strong springs and thus actuating the counting, punching, feeding, moistening, cutting and affixing mechanisms. The several driving wheels are fitted with various arrangements (notches, worms, cams, etc.), destined to perform these manifold operations without the aid of any susceptible or easily destroyed parts, such as toothed wheels, delicate springs, etc.

An electric alarm inserted into the circuit of a local battery reminds the operator of the exhaustion of his stock of stamps.

The hand operated apparatus will on an average, deal with 3,000 and the electrically driven apparatus, with 5,000 packages per hour. The results obtained in actual practice have, however, frequently been even more satisfactory.

The machine is brought out by the *Konsortium zur Begründung einer Internationalen Automaten Gesellschaft*, of 18 Vosstrasse, Berlin W.

Paying Dividends Out of Capital.

A correspondent of the *Commerce* commenting on the report of the liquidators of the *Anritar Bank* discusses the question of the liability of Directors of a Company for paying dividends out of Capital. He writes:—

The liquidators appear to take the view that such liability, in cases where dividends have been paid out of capital, is largely a technical question, and is extremely hard to establish. We are told that the underlying principle of

"Limited Liability" is that, "by incorporating themselves under the Act, a group of persons may adventure a certain definite sum of money in a particular business and become liable for no more. In return for this limited liability and as a protection to any persons to whom the concern may become indebted, it is enjoined (section 13 *et seq.*) that the share-holders shall not, without the previous sanction of the Court, withdraw any portion of the money they have put into the concern, either in the guise of dividends or otherwise. They must do nothing, in fact, to deplete the capital. It must be preserved intact, save for losses. Yet the courts have held, in effect, that a company formed to purchase and work a mine, costing Rs. 10 lakhs, may work it out at the rate of Rs. 1 lakh a year over ten years and regard that 1 lakh annually as profit and distribute it as dividend, so that at the end of ten years there be nothing of the original capital remaining, and yet such a company will not be considered to have paid dividends out of capital (*Lee v. Neuchatel Asphalte Coy.*). Again, although ordinary share-holders and preference share holders, as bodies, may be said to be partners, as between themselves, with special rights as to sharing of profits and ultimate return of capital with nothing to warrant that profits are a different thing from the point of view of the one than from the point of view of the other, yet the courts have held that in ascertaining profits for the purpose of paying a dividend to preference share-holders past losses may be disregarded, and that, although there be a debit balance upon profit and loss account or, in other words, the capital be depleted by losses, yet, if the year in question show a profit, the preference share-holders may be paid a dividend thereout without any attempt to make good past losses and the resulting depletion in capital. (*Dent v. London Tramways Co.*). Again, *Verner v. General and Investment Trust*, as interpreted by the Rt. Hon. Sir

H. B. Buckley, one of the Lords Justices of the Court of Appeal and one of the most eminent authorities on Company law, lays down that, where a company has sunk £900,000 in investments and they have depreciated by £250,000, if the Company's object was not to traffic in those securities but to own them and make a profit by their ownership as distinguished from their sale, then the loss is a loss on capital account, leaving profit and loss account unaffected, and the credit of profit and loss account may be divided in dividends."

FIXED AND CIRCULATING CAPITAL.

So far as it is possible to sum up these and other similar or conflicting decisions "Circulating Capital," i.e., capital invested in goods, material, etc., purchased for the purpose of being sold again in the same or a different form, must be maintained, but "Fixed Capital," i.e., capital invested in land, buildings, machinery shares, leases, ships, etc., intended not for resale but for use in the business, need not be maintained. But how, by these standards, a mine can be said to be a fixed asset, seeing that what is purchased is so much mineral, underground, to be won and sold, is somewhat difficult to understand. Many subtle and specious arguments have, from time to time, been adduced in explanation and justification of these economically—and commercially—unsound principles with a view to showing when they may be adopted and when not, but, whether they throw light upon the subject or merely increase the confusion, they at any rate serve to show that no depreciation can be insisted upon in the case of so-called fixed assets until the Courts or the Legislature accept the economist's definition of profits and lay down, as a definite proposition, that profit for the purpose of dividend means the excess of assets, at cost or present worth, whichever be the lower, over capital and debts, and that any distribution without regard to depreciation is consequently a contravention of section 13 *et*

seq. (New Act, section 55 *et seq.*) and an unauthorised reduction of Capital. In the meantime the layman, at any rate must remain hopelessly confused. For further consideration of this unsatisfactory position, reference may be had to Palmer's Company Law where an entire chapter is devoted to its condemnation and to Buckley's Law of Companies where a strenuous attempt is made to reconcile these remarkable decisions with the common sense interpretation of section 13 *et seq.*

Grocery Trade Economics.

We read in the *Tea and Coffee Trade Journal* that a thorough-going, country-wide study of the retail grocery trade, in co-operation with the grocers themselves, has been undertaken by the Bureau of Business Research of Harvard University. A preliminary study, as a result of which this decision was reached, has already been made in Massachusetts and Rhode Island.

This investigation will follow the same general lines as the University's study of the retail shoe trade, which has been in progress since the fall of 1911, and for which detailed information has already been obtained from over 650 retail shoe stores in twenty-six States and Canada.

THE COLLECTION OF BUSINESS FACTS.

The object is to collect facts about business, the actual costs of retailing, and the policies adopted by retailers in handling their problems.

For establishing comparative standards a uniform system of accounts is essential. Hence such a system similar to the Harvard system of accounts for shoe retailers is being prepared for the grocery trade. In its preparation the advice of successful grocers will be followed. The cumulative experience of the bureau in its study of the shoe trade and preliminary investigations of other commodities will be utilized. The system will be practical and sufficiently simple for any retailer to use. It will be adapted for stores of all sizes.

TO INCREASE RATE OF TURNOVER.

Stock-keeping methods and means for increasing the rate of turnover will be studied. And there will be a comprehensive inquiry into the other special problems of the grocery trade. Agents will be sent out to gather information directly from the retail grocers. When sufficient progress has been made, a summary of the results will be published. Thus the experience of many grocers of varying degrees of ability will be summarized on a comparable basis and practical standards set up.

A good accounting system should, of course, enable the grocer to learn where he stands. The advantage to the grocer of using the uniform system of accounts provided by the bureau will be apparent when he realizes that, by comparing his own results with the standards established through this inquiry, he will learn, what is even more essential, where he ought to stand. He can find out how his sales force expenses, delivering expense, rent and other expenses compare in percentages of net sales with the normal percentages for retail grocers, and at what standards he ought to aim. Thus the individual grocer will be able to improve his own business.

FOR THE MUTUAL BENEFIT OF THE TRADE.

The Harvard Graduate School of Business Administration has undertaken this study in order to obtain a deeper knowledge of present-day business methods to aid in the scientific teaching of business. It does not seek to show that retailers are getting an unwarranted profit nor to make any sensational disclosures. The work will be conducted with utter impartiality, as scientific, co-operative research, and the specific information obtained from each store will be treated as strictly confidential. The figures which will later be furnished to the trade for the mutual benefit of all the trade will not in any way reveal the identity of the source of the figures.

The greatest service of the university will be

in the collecting, tabulating and publishing of figures and other information in such form that intelligent comparisons can be made by individual retailers. For doing this work the university has a particularly strategic position as a non-competing and trusted third party. The system of accounts and the published results of the research will be furnished absolutely free to all grocers who co-operate by giving the bureau their own figures.

Auditors under the Indian Companies' Act.

A Bombay Government Press note states :— Inquiry has recently been made whether a person appointed as the auditor of a Company before the New Indian Companies' Act VII of 1913 came into force can audit the accounts of that Company after 1st April 1914. With a view to removing doubts on this point, the attention of the public is invited to clause (2) of Section 290 of the Act, under which all things duly done under the old Act shall be deemed to have been done under the New Act. This provision and the provision in clause (8) of section 144 of the Act are held by Government to cover such cases in spite of the wording of clause (1) of Section 144.

Business Enterprise.

During the month of June 4 new companies with an aggregate nominal capital of Rs. 4.6 lakhs, were registered under the Indian Companies' Act (VII of 1913) in the Province of Bengal. The details are given below :—

	Aggregate nominal capital in rupees.
1 Banking and Loan Company...	20,000
1 Insurance ...	20,000
1 Trading ...	2,00,000
1 Tea Planting ...	2,50,000

In the Bombay Presidency only one company with a nominal capital of 35 lakhs of rupees, for constructing railways, was registered during the month.

HINTS ON ADVERTISING.

Contract Advertisements.

The main object of advertising is to secure orders. Unless results follow, the advertisement in a paper is wasted. In Mail Order, it is easy to trace results to their source, and so quickly find out whether certain space in a medium is paying or not; therefore, space should not be booked for more than two or three weeks ahead, then it can be continued if it is profitable, or changes to other media can be tried till better results accrue.

Newspaper Advertisements.

At the twenty-eighth meeting of the Sales' Managers' Association, Mr. W. B. Robertson discussed the subject of "selling by post."

Speaking of newspaper advertisement to get the names of individuals interested in a proposition, he said that he had personally been able to purchase cheaper business by this method than by the postal method only. Another point of advantage in exciting inquiries by newspaper advertisement was that it was possible by this means to get up a hotter and more rapid campaign. The advertisement should be strong and straight, the larger the better.

Mr. A. W. Gamage, who spoke next said that newspaper advertising was the most paying medium. If a firm secured public confidence, orders would pour in and pay for the amount spent in advertising. The best method, in his opinion, was to go straight, always speak the truth, and see that the value given was what it was stated to be.

Test of Paying Advertisements.

The President of the Advertiser's Protection Society once told a little story. He said he had been induced to key his advertisements and insert them in the cheaper papers. The result was to fill his letter-box with enquires, but what he wanted were not enquires, but customers. So he reverted to his former method of advertising in higher priced papers with less

extended circulation. The real test of a paying advertisement is not mere enquiries but extra sales. Advertisers therefore should not be misled by large circulations apart from the quality, i.e., the purchasing power of the readers of a paper.

The Audit Bureau of Circulations.

The Audit Bureau of Circulations is the new name of the Advertising Audit Association and Bureau of Verified Circulations, which held its first convention in Chicago on May 20. The association was formed for the purpose of making thorough and systematic examinations into the records of advertising mediums, and to furnish confidential information to member advertisers, advertising agencies and publishers. Another object is to increase advertising for publishers and bring about the judicious purchase of space for advertisers and agencies by determining the advertising value of the various publications. The points to be considered will be quantity, quality and distribution.

Persistent and Continuous Advertising.

SPEAKING to a representative of *The Times* regarding his acceptance of the Chairmanship of Messrs. A. and F. Pears (Limited), Sir Thomas Dewar said that one of the first-fruits of his dual control would almost certainly be an amalgamation of the advertising interests of the two firms. As advertising is the key-note of Pears, as of his own business, his experience, combined with the goodwill of a name which an expenditure of close upon £3,000,000 had made world-wide, ought to make things easy for him in his new sphere. Regarding his future policy he said :—

"I mean to continue the policy of the late Mr. Barratt," "Advertising must be persistent and continuous. Those who do not advertise pay for those who do. Save in this direction the firms of Dewar and Pears will remain entirely separate. Up to the present the directors have not had sufficient time to formulate their policy, but we are giving serious thought to it."

OPENINGS FOR BUSINESS.

[For particulars, address the Director-General of Commercial Intelligence, New Imperial Secretariat I, Council Street, Calcutta, mentioning the *Wealth of India*. Firms that may like to follow up any enquiry should give proper references and restrict themselves to those enquiries only which they are fully and seriously qualified to handle.]

INDIGO, SENNA LEAVES, MYRABOLANS AND INCENSE.

A firm in Trieste, Austria, is desirous of communicating with shippers of indigo, senna leaves, myrabolans and incense. (C 420.)

OILSEEDS, GUMS, SALTED SHEEP AND SAUSAGE CASINGS.

A firm in Trieste, Austria, is desirous of communicating with exporters of oil seeds, gums and salted sheep, goat and beef casings for sausage-making. (C 421.)

SCIENTIFIC INSTRUMENTS.

A firm of manufacturers in Dublin is desirous of communicating with importers of scientific instruments (Chemical, Physical, Electrical, Mechanical, Bacteriological, etc.) (C 422.)

BRUSHES.

A Birmingham firm of manufacturers is desirous of communicating with importers of their speciality brushes which are used by jewellers, silversmiths and metal workers for polishing, electro-plating, etc. (C 423.)

LEAD FOIL.

A merchant of Allahabad, United Provinces is desirous of communicating with sellers in Calcutta of lead foil for wrapping soap tablets. (C 424.)

SANDAL WOOD CHIPS AND LEMON GRASS.

A New York firm is desirous of communicating with exporters of sandal wood chips and lemon grass. (C 426.)

VEHICLES.

A firm in Dallas City, U. S. A., is desirous of appointing selling agents for horse vehicles, carriages, wagons, etc., and parts thereof. (C 427.)

ANIMAL BYE-PRODUCTS.

A firm in Hamburg, Germany, is desirous of communicating with exporters of animal bye-products (horns, horntips dried blood, sinews, hair, etc., (C 429)

CRANES AND FIRE ESCAPES.

A firm of manufacturers in London is desirous of appointing agents for the sale of light hand-power cranes and automatic Fire Escapes. (C 430)

INDIAN CONDIMENTS.

A New York merchant is desirous of communicating with exporters of Indian condiments (including chutney and sauces) packed in tins and bottles. (C 431)

LINSEED OIL AND EARTH PIGMENT.

A firm in Durban, Natal, is desirous of communicating with shippers of raw and boiled linseed oil and earth pigments suitable for the manufacture of paint. (C 432)

MICA AND FELSPAR.

A merchant in Ajmer, Rajputana, is desirous of communicating with local buyers of mica and felspar. (C 433)

MONAZITE SAND.

A firm in Havel, Germany, is desirous of communicating with exporters of monazite sand. (C 434)

STEEL TOOLS.

A manufacturer in Sheffield, England, is desirous of appointing agents at Bombay, Calcutta, Madras and Karachi for the sale of steel tools for engineers, railroad contractors, woodworkers, etc. (C 436)

BAGS.

A merchant in Papua, New Guinea, is desirous of communicating with manufacturers of bags for packing copra, ore, chaff and wheat. (C 439)

BEESWAX.

A merchant in Chicago, U. S. A., is desirous of communicating with exporters of crude yellow beeswax. (C 440)

The Economic World.

Earnings of Our Mill Hands.

It is interesting to contrast the earnings of the mill hands at Bombay with those of Great Britain and America. A Bombay paper gives figures to show the respective positions of the weaving industry in the three countries. Since 1905 the profits of the Bombay mill industry have been dwindling from 8.47 crores to 52 lakhs in 1911. It is only in 1912 that the profits increased to 2.60 crores. The wages paid amounted to 2.68 crores in Bombay which employed 110,000 workers. Deducting the salaries of the management we find that a workman earned Rs. 220 per year on an average. The English workman earned Rs. 780 and the American Rs. 1,050 per annum. But this does not establish that the Indian workmen are only a third as efficient as English workers and a fifth of the American. Various causes unconnected with mere efficiency go to determine wages. If we had labour unions in India, wages would double themselves. It is interesting to learn that while Great Britain had 1,968 mills engaging 627,000 workmen and consuming 4,488,000 bales of cotton, India had 268 mills employing 244,000 hands and consuming 1,600,000 bales of cotton. The value of goods produced was 225 crores in England and 37½ crores in India. Whereas only 20 per cent. of the production was retained for home consumption in England, we find as much as 79 per cent. of the Indian cloth and yarn is used up in India itself. The cotton goods imported into India in 1896 were valued at 30 crores and last year the figure was doubled.

Increase in Food Prices.

The increase in food prices recorded by the British Board of Trade shows that food which cost 100 shillings in 1900 costs in 1912 in the United Kingdom ... 115s.

Austria	...	...	135s.
Hungary	...	...	137s.
Belgium	...	...	132s.
France	...	...	115s.
Germany	...	...	128s.
Holland	...	...	123s.
Italy	...	...	120s.
Norway	...	...	119s.
Russia	...	...	121s.
United States	...	...	139s.
Japan	...	...	138s.
Canada	...	...	151s.
Australia	...	...	116s.
New Zealand...	...	...	116s.

A leaflet published on the subject by the Liberal Publication Department answers thus the question often asked, what has caused the rise :—

"It may be that the world's demand for food-stuffs has been increasing faster than the supply. So far as this is a cause it will tend to right itself, and indeed there has of late been a downward tendency in food-prices in this country. Another cause of the rise may very well be the vastly increased out-put of gold, especially from South African mines on the Rand. Gold is very much more plentiful in the world than it was fifteen years ago, and it is like all commodities in this respect that it gets cheaper as it gets more abundant, that is, you have to give more of it for the things you want. If a man in April had some strawberries, he would not have to give many of them for a leg of lamb, whereas a few weeks later he would have to give a large quantity of them. And what is true of strawberries is true of gold coins."

The Taxation of Wealth.

The London *Economist* explains the relation between the wage fund and the unproductive

investments of capital, as illustrated at the present day in England :—

The enormous increase in the mass of unproductive expenditure on armaments, injures the working classes by raising the cost of necessities and checking the competition for labour on which a rise of wages depends. Taking the simple case of a small community which possesses a hundred adult workers, of whom ten are employed in defence, and ninety in providing food, boots, clothing, and the other necessities and conveniences of life, it is clear that the ten are supported by the ninety, each man, let us say, of the ninety supplying one-ninth of what he produces to support the ten. If the cost of the ten is doubled, the quota of the ninety is also doubled. And if the number of defenders is raised from ten to twenty, there are ten less people to produce the food, clothing, &c., of the community. Hence there will be a scarcity, and the prices will rise, because, while the number of consumers remains the same, the number of producers is diminished. Then, again, if we take a modern community of employers and employed, in which the two agents of production are capital and labour, the wages of labour depend very largely upon the amount and cheapness of capital. When capital is cheap and plentiful new ships and new mills and new machinery can be built, and new companies created for the employment of labour. Employers and capitalists bid for labour against one another, and any diminution of capital means, other things being equal, the diminution of the fund out of which the wages are paid and men are employed. Statisticians agree that the working classes in this country have never been so well off as in the years immediately preceding the Boer War, when money and capital were abnormally cheap and plentiful and the prices of food and commodities unusually low. If, then, larger and larger slices are taken by the State from the income and savings of private capital, and

applied to unproductive purposes, it is clear that labour, as well as capital, suffers. Their interests are, in this respect, identical. The fact that the cost of waste is thrown upon wealth does not prevent poverty from being injured thereby.

Money and Prices.

The rise of prices in India and in every country, in which reliable price statistics have been drawn up, is becoming a source of anxiety here and throughout the world. An international convention to enquire into the causes of this rise has been urged in various quarters, but we doubt whether such a convention, though desirable, would be able to throw much new light on this subject. After all the criticism that has been levelled against 'the quantitative theory of money'—which has by no means disturbed its fundamental importance—we think that in the main this theory explains the cause of this *general rise*. If the rise was merely in *particular countries*, then certainly it could not apply to this theory.

Speaking concisely, this theory urges that (1) the precious metals have increased in quantity everywhere, as proved by statistics and by the fact that they are among the very few imperishable commodities owing to their chemical properties; (2) this increase in quantity has lowered their value, and money has depreciated in value along with them; (3) *the depreciation of money has caused a relative appreciation of commodities*—commodities here implying every thing that has value (including labour) which is measured by money.

What the convention would have to consider is that money is not a rigid standard of measure like the yard measure, and that in itself it is subject to fluctuation by causes other than by the increase and decrease of quantity. These other causes which fluctuate the value of money are as follows: (a) an extension of the credit-system—paper-money, acceptances, clearing house, etc.—which reduces the demand for

money and consequently depreciates its value, thereby appreciating prices; (b) the growth of population which increases slightly the demand for the precious metals, but tends chiefly to increase the demand for money by extending the circle of exchange, thereby appreciating money and depreciating prices.

Other minor causes would have to be considered by the proposed convention, such as the circulation of money—slow or rapid by the activity or depression of trade—which amounts to an increase or decrease in its quantity. Then again, prices would have to be separately treated, by examining the demand and supply of commodities for a considerable period, and this would be no easy task for the main reason that reliable statistics are not available in every country.

But the most difficult problem, after a detailed analysis, would be to arrive at the resultant of forces which interact and are by no means rigid. Much as we desire the convention, we fear that economic science has not yet developed sufficiently to allow of detailed conclusions being drawn after a study of the present phenomenon. But this should not prevent a convention from being formed by the nations for this purpose.—*Commercial India*.

A National Building Loan-Bank for Italy.

There can be no question that house-rents, especially in great centres of population, have of late increased in all countries. The Government of Italy are seriously considering the establishment of a National Building Loan-Bank, to facilitate the construction of well-built dwellings for those who have not the necessary capital at their disposal.

The proposed bank would have its central office in Rome, but would carry on operations throughout Italy by means of agencies in the various centres. The capital would be at the outset 50,000,000 lire [\$10,000,000], to be gradually increased in successive years to 100,000,000 lire. From its resources the bank

would advance to building associations, building firms, or individual constructions, for the erection of dwelling-houses, amounts covering three-quarters of the cost of the building, provided the applicant could give satisfactory proof of the ability to supply the remaining quarter.

The choice of the building site, as well as the plans and specifications of the building itself, would have to be submitted to the bank for approval, and no funds would be advanced before this approval had been accorded; moreover, during the progress of construction the bank would have the right to send inspectors to watch over the work and see that the specifications were duly conformed to in every way. The rate of interest on the advances would be $4\frac{1}{2}$ per cent., and a mortgage covering land and building would be held as security by the bank.

The value of the building site would be regarded as forming part of the quarter share of the cost of the undertaking to be provided by the beneficiary of the loan, and any amount in excess of this ground value requisite to make up the quarter share must first have been expended in construction before any part of the bank's promised loan shall become available. All further necessary sums will then be furnished by the bank as construction progresses, and shall be charged in a running account against the beneficiary, as well as the interest, simple or compound, on the sums successively advanced to meet the builder's requirements.

When the building is completed, the running amount is closed, the sum total of the indebtedness incurred for advances and interest constituting a single loan, bearing interest at $4\frac{1}{2}$ per cent., payable at the usual intervals, and to be liquidated within a period not exceeding fifty years; as guarantee for this payment the bank holds its mortgage covering the entire property.

The Indian Economic Problem.

A correspondent of the *Leader* writing on the

solution of our economic problem argues that the real cause of the present unsatisfactory economic condition of India is to be found in what List, the great German economist, calls *a crippled state of agriculture*, which he defines as 'a state of things in which, from want of a powerful and steadily developing manufacturing industry, the entire increase of population tends to throw itself on agriculture for employment, consumes all the surplus agricultural production of the country, and as it has considerably increased, either has to emigrate, or to share with the agriculturists already in existence the land immediately at hand, till the landed property of every family has become so small that it produces only the most elementary and necessary portion of the family's requirements of food and raw materials, but no considerable surplus which it might exchange with the manufacturers for the manufactured products it requires.' As to the external causes which cripple it the same author points out that when an agricultural nation has reached the culminating point of its agricultural development, as far as that can be attained by the influence of foreign commerce, and when owing to the successful competition of the manufacturing nation in the markets of the agricultural nation no manufactures can spring up in the latter, in such a case the agricultural power of the agricultural nation is exposed to the danger of being crippled. That India is suffering from such a state of crippled agriculture very few people will deny. The situation is aggravated here by the fact that several indigenous industries have been wiped out owing to their being exposed to the unrestricted competition of the most advanced and powerful manufacturing nation in the west, with the result that not only does the increase of population tend to throw itself on agriculture for support and employment, but also a large number of people belonging to castes whose hereditary occupation was the pursuit

of manufacturing industries have to take to agriculture. Of late the Government has no doubt become alive to the necessity of technical and industrial education, but so far very little practical results have been achieved. The people are blamed for not developing manufactures in the country, but can they be justly blamed? The whole system of education in this country has been directed, more or less, to the production of lawyers, clerks, schoolmasters, and here and there, engineers, surgeons and physicians. Almost nothing has been done to turn out practical manufacturers and trained workmen and to produce in the minds of the people by means of educational institutions a craving for following industrial pursuits. The result is that to-day we cannot even manufacture a pin, a needle or a nib. 'A nation' says List, 'which only carries on agriculture, is an individual who in his material production lacks one arm.....A nation which exchanges agricultural products for foreign manufactured goods is an individual with one arm, which is supported by a foreign arm.' This is, in a nut-shell, our economic position. It behoves the British Government, which holds India in trust for Indians, and whose primary duty ought to be to ensure their well-being and prosperity, and the people as well, to remedy by all the means in their power, such an unsatisfactory state of affairs, and let India have a manufacturing arm also, which it sadly and sorely needs.

The South African Economic Commission.

The Report [U.G. No. 12, 14. Price 3s. 6d.] has been issued of the Economic Commission appointed by the Governor-General of the Union of South Africa to inquire into and report upon the following matters, *viz.*:—(1) Wages, working hours and the cost of living on the Witwatersrand and other industrial centres within the Union of South Africa; (2) Comparison between wages, working hours and cost of living at such places with those

ruling in other countries; (3) Cost of production in the Union compared with that of other countries; (4) The question of establishing a minimum or subsistence wage in any trades or industries within the Union; and (5) The payment for overtime and for night-work in trades or industries within the Union. The Commission, which met under the chairmanship of Professor S. J. Chapman, of the University of Manchester, report that the cost of living for whites (food and rent) on the Witwatersrand is about 40 per cent. higher than in America (the most expensive of the other countries examined) and nearly 80 per cent. higher than in any European country. Other points emphasized in the conclusions of the Commission are as follows:—The chief factor in the high cost of living in South Africa is rent, and another factor of some weight is the high standard of living, particularly on the Witwatersrand. On the other hand, wages on the Witwatersrand are nearly 40 per cent. higher than in America, where money wages are materially greater than in any other country examined, and nearly 225 per cent. higher than in any European country. When allowance is made for the cost of living as a whole it would seem that the workman on the Witwatersrand is better off than the workman in America and much better off than the workman in Europe. Few of the rising generation in South Africa are being apprenticed to the skilled trades, and the training given to apprentices is seldom satisfactory. Attention should be given to this matter, and particularly to the preparation of the youth of the country for supervisory positions, which are relatively numerous and highly remunerated in South Africa. The productivity of the natives could be increased by giving more attention to the organisation of their work, and, where it is possible, adopting more generally the piece-rate system, particularly on the Witwatersrand Gold Mines. The Commission are, further, of opinion that

it is undesirable that barriers should be placed in the way of non-white labour by the State or local authorities to prevent their advancement to any kind of work of which they are capable. In regard to a minimum subsistence wage, the Commission consider it undesirable that the Government should lay down any minimum, whether made applicable to whites alone or to all persons regardless of race, but as many white persons are in receipt of low wages some action of a less drastic character should be taken. If satisfactory agreements are to be made and the existing labour unrest is to be allayed, it is essential that employers should recognise trades unions. It is urged, moreover, that, with a view to preventing strikes and lock-outs and settling disputes, voluntary conciliation boards should be established, and additional provisions are recommended.

The Commission make the following specific recommendations to the Government:—

(1) That periodic inquiries should be made by the Statistical Office into the cost of living in different parts of the Union.

(2) That a non-political advisory council to deal with native questions should be instituted.

(3) That an industrial commissioner should be appointed (a) to administer any laws that may be passed relating to trades unions and industrial disputes, and (b) to deal with the problem of low wages respectively.

(4) That an Act should be passed facilitating the formation of conciliation boards, providing for mediation, and in the last resort, if deemed expedient, for reports on strikes or lock-outs by disputes boards or otherwise.

(5) That an Act should be passed providing for the voluntary registration of trades unions and the protection of non-unionists.

(6) That on and before conciliation boards and representative disputes boards, officials of registered trades unions should be given a status.

(7) That a Factory Act should be passed

regulating the hours and conditions of labour.

(8) That the regulations relating to hours in shops should be assimilated to the most comprehensive at present in force.

(9) That by legislative enactment one day's rest in seven should be required for all industrial workers.

(10) That wherever hours are regulated payment for overtime at the rate of time and a quarter at least should be required.

(11) That periodic industrial reports should be made.

(12) That the administration of all industrial and mining legislation should be centralised in one office.

The Economic Condition of India.

In the current number of the *Modern Review*, the well-known author and historian Mr. Pramanath Bose, B.Sc., writes a critical article on the Economic Condition of India under Western Influence. The contact with the West has not been beneficial to India's industries and Commerce. On the other hand, Western competition has dealt those old industries a blow from the effects of which it will take a long time indeed to recover.

Mr. Bose first describes the condition and history of Indian industries and commerce during the pre-British periods. Even under the Hindu regime, India had developed all the great and important industries and carried on an extensive commerce with the outside world. The establishment of the Mahomedan rule did not introduce any break in the history of India's industries. On the other hand, the Mahomedan kings and nobles became patrons of the native arts and crafts. New industries were also imported into India from abroad like the carpet-weaving of Kurdistan and the glazed pottery of Ispahan. The advent of European companies, especially the East India Company, further increased the trade and commerce of India. The demands of England led to the

development on a large scale of the cotton and silk industries of India. In cotton goods alone, the writer says, some 50 lakhs of exports were entered at the Custom House. Other things also like spices, pepper, sugar and coffee were exported in large quantities from India. Thus, during the Mahomedan rule and during the early days of Western Influence, the industries and commerce of India were in the most prosperous condition. The Artisan classes had employment and good wages. The general prices also were low.

The sad chapter, however, began towards the close of the eighteenth century. The inventions of James Watt and Cartwright introduced a revolution in the industrial condition of Britain. Her industries suddenly grew. From being an importing country, she developed into an exporting one. India, being situated far from Europe and bound down by fixed social institutions which made the reception of new ideas impossible, could not be benefited by these inventions. Nor could the Government step in and ward off the evils of Western competition by protecting the native industries. The interests of the Government rather pointed the other way. As Mr. Bose says—

If India had her own way, she would probably have protected her industries, as England had protected hers in the eighteenth century, and as most civilised countries protect theirs at the present day. But India could not have her own way; and a protective tariff was not to be thought of.

The result was that the Economic independence and prosperity of India was shattered to pieces. The effect is forcibly described by the writer—

"The outstanding result of the influence of the Western environment has been the shattering of our industrial fabric, which is fraught with grave consequences to the life of our civilization. We have within a century been reduced from the economically sound position of industrial independence to the very unsound

one of industrial servitude, from the position of exporters of manufactured goods to that of importers of such goods and that too to a most colossal extent. No civilization can last long under such conditions. No civilization can long be supported by agriculture alone, and that too of an unexpanding and unimproving character.'

Mr. Bose points out certain other evils which have resulted from western influence. He says that the abnormal rise in prices in India has been due to the general rise in gold prices all over the world and to the exportation from India of the necessities such as rice. A more grievous effect, in the writer's eyes, is the spread of a "craze for western standard and mode of living" among our people. He mentions that this is fraught with danger to India. Adoption of western luxuries and western modes of living without corresponding wealth and industrial development means ruin to the people of India. In almost a strain of patriotic indignation he says—"It means for the great majority of our people pecuniary embarrassment and possible ruin; the sacrifice of necessities to luxuries; of substance to shadow; and it means mental slavery, the subjugation of our mind to the extent of maudlin infatuation."

The Wealth of the World.

Sir George Paish, writing in the *Statist* of which he is the editor, declares that 'at no time in history has the economic condition of the world improved as rapidly or as much as in the past hundred years.' While all civilized countries have not advanced at an equal pace, progress has been made in all countries, and it is nothing short of 'marvellous.'

PROGRESS IN EUROPE.

The United Kingdom, for example, possessed in 1814 a total wealth of only about £2,800,000,000, whereas now 'a conservative estimate' would place the total wealth of that country at £17,000,000,000 or a six-fold increase the population, meanwhile, having increased

less than two and one-half fold. The income of the British people in this hundred years has increased about eight-fold, that is, from £300,000,000 to £2,400,000,000.

In France wealth has expanded about five-fold; that is, from under £2,000,000,000 to nearly £10,000,000,000 and the income of the country has risen from £250,000,000 to about £1,200,000,000, the population increasing only one-third, or 33 per cent. In Germany progress equally remarkable has taken place. One hundred years ago there was no German Empire, nor even a confederation of German States, but merely a number of separate German States, none of which was overburdened with riches or with income. Sir George estimates the aggregate wealth and income of the German States one hundred years ago as 'probably less than France's'. Now, however, the income of United Germany has reached £2,000,000,000, or considerably more than that of France, while the wealth of the Empire has reached £16,000,000,000; that is £6,000,000,000 more than the wealth of France, and within £1,000,000,000 of the wealth of the United Kingdom. Population in Germany has increased faster than in France or England, having grown in the hundred years from 24,000,000 to over 67,000,000, that is, more than 180 per cent.

THE UNITED STATES.

Such are the figures for the three leading countries of Europe. Remarkable as they are, however, they are outstripped by a younger State which has 'attracted large numbers of persons from densely populated districts of Europe.' Here still more noteworthy has been the progress in wealth and in well-being. For the most part, those who emigrated 'were inconceivably poor and destitute,' but in general they 'have attained incomes and wealth much greater, on the average, than persons who elected to remain in the older countries.' Sir George gives for the United States a total wealth in 1814 of about £350,000,000, and a

total wealth now of £3,000,000,000, or nearly ninety-fold. At the same time, the total income has risen from less than £100,000,000, to about £7,000,000,000, or to more than the combined incomes of the United Kingdom, France, and Germany. In population there has been a twelve fold expansion—that is, from 8,000,000 they have advanced to 98,000,000.

In other young countries progress in comparison has been small, and yet when one remembers the meagreness of the populations of Canada, Australia, and South America, and the smallness of their incomes in the early part of the last century, the really wonderful advance in their economic well-being becomes apparent. Sir George has interesting comments to make on the influence of this enormous increase in the world's wealth:

THE STANDARD OF COMFORT.

'This rise in economic prosperity has completely changed the atmosphere in which men live. It is difficult to grasp the fact that only a century ago none but the very wealthy could afford to travel, that nearly all were chained to the localities in which they were born, that even in London there were no omnibuses, that all but the very rich were compelled to live in the immediate vicinity of their workshops or businesses, and that now it is possible for most persons to travel not merely by motor-bus, tram-car, railway, motor-car, or bicycle, from their homes to their occupations, but to journey many thousands of miles at small cost to obtain employment, either temporary or permanent. Moreover, when one stops to think that in those days newspapers, magazines, books, or engravings were very great luxuries, to be indulged in by the few, and that it was exceptional for people to know anything of affairs outside their own village or town, whereas now nearly all are rich enough to purchase newspapers or magazines containing information about everything under the sun, to possess prints of the greatest pictures in the world and are able to keep in touch with social, scientific, political, and religious thought not only in their own locality and State, but in every country, one is compelled to acknowledge, however averse one is to doing so, that the advance in the mental condition of the world in consequence of the growth of wealth and of income has been extraordinary. Thus a very cursory review of conditions to-day and a century ago reveals the wonderful change on every side of life, in this and in other countries and the great forward movement of the nations both in mental and in economic well-being.

UPLIFTING FORCES.

'What are the forces to which we owe this great uplift of the whole race? Many things both mental and physical, acting and reacting upon each other, have combined to bring about the new conditions; and not the least of them has been the progress of invention, which has enabled railways and steamers to be built and distance between the various parts of the world to be largely annihilated.

'But the greatest uplifting force of the past century has been the growth of a spirit of trust and of confidence between man and man and between nation and nation. This new spirit has infected men on every side of their activities, whether as labourers or as employers of labour, as capitalists or as users of capital, as producers or as consumers, as persons who save or as persons who spend, as pioneers in new lands or as dwellers in the old countries. It has made men willing to co-operate and to combine in order to overcome otherwise insuperable difficulties, and it has thus brought about the wonderful improvement in economic well-being and in mental attainment everywhere apparent.

THE GROWTH OF CREDIT.

'One of the most noteworthy consequences of the new spirit has been the creation of a credit system which embraces the whole world, and which has enabled countries to be populated, towns and villages to be constructed, agriculture extended, mines developed, and riches transported from the ends of the earth for consumption and use wherever they are needed.

'Until quite recent times, even in the most advanced countries, it was customary for each person to seek to secure the safety of his wealth either by employing it himself or by hoarding it, a practice that still largely prevails in backward lands, such as Egypt, India, and China. Now vast numbers of persons in all countries render value to others as well as to themselves that part of their wealth they cannot use in their own business or in building and furnishing their own homes by making loans to Governments, States and municipalities wherever situated, or by forming jointstock enterprises of every kind and description, or by placing money on mortgage, on loan to private individuals, and on deposit with both jointstock and private bankers. This trust in the good faith of others has created, and is still creating, machinery whereby the income of all the nations is showing infinite expansion in comparison with the slowness of its growth in former days.'

The Financial World.

Gold in Banks.

In view of the war in Europe, it will be interesting to know the stock of gold with the banks in the several countries. In the middle of May, the Russian banks held no less than £178,325,000 in gold and £7,295,000 in silver—a total of £185,620,000 against a total of £166,574,000 at the same date last year. France comes out with £146,972,880 in gold and £25,176,720 in silver—a total of £172,149,600 compared with £154,209,080 at the same time last year. Germany is out with £66,338,050 in gold and £16,850,000 in silver—£83,188,050 against a total of £65,137,850 last year. Austria-Hungary is fourth in the list with £52,219,000 in gold and £12,248,000 in silver—a total of £64,467,000 against £60,773,000 last year. Spain is fifth with a total of £49,236,000. Italy is sixth with £48,367,000 and Britain is the seventh in a list of twelve European countries with a total of £35,806,352, all in gold against £36,361,981 last year. The total amount of bullion in the principal European banks on May 16th, was £681,874,902 against £622,540,011 last year.

To "Support Exchange."

The following notice has been issued under date August 3rd:—

The Government of India announce with the approval of the Secretary of State that they will support Exchange by all means in their power. In pursuance of this policy they will sell sterling bills on London from this week onwards and until further notice up to a maximum limit of one million pounds sterling a week at the rate of *Sh.* 1 3 29/32*d.* the rupee. Any applicant to whom an allotment is made can, at his option, instead of bills, receive telegraphic transfers at a rate which is fixed for

the present at *Sh.* 1-3 13—16*d.* the rupee for amount allotted to him or any portion thereof provided that the intention to exercise such option has been intimated in his original application. The amount of bills issued will be in multiples of £. 1,000 and no single bill will be issued for a smaller amount than £10,000. Bills will be issued at Calcutta, Bombay and Madras. All applications should be addressed to the Controller of Currency at Calcutta and should reach him not later than 12 noon standard time on Thursday in each week beginning from the current week. Applications may be made by telegram. Supplementary detailed instructions will be issued by the Controller of Currency.

Secondly, in view of the necessity for conserving available resources for support of Exchange, the Government of India direct that for the present no gold shall be issued whether from the Currency Offices or Treasuries in amounts of less than £10,000 for any individual applicant. This condition will have effect from Tuesday, August 4th.

Another *communiqué* of the Government of India in the Finance Department says:—

In the announcement of the 3rd August on the subject of the measure contemplated by the Government of India for the support of exchange, it was stated that in view of the necessity for conserving their available resources for that object the Government of India found it necessary to place restrictions upon the issue of gold in India, and it was accordingly directed that no gold should be issued, whether from currency offices or treasuries, in amounts of less than £10,000 to any individual applicant. The situation in which those orders were passed has now been changed by the declaration of war between England and Germany, and a more

prolonged period of weakness of exchange, accompanied by the sale of sterling bills on London, must now be anticipated: it has thus become necessary to reserve the entire gold resources of the Government of India absolutely for their primary function of supporting exchange and contributing to the Secretary of State's requirements. For these reasons, the Government of India have now directed, with the approval of the Secretary of State for India, that no further issues of gold, whether from Currency Offices or from treasuries, shall be made.

Finance Commission Report.

The following are the main portions of two circular letters sent out by the Government of India to Local Governments (with copies to other public bodies) inviting opinions and recommendations of the recent Royal Commission on Indian Finance and Currency. Previous to the appointment of the recent Commission the problems connected with Indian currency had last been dealt with authoritatively by what is known as the Fowler Committee of 1898. The deliberations of that committee took place a few years after the closing of the Indian mints to the unrestricted coinage of silver. The time was transitional and many of their recommendations were necessarily of a tentative and experimental character. The report now before the Government of India is a weighty pronouncement on the policy and the measures which have gradually been evolved in pursuance of the Fowler Committee's suggestions and as the outcome of extended practical experience in the working of a gold standard system. It emphatically confirms what has been the fundamental basis of the Indian currency policy of the last twenty years, namely, the maintenance of the gold value of the rupee by the restriction of rupee coinage and by the accumulation of gold reserves and the substantive recommendations which it contains relate accordingly less to matters of funda-

mental principle than to the practical details of financial and currency administration. In view of the facts that while some of those details are of a technical nature, others intimately affected the commercial life of the country and that the Commission did not visit India and were only able to examine a limited number of witnesses, therefore, the Government of India consider it desirable to afford an opportunity to the local Government and the principal commercial bodies in the country to submit an expression of opinion on any points to which they desire the special attention of the Government of India should be called before the latter transmit to the Secretary of State their own views on those portions of the report on which His Lordship has consulted them.

COMMISSION'S RECOMMENDATIONS.

The Commission's recommendations are of two classes: firstly, those concerning such matters as the conduct of Indian financial administration in London, the relations of the India Office with the Bank of England and the financial organization and procedure of the India Office; and secondly, those which more nearly concern the Government in this country. Some of the more important of this second class of questions are enumerated below.—

(1) The use of gold in internal circulation; (2) the limit, if any, to be placed on the growth of the gold standard reserve and the question of its location and constitution; (3) the treatment of the paper currency reserve; (4) the question whether the Government of India should now publicly notify their readiness to sell sterling bills in India on London at the rate of 1 s. 8-29-32 *d.* whenever they are asked to do so; (5) the use and location of the Treasury balances and the advisability of granting loans therefrom; (6) the desirability of increasing the amount of Government rupee loans; (7) the sale of Council Bills in excess of the Secretary of State's immediate requirements or at a rate below 1 s. 4*d.*; (8) the

question of appointing a small expert body with instructions either to pronounce definitely against the establishment of a State or Central Bank in India or to formulate a definite scheme for its establishment.

The above summary is not exhaustive and in particular omits the question of the establishment of a gold mint regarding which a separate communication is being addressed to local Governments. On the other hand it includes one or two matters such as those referred to in clauses (6) and (4) above on which the Government of India have either taken action already or may find convenient to do so in anticipation of the replies to the general reference which is now being made.

GOVERNMENT'S OBJECT.

The Government of India do not ask for, though they in no way deprecate, an exhaustive examination of the ground covered by the Royal Commission's report. Their object in addressing local Governments on the subject as well as the leading commercial authorities is, as already indicated, to obtain expressions of opinion on the particular points to which each authority addressed may have reason to attach special importance or on which such authority may be specially competent to advise. The Government of India will be glad also if these opinions can be submitted without avoidable delay. The report has now been before the public for several months. It has already been closely scrutinized and widely discussed and it is desirable to proceed to an early decision on the main issues involved. It is hoped, therefore, that the reply to this letter will be submitted not later than the 15th October next.

In inviting opinions on the desirability of establishing a gold mint in India the Government of India write: This question came under the consideration of the Royal Commission on Indian Finance and Currency who in paragraph 78 of their report, while expressing their inability to recommend on its merits the

establishment of a gold mint, nevertheless saw no objection thereto in principle provided that Indian sentiment genuinely demanded it, that the Government of India were prepared to incur the expense, that the coin to be minted should be the sovereign or half sovereign in the opinion of the Commission. The question is pre-eminently one in which Indian sentiment should prevail and the Government of India's present enquiry is, therefore, primarily directed towards ascertaining whether there is any considerable body of Indian sentiment which desire the establishment of a mint for the coinage of sovereigns or half sovereigns.

Monetary Situation in India.

M. de P. Webb, C.I.E., writes in the *Commerce* :—

At a moment when the war in Europe has brought about a wide suspension of cash payments, it is satisfactory to know that the monetary situation in India is particularly strong. Indeed, so far as the internal requirements of India are concerned, it is doubtful if the financial position has ever been stronger. The supplies of monetary tools of all kinds—silver, gold, paper, etc., in the hands of Government, of the banks, and of large financial and commercial houses—Indian as well as European—are unusually large, and unless an unexpected shrinkage of credit and diminution of business occur in India (which seems improbable because Europe's troubles are on the whole more likely to increase rather than diminish the demand for India's raw products), there is not the slightest reason to apprehend any financial or monetary difficulties so far as the internal trade of India is concerned.

CASH BALANCES.

The Presidency banks as everybody knows are full of money. Their cash balances at the middle of July were approximately as under :—

	Rs.
Bank of Bengal	15,00,00,000
Bank of Bombay	7,00,00,000
Bank of Madras	3,00,00,000

whilst their holdings of Government and other authorised securities exceeded ten crores.

GOVERNMENT RESOURCES.

The position of Government in the matter of cash resources is particularly interesting at this juncture. The cash balance held in India by the Government of India (in the Treasuries and Presidency Banks) on the 30th June 1914 was Rs. 24,71,40,000 which is a very handsome figure indeed, and ten crores in excess of what Government held in India on the 30th June 1909. The average cash holding on the 30th June for the five years 1909-13 has been Rs. 21 crores, so that Government now hold $4\frac{3}{4}$ crores (over £8,160,000) in cash more than usual in India.

PAPER CURRENCY RESERVE.

Then there is the Paper Currency Reserve. Ordinarily the Paper Currency Reserve ought to be held and treated entirely separately and distinctly from all other cash resources. But in times of emergency there is no reason why the Government should not largely increase the invested portion of the reserve as a temporary measure. Against a total circulation of Rs. 71,46,33,835 on the 7th ultimo Government held in India—

	Rs.
(a) In silver	30,02,21,616
(b) In gold	17,89,84,508
(c) Securities	9,99,99,946

(The balance of the reserve was held in London on the 7th July 1914). Of the above Rs. 47 crores of silver and gold, Rs. 15 crores could in an emergency be safely advanced on the security of first class gilt-edged securities, thus placing £10,000,000 at the disposal of the public. As compared with the £14,000,000, of Indian money lent out to the public in London two years ago (when there was no economic or political crisis to meet) ten millions sterling is quite a modest sum.

If then we add to the surplus cash available in the treasury balances £10 millions from the Paper Currency Reserve, it is obvious that the

Government of India can make at least £15,000,000 available to the public in India on good securities through the agency of the leading banks should circumstances demand such exceptional action. As a matter of fact this sum could be increased without very serious inconvenience to Government, but it is not in the least likely, as far as can be seen at present, that any very special action of this kind will require to be taken in India.

EXTERNAL REQUIREMENTS

When we turn to the external requirements of India, the situation, though strong, is not quite so satisfactory. Were India in the enjoyment of a widely circulating gold currency, it would be possible when the balance of trade turns against India (as it will probably do in the course of the next week) to ship gold out of India in satisfaction of external demands. To meet this contingency Government have created a Gold Standard Reserve of over £25 millions. This reserve at present consists of the following:—

Lodged in London—	
(a) British and Colonial Securities held by the India Office	£ 17,073,158
(b) Gold at the Bank of England	4,420,000
(c) Lent out in London	111,595
(d) In London Treasury	22,199

Held in India—	
(a) In silver (rupees)	25,626,952
Total on 30th June 1914	25,626,952

Indian Currency System.

Questioned in the House of Commons, by Mr. Rupert Gwynne, Mr. Roberts replied that the chief aim of the India Office with regard to the Indian Currency System "is the maintenance of the exchange value of the rupee at sixteen pence, and the chief measures are the provision of a Gold Standard Reserve, and other sterling reserves for the regulation of the coinage of rupees and sales of drafts between England and India."

The Educational World.

The London School of Oriental Studies.

Writing in a recent issue of the *Westminster Gazette*, Mr. F. H. Browne lays special stress on the importance of the proposed institution to Great Britain from the point of view of trade. "The total value of our trade with the countries whose languages will be taught there is over £210,000,000 per annum, and well nigh half their aggregate population of some 800 millions is under British rule or protection. In India, where our task is the greatest ever committed to a self-governing people, the growth of an educated native class able to write and speak our tongue has been an excuse, though not a justification, for the failure of many English-residents, and particularly those engaged in mercantile pursuits, to learn the local languages. Still business men, in the larger cities at all events, not having begun linguistic study before leaving England, find themselves absorbed in exacting work and necessary recreation, and able to pull along with no more than the merest smattering of any vernacular, and when called upon to deal with non-English-speaking Indians—that is, all but a mere fraction of the population—they fall back on an interpreter. The linguistic barrier to direct contact is a source of constant misunderstanding and frequent unintentional injustice, and this will be obviated to some extent by the proposed institution."

The Schools and the Nation.

A serious warning is uttered by Viscount Haldane, who has written an introduction to the English translation of a work on education published by Messrs. Macmillan & Co. The book, *The Schools and Nation*, is by Dr. George Kerschensteiner, and deals with the German system of continuation schools, by which employers of labour are bound by law

to allow their juvenile workers under the age of 18, time for attending classes in which they are instructed on matters useful in their various vocations. Viscount Haldane warmly commends the system. "It is a system with which we have to reckon," he says: "If we do not keep up with it, our workmen will, in the course of a few years, compete with their fellow-workmen abroad at a serious disadvantage. The latter are beginning to enjoy, under the new method, a training and opportunities which have no counterpart here. Some of the educational authorities in Great Britain, those in London and in three or four other great cities are quite alive to what is going on and are making efforts to keep up in the race. But public opinion in this country is slow to awaken, and unless it does, and gives a definite mandate to the local authorities, the latter have little power to help."

A University for the Central Provinces.

An important Resolution has been issued appointing a representative committee to frame a scheme for the establishment of a University for the Central Provinces and Berar. It says that Sir Benjamin Robertson desires to limit the free discretion of the committee in one respect only. In view of the important expression of public sentiment elicited at the University Conference last year, it would be inadvisable for the committee to submit proposals for a completely centralized university, but the scheme should provide for a university of the teaching type at Nagpur or in its immediate neighbourhood and for the affiliation of colleges situated elsewhere. The Chief Commissioner desires the formulation of a scheme in proper form for placing before the Government of India for sanction, and the committee should work out a detailed financial estimate both for

the central university and the outlying colleges. The committee will avail itself of all advice and assistance in this work and the Chief Commissioner hopes the public will readily help. The committee's report will be published for information and criticism before orders are passed. Mr. Mayhew, officiating Director of Public Instruction, will be the President of the committee, of which among others, Sir Bepin Krishna Bose, Mr. Low (Director of Agriculture), Rao Bahadur Mudholkar, the Principals of the Training College and the Government College of Jubbulpur and of the Government, Hislop and Morris Colleges and the Victoria College of Science of Nagpur will be members.

Physical Education in India.

Dr. J. H. Gray recently made a test of physical development among High School boys on the Y.M.C.A. Athletic Field, Madras, with the assistance of Headmasters and Secretaries of the Association. Sixty-one boys from the Pachaiyappa's High School were tested in about half an hour with the following results :—

Average for all boys of 14 and 15 years of age :—

Standing broad jump ... 4·3 feet.

Pull up ... once.

100 yards dash ... 16 4/5th seconds.

Average for all boys of 16 years of age or over :—

Standing broad jump ... 5·13 feet.

Pull up ... 2 1/4 times.

100 yards dash ... 15 seconds.

The object of these tests was to show by experiment how simple and yet how efficient they are, to enable Headmasters and teachers to carry on these tests and to establish standards of efficiency. All the boys in a school are divided into four groups according to age and the tests indicated above vary according to the age of the boys. After 1,000 or more boys of the same age have been tested it will be possible to arrive at a standard which the average

boy of that age should be able to pass provided the tests are carefully made and the time and distances are accurately measured. The results of these tests would have in the doctor's opinion a very definite scientific value.

It is proposed that a surprise test be made on the first occasion and after the boys have been tried they are to be given a lecture to explain the purpose of the tests and how they may improve themselves before a second trial is attempted. Two months later a second test will be made and by comparing the results of the two it will be a very simple matter to arrive at the exact improvement which has been made in the drill classes and elsewhere. The real object of such an experiment will be to encourage the average boy to take part in the tests and not to permit a few boys to monopolise the attention and athletic equipment of the school as is done at present.

The Teaching of Science.

The Government of Bombay have issued the following note to the press :—

In December 1912 Government sanctioned a revised science curriculum for secondary schools, and directed that it should come into effect in November 1914. Its introduction into Government High Schools involves the preparation of text-books, the purchase of apparatus, the provision of laboratories and the training of teachers. The steps taken towards supplying these needs are detailed below.

The text-books are being prepared by Mr. P. Wren of the Indian Educational Service, who has himself taught school science and has had previous experience in the writing of school books. His drafts are submitted to a number of experts before receiving final sanction. In all, seven readers will be required, one for each standard, together with a teacher's hand-book for each. Several of the text-books have already been published and the remainder are in active preparation. In addition to this the Inspector of Science Teaching is preparing

some special exercise books in which the pupils will record their observations and experiments, and which will be sent to him periodically for inspection.

Model indents for the apparatus necessary for physics and chemistry have been prepared and circulated, and in most cases the apparatus has already been ordered. Government have allotted a sum of Rs. 66,760 to defray the cost.

The present science rooms in the High Schools are for the most part unsuited for the teaching required by the new course, as they are not designed for individual work on the part of the pupils. Hence the Inspector of Science Teaching has designed a type of school laboratory, and plans and estimates are in course of preparation. It is hoped that work will be begun in many cases during the current year. In the meantime temporary arrangements are being made for improving the present rooms sufficiently to enable the course to be taught, and for this purpose Government have sanctioned the expenditure of Rs. 11,054.

Every Government High School already possesses a special teacher for science. When the new course is fully developed, certain schools will probably require to have the staff strengthened, either because of the number of boys working at mechanics, physics and chemistry in the upper standards, or because of the class teachers of the lower standards not proving competent to undertake the simple nature study prescribed. The strengthening of the staff will be considered in due course. Even the present science teachers are perhaps not fully qualified to teach the new course, because they themselves, though graduates, have had comparatively little experience of practical laboratory work. The Inspector of Science Teaching therefore intends to hold a training class for science teachers between November, 1914 and March 1915. Each class will meet for a full fortnight and be put through selected experiments, the discipline of laboratory routine being explained at the same time. It is

believed that by this method an efficient body of science teachers for schools will be obtained.

Indian Education.

In an article on the "Analysis of the College system" published in *The Times Educational Supplement* of July 7, the writer makes a critical examination of the facilities for higher education in India. The writer declares that India's five Universities are merely nominal and that University teaching devolves upon some seventy-five Colleges scattered all over India.

It is impossible, he says, for any country to maintain as many as seventy-five self-contained university institutions in a condition of full efficiency. The provision of adequate teaching bodies for so many institutions of the highest grade would be out of the question anywhere, and India is poor, and has only recently begun the study of Western science. It may be said, broadly, that there is no College in India whose staff and equipment can be compared with those of a European university; that is to say, there is no place where an Indian youth can obtain a training equal to that which is open to every European youth. The great majority of the Colleges are quite unworthy to be charged with the function of university teaching.

These Colleges may be sub-divided into three classes—Presidency or Government Colleges, Mission Colleges and institutions purely Indian.

On the material side the Government Colleges are usually much better equipped than the others, because they are maintained by the State. In some cases they have really handsome buildings. In recent years they have all obtained adequate scientific laboratories, because Government has been spending money lavishly on science. But in no case does any Government College possess a library which even approaches adequacy. You will hear from keen scientific teachers that their grants for apparatus are so handsome that they sometimes find difficulty in spending them, while they cannot get money to buy even the most essential journals. And if this is the position

of the teacher of chemistry, the situation of the serious teacher of history, who has to seek in the library at once for his raw material, his apparatus of study, and his records of modern work, must be left to the imagination. It should be remembered that, except in Calcutta and (in a less degree) in Bombay and Madras, there are no great public libraries to supplement the deficiencies of the College libraries. It may therefore be said that in most subjects of study, and especially in the arts, the serious conduct of higher university work is impossible even in the best of the Government Colleges.

Of the group of mission Colleges some are stated to be extremely weak and ill-equipped, while others "are among the best teaching institutions to be found in India":—

This is not because they have large resources. Missionary societies cannot have unlimited funds for educational purposes; and though these Colleges receive Government grants, such grants are naturally far less generous than those made to Government colleges. But the best of the Mission Colleges seem to be able to attract from home young men of an admirable type, disinterested and full of zeal, who come out for a few years for the sake of the experience and the interest of the work they have to do.

The Indian Colleges, maintained some by ruling princes, some by religious bodies, as, for instance, the Mohammedan College at Aligarh and the Central Hindu College at Benares, and others again by local enterprise, form the largest group of Colleges. Most of these Colleges, apart from those in the Native States, are in receipt of more or less substantial Government grants.

It is a common complaint against these Colleges, especially against those which are governed by committees, that the lay governing body is too prone to interfere in minute matters of College discipline, that their action is increasingly governed by political considerations; and that the work of the Colleges is thereby prejudicially affected and their tone lowered.

These complaints mainly come from the Englishmen engaged on the staffs of the Colleges, who seem to feel that they are regarded with suspicion. At Aligarh, for example, which in the days of its founder, Sir Syed Ahmed, was regarded as the model Indian College, it seems clear that discipline has been much relaxed; no college is regarded with greater pride by its alumni but they all complain that it is no longer what it once was."

World's Hindusthan Student Federation.

By Mr. Sudhindra Bose, M. A., Ph. D., *Lecturer, State University of Iowa*, writes to us:—

It has been roughly estimated that there are now about three hundred Hindu students in American Colleges and Universities. And one of the most significant things which this student body has done in recent years is the organization of the Hindusthan Association of America. The Association is a national society with chapters at nearly all important institutions of learning where there is a sufficient number of Indian students. At present, the strongest branches of the Association are to be found in New York, Chicago, and in the Universities of Illinois, Wisconsin, Michigan, Iowa, Kansas, Washington, Oregon, and California.

The primary object of the Hindusthan Association is to further the educational interest of India. It furnishes the prospective students with information on educational conditions in America; it encourages the stay-at-homes to go abroad for education; the officers of the Association meet the newly-arrived students at the port of entrance, and direct them to the proper college. Last, and not least, the Association is doing a vast deal to promote closer fellowship between India and America.

Desiring to leave nothing to chance, the society has organized a campaign to carry on its patriotic programme. As a practical step to that end, it is publishing an excellent educational magazine, called, "The Hindusthan

Student." The Association has already secured the support and co-operation of many of the leaders of this nation and of India. In its long list of distinguished honorary members figure the names of many a notable American University President, College Professor, author, journalist, and not a few Indian Nawabs, Maharajas, and Rajas.

The Hindusthan Association is now very anxious to extend its field of operation by internationalizing its organization. It has perfected a plan to unite all Indian student societies in every land under one general federation, to be known as the "World's Hindusthan Student Federation." The branch organizations, which will be the members of the Federation, will have for their basic purpose the promotion of Indian student welfare. As far as possible, the chapters federated throughout the world will render one another neighbourly services, and look after the interests of Indian students, just as the Hindusthan Association of America is trying to do at present through its various local organizations in the United States.

All the important business of the Federation should be conducted through a Central office, the location of which is to be fixed annually by its chapter members. It may be one year in England, another in Europe, next in America, and the following year in Japan or in India. The Central office which will be under the direction of an international President and international general secretary, will become the international clearing-house of information.

It should be well understood that the coming of a branch society within the circle of the World's Hindusthan Student Federation will in no way or manner interfere with the constitution of the local organization. Each individual society will retain its full freedom and autonomy, and will merely become a co-operating member of the Federation. Take a recent instance. The Woman's Auxiliary of the Hindusthan Association, started by that true and

loyal friend of India, Sister Kamala Devi, has applied the other day for a membership in the Hindusthan Association of America. The Auxiliary is organized for the benefit of all Indians in the city of New York, and its active members are all American women. This rather new organization will be in no way competing with the old Hindusthan Association of New York: each has its own constitution and by-laws, each has its own peculiar work, and each will try to help the other as far as possible. The chief reason why the Auxiliary is seeking affiliation with the national organization is that such a connection will give it a better standing, and in some respects, a wider field of activities.

As the national President of the Hindusthan Association of America, I take this opportunity to extend a cordial invitation, through the medium of your valuable journal to all Indian student societies to co-operate with us, and build what promises to be one of the greatest and most effective agencies for the welfare of Indian students. We have been criticized, doubtless sometimes unjustly, for our inability to organize on a national and international basis. We can now show how untrue this is. There is a real demand for young men of constructive vision, and of aggressive personality to step forward and lend us a helping hand. We need the World's Hindusthan Student Federation.

Agricultural Education in U. S. A.

In the report on Agricultural Education recently issued by the Director of Agriculture, Mysore, on the systems prevalent in various countries in the world on which Agricultural Education is imparted, we find a very interesting account of primary Agricultural Schools in the United States of America, where such education for the sons and daughters of the farmers is compulsory. There are only a fraction of the sons of the agriculturists who receive training in Secondary Agricultural Schools, and very few who go to the Agricultural Colleges, the great mass stopping with the six to eight

years of primary education. Even in a go-ahead country like the United States we find the same complaint made, with which we are face to face here to-day in India, namely, the teachers being not properly qualified in subjects related to Agriculture. But this defect is being removed rapidly by the various agencies which are used for the purpose of training teachers already engaged in work, and which, as given in a recent issue of the *Jayaji Pratap*, are as follows :—

- (a) Summer schools and institutions.
- (b) Introduction of Agricultural work to teachers, institutes and convocations.
- (c) Lectures before teachers, farmers and various organizations emanating from an educational centre.
- (d) Correspondence, reading club, and leaflet work.
- (e) Short courses in Agricultural Colleges and other institutions.
- (f) Supervising or Advisory teachers who inspect the teaching of nature study or Agriculture in a group of schools.
- (g) Work of the Department of Agriculture.

Regarding peripatetic teachers or supervisors, the following extract serves to give an idea :—

"Following the city school plan of having visiting teachers of music or manual training, some places have adopted a similar plan for rural schools. One teacher can visit several schools, either giving instruction himself or what is better supervising and directing the work of the teacher in the school. The former phase (the peripatetic teacher doing all the teaching) may be worth while in starting the new education. The second phase (the directing of other teachers) is very effective when the individual teachers are not themselves experts and it should have a marked effect on the teacher."

With regard to the training of new primary

teachers in agricultural work, the following types of institutions are taking up the work in various parts of the United States :—

- (a) State Normal Schools.
- (b) Local Normal Schools.
- (c) High Schools and Training Classes.
- (d) Separate Agricultural Schools (Agricultural High Schools, etc.).
- (e) Education Departments of Colleges and Universities and Teachers' Colleges.
- (f) Agricultural Colleges.

It is not possible to discuss the work done by all these institutions, but the simple enumeration indicates clearly enough how the importance of training rural teachers in Agricultural Sciences has impressed itself upon the country.

The rural elementary school is made in the United States a natural expression of the community of which it is, and ought to be a part. Education is made to develop out of daily experience. We are told by Dr. Bailey, that if Geography be taught, let it be taught in terms of environment. Geography deals with the surface of the earth. It may well concern itself at first, with the school grounds, the highways, the fields, and what grows in them, the forests, the hills, the streams, the hamlet, the people and their affairs. As the pupil grows he is introduced to the world activities, similar remarks may be made for Arithmetic, reading and all the customary work of the school. This is much more than what is meant by "correlation." The problem of the rural school is not so much of the subjects, as of methods of teaching. The best part of any school is its spirit. A school can be conceived in which no agriculture is taught separately, which may still present the subject vitally from day to day by means of the customary studies and exercises. The Agricultural Colleges, for example, have all along made the mistake of trying to make farmers of their students by compelling them to take certain practical courses, forgetting that the spirit and method of the institution are

what make the work vital and what send the youth back to the land. The whole enterprise of elementary schooling needs to be developed natively and from a new point of view, for in an agricultural country agriculture should be as much a part of the school as oxygen is a part of the air. We should not isolate Agriculture from the environment of life in order to teach it. We should teach the entire environment.

The consensus of expert opinion is that any training in rural sciences must begin with the so called nature study, *i.e.*, the study of environment. This necessitates the spending of a good deal of time in the open and in actual observation and the handling of things by the pupils. Instruction in rural science which is confined to recitation from books is useless or worse than useless.

THE BOYS' AND GIRLS' CLUBS.

One of the most interesting phases of Agricultural education, a phase which is only indirectly connected with the actual training given in the schools, is the great Agricultural demonstration movement including the formation of boys' and girls' clubs. These organizations have proved frequently, a much more successful mode of giving agricultural instruction than the teaching of subjects in schools. In fact in many places where school instruction has failed, boys' and girls' clubs have been a decided success. This form of Agricultural instruction is extending rapidly over the entire country, and is becoming a very important extension work in education as well as in agriculture.

There are separate organizations for the training of adults, and for young boys and girls. We are here concerned with the work among boys and girls. This work was begun in the United States in a small way in 1903 in one State and has now increased to such extent that 75,000 boys and 25,000 girls are enrolled as members. The clubs organized were

known as Boys' Corn Clubs and their objects were as follows :—

1. To afford the rural teachers a simple and easy method of teaching practical Agriculture in the school in the way it must be acquired to be of any real service, mainly by active work on the farm.
2. To prove that there is more in the soil than the farmer has ever got out of it by tilling it in a better way and thus be helpful to the family and the neighbourhood.
3. To give the boys a definite worthy purpose and to stimulate a friendly rivalry among them.

In the United States the Departments of Agriculture and Education both actively interest themselves in the Boys' Club work. The girls have also similar clubs and they, instead of taking field crops, take up garden crops, and in addition to cultivation, they work in connection with the preserving or canning the product for winter use.

Elementary Education in Mysore.

The Government of His Highness the Maharaja of Mysore have sanctioned the opening of one thousand Aided Village Elementary Schools in the State.

As regards the aid to be given to these schools by Government, a grant will be made of Rs. 48 per year for each teacher and eight annas for each pupil in standards below the 3rd, twelve annas for each pupil in standards 3rd and 4th and one rupee for each pupil in the 5th standard, in average daily attendance. The Government expect the villagers to provide buildings for the schools started and to pay private contributions to the teachers employed in aided schools.

The annual cost is estimated to come to Rs. 84,000.

Each school will be placed under a Committee of the villagers and may also be supervised by the Progress Committee of the Taluk or the District Committee of the Conference.

An Industrial Education Convention.

The second convention of the National Association of Corporation Schools was to have been held in Philadelphia from June 9th until June 12th, inclusive.

The National Association of Corporation Schools is an association organized for the furthering and developing of industrial education by employers. Its members are the corporations and firms who have taken positive steps in the forwarding of industrial training by organizing schools in which their new employees are taught what to do and their old employees are trained to higher degrees of efficiency.

Its field of operation lies right alongside the field of operation of the National Society for the Promotion of Industrial Education. The purpose of the National Society is to develop industrial and vocational training in the public schools. The National Association begins where the National Society stops; it takes the public school graduate just entering business and trains him for the particular work of the concern into whose employ he is entering. The purpose of both organizations is to train the man to be of the greatest value to society and business and to enable him to earn the largest possible salary.

A Course in Merchandising.

Announcement has been made by the Extension Department of the University of Minnesota of a short course in merchandising, the first attempt on the part of any University to do for dealers what is already being done for farmers.

The course is to be practical rather than theoretical. Facts will be presented by men who not only have had successful experience in merchandising, but who are also experienced in training others to be successful in business.

The course is intended for both the employer and the employee in retail institutions, and for those who aim to enter the field of retail selling.

The lectures and discussions will relate the result of the successful experiences of many dealers and will offer suggestions for economy in management and in increasing trade.

University Education in Bengal.

A statement is being circulated for perusal and signature among the professors and lecturers of the Calcutta University by Mr. W. A. J. Archbold of Dacca urging that—

(1) College principals should be ex-officio members of the Senate and more representation be given to teachers;

(2) the so-called University students should not be encouraged at the expense of College students;

(3) the examination system should be recast and the standard raised by an independent searching enquiry;

(4) the number of students at lectures should be reduced;

(5) four years should be recognised as the University course; and

(6) students should be better housed and cared for.

Hand Weaving in India.

In answer to a question by Mr. King, in the House of Commons Mr. Roberts stated that there had been no change in the policy of the Serampore Weaving Institute. In the artisan section improved methods of hand-loom weaving were taught. In the upper section the instruction given fitted students to work either as teachers of hand-loom classes, managers of hand-loom factories, or draftsmen and designers in power-loom factories. Most of those who had so far passed out appear to be following the first two of these occupations. The school was believed to be of material service to the hand-loom industry.

Technical Education in Bihar.

A Committee of 26 gentlemen has been appointed by the Government of Bihar and Orissa to consider the question of Technical Industrial Education in the Province.

The Scientific World.

Research Work in Dairying.

Considerable attention is being directed to the Dairy industry in India but it is well to point out that the problem is interesting not so much to Indians as to the Europeans resident in this country. Very few Indians use raw milk and butter. Milk is generally boiled and butter converted into *ghi* before being used. The possibilities for harm in the use of milk and butter are therefore not so great in India as in European homes. The present position of the Dairy industry in India forms the subject of an interesting note by Messrs. Milligan and Hutchinson of the Research Institute at Pusa, and in the 'Industrial World' of the *Wealth of India* for July will be found stated the main points as they concern the Gowallas and the steps to be taken by Municipalities and Co-operative Societies to secure an improvement in the industry. It would seem however that the aid of the Scientist is required as well and the points awaiting enquiry by the bacteriologist are also indicated by Messrs. Milligan and Hutchinson. They state that temperature plays a most important part in the development and physiological actions of bacteria, and as the question of milk condition and keeping power depends almost entirely upon bacterial action, it is obvious that a thorough knowledge of the bacteriology of milk under Indian conditions is necessary for successful work in dairying in this country, where air temperatures during most of the year approximate to the optimum for bacterial action and development. They point out that high class dairying in India is mostly carried on under conditions which demand the supply of large quantities of milk and milk products, but do not afford opportunities for original work on bacteriology by those in charge of such establishments. It is more than probable that the high tempera-

tures obtaining in the plains of India affect the complicated bacterial reactions taking place in milk in such a way as to introduce serious differences between them and similar changes at the lower temperatures of Europe; it is possible that investigation might show that methods which are best in temperate climates may be modified with advantage or even superseded by very different ones, in India.

Such investigation would naturally be included in the work of the Agricultural Department; whether the time has arrived for its inception is a question to be decided in relation to the more practical problems now under consideration.

BUTTER AND GHI.

The application of bacteriological research to the manufacture both of butter and *ghi* in this country would take the form first of general enquiry as to the best methods of securing the absence of deleterious organisms, as in the case of milk itself, and more specially, the isolation and culture of such organisms as are most suitable for the "ripening" of cream. Such cultures are known as "Starters" and are in universal use in European and American dairies, the quality of butter depending upon their purity and suitability in the same way as that of beer does upon properly selected yeasts. In India the use of starters imported from Europe has not been a success, even in dairies under European supervision, partly owing to the difficulty of avoiding contamination, and partly, no doubt, to the unsuitability of the imported strains to Indian conditions.

From the point of view of the European consumer, therefore, it is probable that butter making in India might profit by research work on bacteriological lines. It is also possible that improvements in the making of *ghi* might result from such work, but the latter depends

so much more, as a commercial article, upon careful blending with adulterants, that it would probably be a waste of time to deal with its manufacture from this point of view.

STERILIZATION OF MILK.

This process in dairies is carried out entirely on lines elaborated in Europe or America, and it is assumed that the organisms present in milk are similar in India to those found in the former continents, and can be controlled or eliminated by similar treatment. This is a large assumption and savours of empiricism in dealing with an industry which owes its success in Europe entirely to scientific investigation on bacteriological lines. As an instance of the use of what appears to the writers to be a method highly unsuitable for use in India may be cited the apparatus for cooling during the process of pasteurization, in which the milk is spread in a thin layer completely exposed to the air; were it desired to reinfect the milk with the greatest number of air borne bacteria possible in a given time, this method would admirably serve the purpose. It is also customary to assume, as has been already pointed out, that the standard technique of sterilization as practised in European dairies is the best possible for India. It is necessary, however, to remember that this technique does not aim as a rule at the complete removal of all micro-organisms but endeavours to exterminate the directly pathogenic species, such as those of tuberculosis and typhoid, and to keep down the number of the others so that at the comparatively low temperature to which the milk is reduced after heating these latter may not multiply with sufficient rapidity to produce harmful results. Such a method of treatment depends almost entirely upon starting with comparatively clean milk, and being able after heating to keep the partially sterilized products at a temperature at which the surviving organisms will not multiply rapidly. Such

conditions are easily obtained in Europe, but very difficult to procure in India, and it would seem necessary to revise the whole technique of sterilization in this country with a view to modifying it in accordance with local conditions.

It would also be necessary to include an enquiry into the conditions under which toxic bodies are formed in milk by bacterial action before sterilization, which operation, although it may prevent further formation of such substances, does not remove or destroy them. In the opinion of Messrs. Milligan and Hutchinson it is a question for consideration whether such enquiry would come into the province of the Agricultural Department or be more properly relegated to that of medicine.

Scientific Research in India.

The programme of work of the various scientific departments for 1914-15 is the continuation of the researches of last year. There is hardly anything new, but the Meteorological Department will take up the following works:—Pilot balloon ascents in Agra, Simla and Darjeeling; instrument carrying balloons in Agra; detailed cloud measurements at several stations; the training of observers for independent work at outstations; the completion of the analysis of previous balloon records.

The Geological Survey will enquire into petroleum in the Punjab, North-West Frontier Province and Baluchistan. The officiating Director of Botanical Survey will again tour with the officiating curator of the herbarium in Travancore and they will work out conjointly the resulting material. A survey of the whole district is contemplated and will probably be published in the records when completed in the region of agricultural chemistry. Testing of sugar beets which are being grown experimentally at Peshawar, is now absorbing a good deal of time and promises to become a matter of first rate importance.

In the sphere of entomology, the work of

investigating and advising upon insect pests of crops will be continued and accounts of life histories, etc., will be published as the material accumulates. The issue of a revised edition of "Indian Insect Pests," which is now out of date and has been out of print for years, will be undertaken as early as possible. This implies the comparison and checking of all entomological collections and records both at Pusa and in the province and will take a considerable amount of time and work. This and the necessary internal reorganisation of the work of the section will probably fully occupy the time of the Imperial Entomologist and will leave the way clear for taking up new lines in future years.

The Imperial Bacteriologist will continue an investigation on the influence of drugs, administered by mouth and subcutaneously in the course of the disease, the object being to discover a method of treatment for rinderpest. The rinderpest anti serum is a prophylactic agent and of very little curative value; consequently there is no known means of saving the lives of animals when once infected with rinderpest. The discovery of an effective treatment for rinderpest would be of great economic importance. All experiments on this line have up to the present given negative results. He will also investigate into methods of prophylaxis and treatment.

A Surgical Marvel.

The home papers report a wonderful development in surgery. Dr. Serge Voronoff, the well-known surgeon, has, it is stated, succeeded in grafting a monkey's thyroid gland on to a child suffering from cretinism, and effecting a radical cure.

For the benefit of our non-medical readers, we may explain that the thyroid gland is a gland extending down the neck, which, in some way or other, exercises an influence upon the blood-flow through the brain. Creti-

nism is a chronic disease, arising in early childhood, and is due to an abnormal condition of the gland, and is characterised by imperfect development both of mind and of body. The speech of the child is delayed, or in bad cases may be entirely lacking. The voice is usually harsh and unpleasant. Goitre is a form of cretinism, due apparently to bad water, and it may attack an adult whose brain is already developed.

Dr. Voronoff described the case before the Academy of Medicine, and it was unanimously regarded as opening a new path in constructive surgery, rich in discoveries which will diminish human suffering.

The child operated upon was aged fourteen. When aged eight she was attacked by myxoedema as a sequel to scarlet-fever, and ever after has presented all the symptoms of severe cretinism.

Dr. Voronoff, in the presence of nineteen doctors, grafted to the child's neck the right lobe of the thyroid gland of a large baboon. The child has since continued to grow rapidly in body and mind; while formerly apathetic and silly, she is now turbulent and sharp.

The child's progress is being carefully observed by Professor Hobbs of Bordeaux University.

This is the first time that the grafting of an organ from an animal to a human being has been accomplished with success.

It is believed that, thanks to Dr. Voronoff's new technic, the operation may become common and that a number of cretins and imbeciles, now leading a purely vegetative existence, may be transformed into useful members of society.

What Influences Sex of Children.

Dr. Isreal Bram, of Philadelphia, is the latest recruit in the ranks of the sex determinators. He discusses the various theories which have been suggested as explanations of

the fact that either a girl or a boy was born. The influence of either parent as well as other ancestors, the months and seasons of the year, the mental states of the father and mother, the sentiments, emotions, the power of love, the foods, etc., have all been credited or blamed with a capacity to direct the sex of the approaching child.

The upshot, however, of Dr. Bram's researches are entirely different.

An excess of food, he says, in the mother causes the female to predominate. Thus the child is a girl. Generous amounts of pabulum to the father, with a scanty allowance for the mother tends to the birth of a boy. Albuminous, rich, heavy, meaty foods, if taken by either parent, will influence the sex in favor of the overfed one.

He cites the fact that in periods of privation, starvation, financial panic and war the mothers do not receive enough nutriment, and the ensuing births are, as a consequence, mostly boys.

Moreover, he holds, the internal tissues, such as near-kidneys or "adrenal" glands, when active tend to make the child a male. In women whose adrenals are ill or injured the children are predominantly female. If the dry powder of the adrenal glands is given as a medicine, Dr. Bram contends, the offspring will be male.

Dr. Bram has devoted several years to an investigation of these facts. A large number of his patients wished to have boy babies. He experimented, he says, with thirty of these prospective mothers, twenty of whom were seen seven months before their babies were born. Every one of these had a baby boy.

For boys, eggs, meats, fish, cheese and heavy albuminous foods are forbidden. Cereals, fruits, potatoes, butter, milk and buttermilk are allowable. Lots of water must be drunk. In addition to this, a capsule with two grains of the extract of suprarenal gland, combined with four grains of leci thin, is given after each meal—always under the advice of a physician, of course.

Horse-Power of a Stream of Water.

A gallon of falling water will develop as much power as a falling block of iron weighing ten pounds. Of course, the greater the fall, the greater the power developed. Water falling one foot will develop a pressure of 4.8 pounds per square inch of pipe. The same amount of water falling 100 feet will develop a pressure of 48.31 pounds per square inch of pipe. Falling 1,000 feet it would produce a pressure of 483.09 pounds per square inch of pipe. To compute the power of falling water it is necessary to multiply the volume of flowing water in cubic feet per minute by its weight, 62.5 pounds, and this product by the vertical height of the fall in feet, and divide by 33,000, the number of foot-pounds representing 1 h. p. for 1 minute.

Talking on the Telephone.

In case one does not care to stoop to a telephone, while talking, he can make himself heard by a very simple means. Simply place the abdomen or the chest against the mouth-piece of the transmitter and talk into open air—and the sound will get to the party at the other end. The whole chest wall and the wall of the abdomen vibrate in unison when the mouth is speaking, as they are a great sounding board, and they will transmit the proper sound waves to the diaphragm. This, says the *New York World*, is easy to try and astonishing in result.

Wanted Long Envelopes.

Sometimes a man has an urgent necessity to use a long envelope. If none is at hand, two smaller envelopes will answer the purpose. Mr. W. M. Braly gives some directions for making a long envelope out of the two smaller ones. They are as follows:—

Cut the right end from one and the left end from the other and place one inside of the other so that the open ends will lap, and paste them at the edge. In this way an envelope of the desired length may be made.

The Sanitary World.

Claims of Indian Systems of Medicine.

In the special supplement of the *Commonweal*, dated the 3rd July 1914, Sir Balachandra Krishna of Bombay strongly appeals for a better appreciation of the Indian systems of medicine.

In spite of the tendency of a large majority of English medical men to discourage the use of Indian drugs, he says they are being largely used in various parts of India and means have been adopted for the preservation of the literature on the subject.

After shortly describing the activities for promoting the Indian systems of medicine in Bombay, Madras and Calcutta, he pleads for more attention and sympathy on the part of the medical men.

He suggests that they should study the standard works on medicine and surgery in Sanskrit so that they may get a clearer insight into the subject and may be convinced of the usefulness of some of the gems they will dig up.

Incidentally the writer points out that Sreshrita and Charaka had been translated into Latin long before any translations appeared in the Vernacular languages of India.

Sanitation and the Masses.

It is easy enough to instil ideas of sanitation into the minds of the educated classes in India, but the final aim is to cause the three hundred millions, the ryot and the coolie, the villagers and the small people, to get an inkling of the drift of the modern ideas on the subjects of health, hygiene and sanitation. To them bacteria and bacilli and epidemics and disinfectants have no meaning because in their belief the phenomena of life are governed by one comprehensive cause, God. If a child is sick, if a cow or goat has strayed, if money has been stolen, the uni-

versal cry in the last instance is: "it is God's will."

Therefore some means must be found to reach them and for this purpose Indian mythology must be largely used. So says Mr. Johan Van Manen in the *Commonweal*. He says that nearly all great sanitary rules of practical value can be clothed in some mythological costume. The noxious microbes and bacilli may be represented as demons asuras or bhutas, the beneficent ones as suras, devas and what not. You want people to boil their water, in a district where typhus is rife; see how the good and bad spirits wrestle for mastery until the temperature has reached the boiling point. The struggle subsides; the demons have fled.

"Were I an expert medical man," writes Van Manen, "I doubt not that, from the huge storehouses of Puranic lore, from the stories in the *Mahabharata* and other poems, from the symbolical teachings of the ancient sages, I might cull elements quite easy to arrange so as to point out a sanitary moral, minutely symbolising sanitary processes, and phenomena of health and illness. I hope that what has been written may be enough to set some readers thinking and to cause our pioneers of Indian sanitation to consider the idea carefully. Here is a great and valuable work to be done. Perhaps only co operation between the literary man, the Indian scholar and the western scientist may be able to bring the idea to full fruition. Yet I cannot help being convinced that besides all the magnificent work done or to be done by doctor and inspector, by populariser and preacher, there remains also much to be done on this Indian Continent for the man I have called the Sanitary Mythographer. Him I wish to call forth by this short note; may he soon begin his labours."

USEFUL MEDICAL AND SANITARY NOTES.

Tincture of Iodine.

This is the most useful of household remedies. The cut hand, the "barked" shin, the pricked finger, the scratched foot, as well as more serious wounds, should be painted with it at once. It is a perfect germicide and can do no harm.

Dangers of Exposed Fruit.

Considerable danger occurs from the exposure of fruit to dust in open shop windows. As the result of observations in this connection, E. F. Ladd found that grapes which had been exposed in the street had 3,000,000 bacteria per grape on the outside as compared with 780,000 on the inside grapes.

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Remedy Against Mosquitoes.

New Jersey, in the United States, ranks among the most mosquito-infested countries in the world. There immense tracts of land are deserted on this account. Some years ago a scientific commission was formed to devise a remedy. After patient research this body decided to employ a shrub from South America called *Ocimum viride*, on account of a peculiar odour which it possesses, which the mosquitoes dislike, and which puts the insects to flight and frees the locality of them. A single branch in

a room and a plant growing near a house are, it is stated, sufficient to establish immunity.

This plant is known locally as "Mosquito Balm." *Ocimum sanctum*, the Tulsi plant, is supposed to have similar properties for driving away mosquitoes. We understand that the *Ocimum viride* is not found in India. Will botanists and malaria investigators find out if it could be cultivated in India?

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Coffee for Asthma.

It is claimed that coffee is an excellent remedy for asthma in some cases; that it often succeeds admirably where everything else has failed, if taken very strong—what is called black coffee; weak coffee does more harm than good; an ounce (about two tablespoonfuls) of very strong coffee is enough, and a large quantity is a positive disadvantage, for the large quantity is less rapidly absorbed, and only serves to distend the stomach. The coffee should be taken "straight," without sugar or cream, and sipped by the teaspoonful as hot as can be taken without burning, the stomach being empty. If taken on a full stomach it is said to stop digestion. It is also claimed that with some people, coffee taken at meal time, especially late in the day, is very apt to induce asthma.

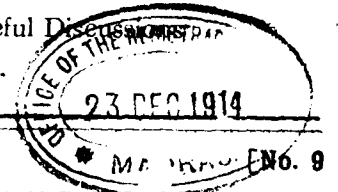
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The hopes that economists and politicians have long entertained that this twentieth century would witness a very important development in the peaceful and friendly organization of the nations of the world, at any rate of the European world have now been completely shattered and the idea of seeing the progressive west shaping its course towards the goal of cosmopolitanism or universalism, has proved, alas! an idle dream. Whatever change the distant future may effect, the economic rivalries and political jealousies of nations are too potent, for the moment, for co-operation and solidarity. In matters of railway and steamship communication, post offices and cables, capital and labour, and literature and philosophy, the old barriers which separated nation from nation were broken down and they were drawn more closely towards one another. Economic Science taught the lesson of solidarity and co-operation and it was thought, with the advent of the twentieth century, a new era of universal brotherhood had dawned. The ideal is indeed a noble one, though it is by no means a new one and the present time is most favourable to attempts at its realization. But the principle of nationalism in politics and economics which proved a powerful lever to

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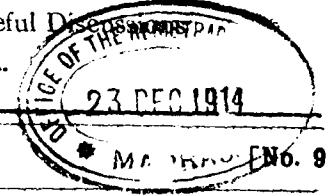
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The hopes that economists and politicians have long entertained that this twentieth century would witness a very important development in the peaceful and friendly organization of the nations of the world, at any rate of the European world have now been completely shattered and the idea of seeing the progressive west shaping its course towards the goal of cosmopolitanism or universalism, has proved, alas! an idle dream. Whatever change the distant future may effect, the economic rivalries and political jealousies of nations are too potent, for the moment, for co-operation and solidarity. In matters of railway and steamship communication, post offices and cables, capital and labour, and literature and philosophy, the old barriers which separated nation from nation were broken down and they were drawn more closely towards one another. Economic Science taught the lesson of solidarity and co-operation and it was thought, with the advent of the twentieth century, a new era of universal brotherhood had dawned. The ideal is indeed a noble one, though it is by no means a new one and the present time is most favourable to attempts at its realization. But the principle of nationalism in politics and economics which proved a powerful lever to

raise nations to strength, independence and greatness in the last century, has not yet become a spent-up force and it seems to be premature to talk of the world's federation and parliament of man. This is, however, no reason why self-seeking and ambitious nationalism should run riot and trample under foot solemn treaties and the liberties of small and innocent peoples. Economists and political philosophers have pointed out how the greatest good of the world can be attained by nations living peacefully near one another and making their own contribution to the progress of civilization. If cosmopolitanism has therefore proved a utopia, nationalism and internationalism have not, and despite the present war, one need not despair of the future of humanity and civilization.

Despite a discordant note here and there, the British nation is unanimous in thinking that the war into which it has been forced is a struggle from which it could not and ought not to have stood apart. With peace upon its lips, the military clique in Berlin with the Kaiser at its head, has been methodically preparing for a wanton war and it seized the present occasion as a golden opportunity to swoop upon its prey. The Kaiser's policy and acts are an imitation of the theories and doings of Napoleon and as the immoral and inhuman wars of the Corsican brought the whole of Europe upon him, the violence and brutality of the German Emperor have raised the entire world against Prussian militarism. The issues involved in the war are now clear to everybody. England is fighting for peace, for international morality, for civilization. The political ambition of Germany has run mad and if it is not resisted and crushed in time, it would be a menace to progress and civilization. It has been correctly said that this is not a war upon the German people who have practically no voice in the politics of their country; it is a resistance to the un-

thinking, the barbarous, the inhuman militarism of Germany which has no regard for the plight of word and for the right of other peoples to live. England would not have been true to herself if she had not taken up arms and, in spite of the flimsy excuses and feeble protestations of innocence put forth by Germany, she has the moral support of the whole world behind her. The war has brought out in an unparalleled way the unity and solidarity of the British Empire, and the cordiality and spontaneousness with which India, in particular, came forward to take her part in the war, have extorted the admiration and gratitude of the mother country and the colonies. India has not only supplied a contingent to fight against the enemy shoulder to shoulder with British and French troops, but has also contributed liberally towards the war funds. The British exchequer being by law liable to discharge the expenses of the forces sent out of India for Imperial purposes the arrangement decided upon by the Viceroy's Council and thankfully accepted by the British Parliament, under which the Indian treasury will bear the cost of the contingent till the end of the financial year, as if that Indian army were in this country, combines loyal liberality with farsighted economy.

It goes without saying that the German apotheosis of war will, besides causing untold suffering to millions of people, have exhausted the treasuries and credit of the belligerents and piled up huge debts before hostilities terminate. The British Government is taking all possible measures to support credit by assisting banks and merchants. Thanks to the British fleet, the trade routes are open and every effort is being made to maintain trade and industries. In spite of all efforts to keep factories and mills going, unemployment and distress are bound to follow the dislocation caused by the war. The Board of Trade, the Trades Unions and other agen-

cies are active in affording every possible help to the working classes who are confronted with partial or total unemployment. The paralysis of the enemy's trade by the effective blockade of his ports is being most enthusiastically availed of to deal a crushing blow to German industry and to stimulate the industries of Great Britain. During the last few years, Germany has built up a large trade with England and other countries and a systematic invasion of it is being planned and carried out. Valuable information and statistics have been published for the benefit of enterprising and monied people, so that they may realize what industrial openings there are waiting for them. Advantage will certainly be taken of these facilities, but the lack of capital, which it is extremely difficult to secure at the present moment, is a serious hindrance in the way and loud complaints are made against the refusal of the banks to accommodate applicants. With regard to the Moratorium, Mr. Lloyd George has decided, after consulting various interests whose replies were most embarrassingly conflicting, that there will be no further extension in the case of bills of exchange, retail debts and rent, though as regards other debts there will be an extension of one month. Little definite is known about the financial situation in Germany, but we shall not be far wrong if we conclude that it is most desperate.

We, in India, were not slow to take up the idea of capturing the enemy's trade with us which has been stopped by the war. That trade is, by no means, very large, though Germany stands next to Great Britain in her share of our foreign trade. The latest review of the trade of India thus observes:—"The value of Indian trade with Germany has increased, costly British goods being largely displaced in India by German cheap manufactures. German manufacturers have secured special advantages by the application of skill, chemical science, or a combination of both, in the supply of certain

goods, such as musical instruments and mineral dyes from coal tar." There are certainly a few articles which we usually import from Germany and Austria which we can locally manufacture and it is possible that a stimulus may be given to the manufacture of paper, stationery, candles and so forth. But the present outburst of industrial patriotism is a veritable revival of the Swadeshi movement which, four years ago, was wrecked on the rock of practical difficulties it encountered on its frenzied career. By no means do we wish to belittle the splendid enthusiasm of the people over the cause of Swadeshi, nor do we wish to deprecate the patriotic suggestions that have been thrown out that the present opportunity should be utilized to the full to start new industries and revive old ones. We do not want to exaggerate the difficulties but we do want to utter a word of warning against the raising of false hopes and the talk of impracticable things. The Swadeshi movement did not succeed because it was not founded on sound principles, and we should certainly take a wholesome lesson from its failure.

Are the present conditions more favourable to the success of indigenous industries? For a time indeed, prices will rule high and foreign competition will be stopped. But that is a precarious foundation; because as soon as the war is over, the competition will return. What will then happen to the new industries? Then again, the old difficulties in our path are still there—lack of capital, of experience, of organization and of many other things besides, essential to success. The present may indeed be made a fresh starting point for Swadeshi industries, and the movement may be revived. But let us have no illusions in the matter and let the facts be faced boldly. The governments of the several provinces have taken up the question and inquiries are being made as to what measures

may be adopted to give effect to the wishes of the people. But we are afraid, nothing practical will be done. Industrial surveys have already been made and there is little further to be done in that direction. What is wanted is action. Let the State take up even one or two small industries, demonstrate how they can be successfully worked and give their active support in other ways. This does not, however, appear to lie within the province of practical politics. The Government of Madras, for example, say that they "have long recognized the importance of promoting, as far as possible, the industrial development of the country" and there is, in their opinion, "reason to hope that the stoppage of the importation of goods made in Germany and Austria will enable competing industries already established in India to develop their operations and to secure a firmer hold on the market". The Director of Industries will be glad to supply all available information and to give advice to any private capitalists or manufacturers who would desire to take advantage of the present situation. But the Government are "precluded by the orders of the Secretary of State from themselves embarking on commercial undertakings," and they must leave the actual prosecution of projects of industrial development to private enterprise. It, of course, private enterprise is able to rise to the height of the occasion, nothing will give us better satisfaction. That does not, however, seem to be possible. Cannot the Secretary of State be induced to reconsider his decision and to relax the rigidity of his doctrinaire attitude in view of the present peculiar position?

Mr. G. Findlay Shirras has signaled his advent to the office of the **India's Trade in 1913-14.** Director of Statistics by the publication of an exceptionally informing and stimulating Review of the Trade of India for the year 1913-14. The publication is a vast improvement on the past reviews as it is

characterised by the addition of a number of important features and by an altogether interesting change in the very tone of the treatment of what otherwise prove dry and lifeless facts and figures. If other publications issued by Government were to be cast on the same model and made equally interesting, how valuable they would be! The public has long complained against the dry-as-dust and uninforming character of Government reports, but latterly reform seems to have been undertaken and is visible in certain directions. Besides the usual information and statistical tables, the Trade Review contains impressive charts showing the growth of trade in all its aspects, a summary and an index. The comments that are made in the appropriate places to show the significance of the statistics are most instructive. The total foreign sea-borne trade of India in 1913-14 was valued at Rs. 440.35 crores—a record figure—and represented an increase of about Rs. 180 crores over the figure for 1904-05. Yet the trade per head of the population in India was, last year, only Rs. 13-3-0 as against Rs. 386 of the United Kingdom, Rs. 232 of France, Rs. 230 of Germany, Rs. 39 of Japan and Rs. 24 of Russia. The bulk of the export trade consists of raw materials and the import trade of manufactured goods. The export of food grains compared with their total production is small, being on an average about 4 per cent. But about half of the cotton and jute grown in India and three-fourths of the linseed are exported as against only 9 per cent. of the total rice crop. Another recent publication on trade is a Memorandum which gives figures with reference to India's commercial dealings with European countries now in the grip of war and especially the enemy nations and is designed to show what openings there are for Indian Industries which may be taken advantage of.

It is satisfactory to note that the suggestion

The Industrial Conference.

which had proceeded from certain quarters that this year's session of the Indian National Congress should not be held on account of the European war has been rejected, as it deserved to be, by the leaders of the movement. The continuance of the war is a greater reason why the Session of the Congress should not be suspended as it will go to prove to the world that the Indian political movement is calculated to help the Government whose measures it has to criticise and that there is complete identity of feeling between the Government and the educated classes in the preservation and strengthening of British rule in this country. We have not yet heard anything about the Industrial Conference, but there is no reason why it should not be held with the elder body in the coming Christmas in this city. One may go further and say that the Industrial Conference will have specially important work to do in view of the industrial revival, indications of which we see all around us. Our leaders will have carefully to consider what practical steps may advantageously be taken at the present juncture and to see that the movement takes a practical and useful shape. This aspect of the situation cannot have escaped the attention of the patriotic and indefatigable General Secretary of the Conference, but we may suggest that all attention should this year be concentrated upon the question of the establishment of industries, small and large with the assistance of Government which has been freely offered. In this connection, it is to be deplored that the Commercial Congress, a scheme concerning which was published long ago and which was to be held in November, has been abandoned on account of the war. If the idea of this Congress materialises, the question of having two organizations doing the same kind of work will have to be considered, but this question does not arise at least this year.

The European war will have adverse effects

The Pranks of the Emden.

upon almost all countries—so interlocked are they with one another in connections of commerce. Though the struggle is being waged six thousand miles away from India, it is bound to affect us financially. The people now know that it is but their duty to bear their burden of the responsibilities of a conflict in which the British Empire is involved, and they are calmly and loyally facing the situation which has arisen. The panic which had set in on the out-break of the war had considerably subsided and things were wearing a normal appearance when the frolics of the German cruiser *Emden* in the Bay of Bengal and later in the Madras harbour revived the earlier apprehensions. They were, however, soon allayed and the mass of people, on the whole, showed strong nerves. We, however, learn that absurd rumours have been current for sometime past in the bazaar of Bombay and that the monied men from up-country districts who do the bulk of the trade in that city have run away to their native places. These people have never been remarkable for cool heads and courage and the modicum they had of these deserted them on the first rumours of war. From the speeches made the other day at the annual meeting of the Indian Merchants' Chamber, it appears there is a steady improvement and that business is slowly but surely reviving with reviving confidence. Every sane man knows that the *Emden's* powers of mischief are limited and that she is doomed; but people wonder how she could have been allowed to play the pranks she has been playing. Newspapers in Bengal and the mercantile interests they represent are wroth with the Government for its bungling in this affair and have taken the opportunity to have a hit at it for its Delhi policy. Government must have very good explanation to offer, but they have certainly given cause for criticism of their censorship and their inability to warn merchants of the dangerous presence of the

Emden. From our recent experience we can very well appreciate the state of constant anxiety and apprehension in which people in England have to live at the present moment surrounded as they are by risks on all sides.

Though the panic prices of the earlier stage of the war have somewhat gone down, their general range is ruling pretty high. People of limited and fixed means are being hard hit and they are meeting the situation in the best way they can. The Finance Member has a hard nut to crack to make the two ends meet and square up the two sides of his account. It is now the picking season for cotton and jute will be soon harvested. The demand for these two Indian staples must be considerably reduced and the price will go down. There is, again, no shipping available and trade is at a stand-still. This will react upon the condition of the cultivators and workmen as much as upon railway earnings and revenue. So far as cotton is concerned, America and England have to face a similar difficulty. Lancashire mills will have to run short time and provision must be made for the unemployed and half employed. Trades unions are meeting the situation splendidly in England,

but in the absence of such organizations in India, one cannot calculate the distress that is likely to be caused by the slackness of all business and devise measures for its relief. As the Lancashire mills will not be in a position to work up the normal supplies of American cotton, Sir Charles Macara has put forward a scheme under which he calls upon the Government to stock all the cotton and release it later on at reasonable prices when there is a demand for the raw material. The scheme is calculated to cost some sixty to seventy million pounds, but is expected to enable merchants and manufacturers to tide over the crisis. A similar proposal has been made to the Government in India on behalf of the cotton trade lest all those who are connected with it from the highest to the lowest should suffer heavily. We expect Government to make a comprehensive survey of the situation and to state for the information of the public the measures they propose to take to meet it. The cultivators are being advised not to grow the usual commercial crops like oilseeds which will have no demand in Europe, but to go in for food grains like wheat for which there will be a large market. It must be seen how far the cultivators act up to this advice and profit by it.

Articles.

THE ECONOMIC POSITION OF ENGLAND AND GERMANY.

By U. RAMACHANDRAN, B.A.

It may be of great interest now for all to know the economic position of the British and German Empires—the two mighty powers that are at present engaged in the great Continental war. A deal of information on the subject is available in a paper read by Mr. Edgar Crammond before the Royal Statistical Society recently, from which an interesting comparison may be made of the several trades, banking systems, national income and expenditure upon navy, armaments, etc., in the two Empires. Germany and Great Britain—the pioneers of social legislation—are solving the problem of the transformation of their populations from agri-

culture to manufacturing industries. In this matter, Great Britain was fifty years ahead of Germany, but the latter has had the benefit of British experience and therefore Germany's transformation is proceeding without the dreadful sufferings through which the English people had to pass. According to Mr. Crammond, at the present time, their true economic interests are reciprocal rather than antagonistic. The following statistics, brief though, taken from Mr. Crammond's paper, will exemplify the truth of this statement and show the different conditions and the advance of trade in the two countries.

No.		United Kingdom.	Germany.
1	Output of Coal (including lignite) in 1911	276,200,000 tons	231,500,000 tons.
	Increase per cent. from 1886 to 1911	72.6	218.1
2	Steel production in 1910	6,106,800 tons	13,698,600 tons.
	Increase per cent. from 1886 to 1910	154.1	1,335
3	Cotton Industry. Increase in the number of Spindles in 21 years (1888-1909)	12,860,000 (Lancashire alone)	5,063,000
4	Increase in the Mercantile Marine in 30 years	77.7 per cent.	156 per cent.
5	Progress in Ship-building—		
	i. Average output of the yards between 1893-1914	898,000 tons	210,800 tons.
	ii. Output in 1913	2,203,000 tons	618,800 tons.
6	Growth of Marine as demonstrated from the Suez Canal returns in 1912. Gross tonnage of the vessels passed through the Canal.	62.9 per cent. of the total	15.1 per cent. of the total.
7	Workings of the Railways— The traffic receipts of the railways between 1888 and 1910—Increase per cent.	74.3	156
8	Average inland waterways in 1911 (mileage)	8,180	15,320
9	Aggregate value of the foreign trade between 1888 and 1912—Increase per cent.	100.7	204
10	Aggregate imports from the British Empire into Germany 18 per cent. of the total.		
11	Aggregate exports from Germany to the British Empire 14.7 per cent. of the total.		
12	National Wealth (N.W.)	£16,500,000,000	£15,000,000,000
13	National Income (N. I.)	£2,120,000,000	£2,060,000,000
		£0.8-9 per cent. of N. W.	£0.9-4 per cent. of N. W.
14	Outlay upon Army and Navy in 1912	£3.7-8 per cent. of N. I.	£3.10-0 per cent. of N. I.
15	Trade Balance in 1912	£145,679,000	£86,935,000
	Trade Balance in 1888	£89,100,000	£2,845,000
16	Investments abroad	23 per cent. of N. W.	6.6 per cent. of N.W.
	Home Securities	£45,000,000	£137,500,000
	Foreign Securities	£165,000,000	£13,500,000
17	National Debt	£16-10 0 per head of the population.	£15-6-8 per head of the population.
18	Value of certain agricultural products produced in the Country in 1912, including Wheat, Cattle, Pigs, Milk, &c.	£180,146,900	£477,500,000
19	Woolen Industry, Exports in 1912	£37,773,000	£16,880,000
20	Population— 1910 Census 1911 Census	45,216,000	64,925,000

In the output of coal, item (1) in the above table, Germany is far ahead of the United Kingdom. In the cotton and woollen industries, items (3) and (19), Germany is comparatively low.

Referring to the mercantile marine (4), Mr. Crammond says that although the ratio of increase in the case of the United Kingdom was only half that of Germany, the actual increase was over two millions more than the total tonnage owned by Germany in 1911. Besides, we have to take into account the substitution of steam vessels for sailing ships, the increased carrying power and efficiency of modern passenger and cargo steam ships, etc. The foreign trade of Germany has largely helped the growth of the British mercantile marine, the tendency with regard to which has been in opposite direction in the two empires.

Compared with 1892, the Suez canal returns, as shown in item (6), strongly prove the advance of German mercantile. But one thing to be noted is that Great Britain was for a few years engaged in the South African war which must needs have checked the progress of her navy for sometime. Even with all this, it is gratifying to note that Great Britain has been maintaining her wonted supremacy in the navy. "Having regard to all the circumstances, we have perhaps good reason to congratulate ourselves upon the manner in which we have been able to retain our predominant position in this trade notwithstanding the vast increase that has taken place in the volume of the trade passing through the great water way."

A striking feature with regard to the Railways is that almost all the railways in Germany are state-owned and developed more "with a view to public economic requirements than to private interests." The railway revenue forms 34 per cent. of the total revenues of the empire and the Federal States.

Germany is essentially an industrial nation

and her progress in this direction has been reflected in her foreign trade returns (9). Her industrial expansion has been so wonderfully rapid that the writer even predicts, from an examination of the foreign trade statistics of the last quarter of a century, "that between the years 1920 and 1923, the value of the special trade of Germany will exceed that of the special trade of the United Kingdom. If our re-exports are included in the British total, it will, of course, take Germany many more years to overtake the aggregate value of British trade."

In this connection, it has to be pointed out that not a little of this industrial expansion has been due to a peculiar feature of banking in Germany. The German banks are far more enterprising than the British banks and their policy in developing a loan and finance business has undoubtedly fostered the development of the great industrial Joint Stock Companies in Germany.

What part the United Kingdom plays in the foreign trade of Germany can best be understood by a perusal of items (10) and (11) which state that 18 per cent. of the total imports into Germany is from United Kingdom and 17.7 per cent. of her exports go to the United Kingdom. This is no negligible item considering the fact that the corresponding imports and exports of Germany from and to countries other than the United Kingdom is much less than the percentages given above. On the other hand, 36 per cent. of the exports from the United Kingdom are consigned to the rest of the British Empire and 20 per cent. of the imports are received therefrom. Evidently, Germany is a "less important market to the United Kingdom than the latter is to Germany," although Germany too keeps up her relative position in the foreign trade of the United Kingdom. British trade is so widely spread out throughout the world that Britain does not depend upon any one single market for her advance. Germany, no doubt, stands as one of her best customers, but,

the United Kingdom is of 'decisive importance' to Germany. German trade with the British overseas dominions is very large and consequently, Great Britain's trade with her own dominions overseas depends to a great extent upon the German exports to, and imports from, the British colonies. Most of the trade that is carried on between Germany and the latter colonies is in the form of raw materials and half finished manufactures. Even the United Kingdom exports large quantities of chemical raw stuffs, yarn, wool, hides—all raw materials and also some finished goods of the older productions such as agricultural and textile machines. But Germany which abounds in modern industries, is the main source of supply to the United Kingdom of the newer branches of manufacture, e.g., electro-technical machine and mining machines. It may be interesting to note that in matters of fashion and luxury, Britain takes the lead.

The investment of large British capital abroad in such undeveloped States as Chile, China, Australia and others, enables the latter countries to carry on purchases from Germany of those things which Great Britain is not in a position to supply them with. This is, indeed, an advantage to Germany, for she is now able to facilitate her immense trade with the rest of the world without depositing much of her capital abroad. No doubt, most of the capital is invested in Germany itself which accounts for the wonderful expansion of her inland industries. The British overseas dominions are now the chief suppliers of food-stuffs and raw materials to Germany. The absence of such colonies for Germany compelled her to seek markets in every part of the world and her efforts in this direction have been crowned with success. "German trade is yearly becoming more widely spread throughout the world, and she is, to-day, much less dependent upon any one single market than she was in 1900."

One point about national wealth (12): German national wealth amounts to £15-6-8 per head of the population notwithstanding that the Imperial Government has undertaken the postal, telegraphic and telephonic services besides the possession of 90 per cent. of the railways and 50 per cent. of the forests; whereas in the United Kingdom it amounts to £16-10-0 per head, the Government having control over only postal and telephonic services and shares in the Suez Canal. "Although the ratio of increase of German wealth is now approaching that of the United Kingdom, our (Great Britain's) national wealth may be estimated to exceed that of Germany by at least £1,500,000,000. Our average wealth per head (£366 per head) is much greater than that of Germany (£227 per head), and during the past eighteen years, notwithstanding the wonderful advance that Germany has made, our increase per head has been very much larger than hers."

The average national income of Germany has increased in sixteen years £925,000,000, i.e., from £20.5 per head to £30 per head; and the population of Germany is nearly sixty-five millions. It has been calculated that one-third of this increase of income is due to growth of population and two-thirds to actual increase per head. The corresponding increase in the United Kingdom is £710,000,000, i.e., from, £36 to £47 per head, so that two-sevenths of this increment is due to growth of population. "If the comparison of aggregate national wealth and national income be made upon the basis of the whole British Empire, then the national income of the British Empire exceeds £3,500,000,000, and the national wealth amounts to £10,000,000,000, more than the wealth of the German Empire."

Trade Balance, item (15) tells us that Britain is the largest creditor nation in the world and Germany which was in 1888 far below in this respect is now occupying the second position in the world. Item (16) shows us the opposite

policies of the two empires in the investment of capital abroad, Germany opposing the outflow of her capital, and Great Britain facilitating it, the effect of which is discernible in the exports of British manufactures.

Among all things protected in Germany, agriculture is the most highly protected. Moreover, the agricultural classes enjoy a variety of special privileges, *e.g.*, in connection with taxation, the carriage of goods by rail, etc., and enjoy them at the final expense of the non-agrarian part of the community. The increased duty rate has artificially raised the value of agricultural land by increasing its revenue. Protection has not resulted in the stagnation of German agriculture. By her marvellous system of intensive cultivation, she maintains her position as one of the principal agricultural countries of the world. "So far as total output is concerned, Germany, owing to her large acreage, occupies a high position. In wheat and rye, she holds the third place, in barley also third and in potatoes the first." With all these developments, she cannot satisfy the home demand for the important food stuffs which are largely imported. The policy of Great Britain in agriculture has been the opposite of that of Germany and it has resulted in a large depreciation of the land. Still agriculture is the most important industry in Great Britain which pays a larger number of persons than any other. But she produces more than half her requirements except sugar and beverages "which may be regarded as the necessities of civilized life."

The economic policies of the two empires are so closely bound up to each other. It is doubtful if Germany could have advanced so much but for the British capital and enterprise abroad "which have increased largely the world's supply of food stuffs and raw-materials." "Great Britain—the custodian of the world's largest supplies of loanable capital and the practical director of the economic policy of the world's greatest empire—has

exercised her power wisely and unselfishly and in the best interests of the world as a whole." Mr. Crammond suggests that 35 years hence, the population in the two empires will increase, still with an enormous difference and that a keen competition will take place between Great Britain, Germany and the United States for food supplies and raw-materials, "unless fresh areas of supply are opened up in the meantime and it is in this direction that co-operation between British capital and enterprise and German industry would offer a most fruitful field." If war breaks out—as has happened now—and "if Great Britain ceases to invest capital abroad, Germany's exports throughout the world would fall off enormously, and in order to keep up her foreign trade, Germany would be compelled to invest capital abroad on a very much larger scale than she finds it practicable to do at present. This would re-act unfavourably upon her industrial progress, as it would mean the locking up in foreign countries of a large amount of capital, which is urgently required for the development of Germany's home industries."

Indian Trade with Germany and Austria.

That we have been depending upon Germany for many things will be seen from the following statistics.—

Germany's exports to India during the year 1913-14.

Article.	Quantity.	Value.
		£
Cement ... cwt.	824,555	47,015
Chemicals and Chemical preparations ...	—	84,072
Drugs and medicines (total) ...	—	69,802
Alizarine dyes ... lbs.	4,637,450	129,764
Aniline " " ... "	7,553,830	408,802
Glass and Glassware (total) ...	—	190,577
Hardware (excluding cutlery and electroplated ware) ...	—	483,384
Copper (total) ... cwt.	248,897	866,212
Sugar ... "	14,071	12,217
Cotton goods (total) ...	—	944,504
Wool manufactures (including yarn) (total) ...	—	716,384

Exports from India to Germany during the year 1913-14 were as follows:—

Articles.	Quantity.	Value.
		£
Coir, manufactured (excluding rope) ... cwt.	212,859	158,840
Dyeing and tanning substances (total) ... "	301,073	107,112
Grain, pulse and flour (total) ... "	7,144,963	2,376,911
Rice, not in the husk ... "	6,317,901	2,096,054
Barley ... "	22,957	6,816
Wheat ... "	501,509	187,042
Hides, raw ... "	388,409	2,044,062
Skins " " ... "	12,794	77,343
Lac ... "	52,764	182,811
Oil cake ... "	379,185	100,009
Seeds (total) ... "	4,052,978	2,740,318
Copra ... "	479,797	657,623
Rape ... "	1,163,973	650,734
Linseed ... "	966,526	537,009
Groundnuts ... "	188,724	115,321
Sesamum ... "	330,208	270,887
Mowra ... "	567,670	309,791
Castor ... "	95,228	98,618
Cotton, raw ... "	1,683,070	4,001,623
Jute ... tons.	158,380	4,499,111
Gunny bags ... No.	5,363,772	114,266
" cloth ... yards	7,236,340	87,106

OUR DEPENDENCE ON AUSTRIA.

The following are our imports from Austria during 1913-14:—

Some of the Principal articles of merchandise imported from Austria Hungary into India during the year 1913-14.

Article.	Quantity.	Value.
		£
Glass and Glassware (total) ...	—	582,541
Matches, safety and others Gross of boxes ...	1,376,762	64,146
Sugar ... cwt.	1,480,218	922,460
Cotton manufactures (total) ...	—	225,152
Wool manufactures (total).	—	77,023

Some of the Principal articles of merchandise exported from India to Austria-Hungary during the year 1913-14.

Article.	Quantity.	Value.
		£
Rice, not in the husk ... cwt.	4,228,847	1,370,032
Hides, raw ... "	237,829	1,220,392
Seeds (total) ... "	864,146	580,240
Sesamum ... "	386,842	310,290
Groundnuts ... "	214,114	111,729
Linseed ... "	130,004	73,305
Rape ... "	109,446	65,665
Cotton, raw ... "	747,041	1,949,417
Jute ... tons.	45,727	1,319,392
Gunny bags ... No.	112,700	2,067
" cloth ... yards.	474,000	5,564

SMALL HOLDINGS AND THEIR FUTURE.

By S. V. VENKATESWARAN, M.A., L.T. Lecturer, Kumbakonam College.

In many aspects it is true that the nineteenth century rang out the old and rang in the new. It witnessed in Indian agriculture the passing away of the old order of things, of a system under which helped by the lack of facilities for transport and the general insecurity of the ways, every village was an isolated unit self-sufficing in so far as the necessities of life were concerned. The policy of free trade and the cheap shipping and railways, by throwing the country

into the general stream of the world's traffic undermined such a primitive protection which had walled in a mediaeval system by shutting out foreign competition. The industrial welfare of India and her place in the economy of nations depends, therefore, on her ability to keep pace with the improvements in production and in commerce discovered or adopted by the advanced countries of the western world. The *sine qua non* of efficiency in agriculture is

the application of scientific methods—of the results of geology, chemistry, botany and zoology. This requires a wide surface and a large command of capital, and the small farmer of the west was far out-distanced by the large farmer with his irresistible economics of large scale production and marketing. The small farmers sought refuge in the life-boat of co-operation against the flowing tide of competition and struggle for existence. They found it eminently successful in stemming the torrent and carrying them across to the haven of safety and security.

In India also, the question of small *versus* large scale production has become one of immense importance. The advantages of production on a large scale are indeed so obvious that some of our economists and agricultural experts have pleaded for an artificial creation of large holdings out of the existing small ones. This is the view, for instance, which was expressed by Mr. Keatinge, the Director of Agriculture in the Bombay Presidency, in a paper which he read before the Royal Society of Arts and in his book on Rural Economy in the Bombay Deccan. Madras, Bombay, the Punjab and Bihar are provinces of small holdings and there is a minute sub-division of these in some parts. There are permanent tendencies to a still greater sub-division owing to our law of inheritance. Here is a matter, then, which should cause us some anxiety. Mr. Keatinge is certainly right in saying that minute holdings are not economic, and that they cannot compete successfully with large scale farms. But, are we to adopt the remedy he suggests, and hunt the small farmer out of existence, and perhaps petition the Legislature to devise wholesale measures of expropriation, with a view to an artificial creation of economic holdings?

The history of recent Land Legislation in Europe certainly suggests a negative answer. In the last century the various governments of Europe passed laws facilitating the existence

of small occupying owners. As the direct result of these laws, the latter now occupy 86 per cent. of the cultivated area in Germany, 53 per cent. in France, and 65 per cent. in Belgium. Denmark and Switzerland are almost entirely covered by small cultivating owners. The Irish Act of 1903 is converting small tenancies into ownerships. In Great Britain, the landlord country *par excellence*, the big farms have been diminishing of recent years. We learn from the latest report of the English Board of Agriculture that holdings of from 5 to 50 acres have increased by 2,229 and those of 1 to 5 acres by 624. Though the farming area in England has diminished by 231,000 acres, the number of persons occupying the land has increased by 3,313. An Act of Parliament was passed in 1912 to encourage small holdings in Scotland. What is good for the countries of Europe cannot be bad for India. The same interests of public health and social justice demand that the number of men who have a direct interest in the land should be as large as practicable.

The small holdings must remain, but they must economically justify their existence by securing the various economics possible in large scale farming. This they can do only by co-operation. The self-help and mutual aid of the small European land-holders is much more important than the action of European Governments. The small farmers saw that their disadvantage was due to the middlemen, who stood between them and their market, and to their waste of effort in having to do the same thing several times over each for himself. There arose a general movement to do away with these middlemen, the greedy money-lender, the unnecessary retail dealer and the avaricious employer. The farmers resolved to join together in supplying their household requirements and the materials and implements required in agricultural operations. In some cases, the operations were carried out collectively too, in accordance with the best princi-

ples of equity and social justice. They saw that, in their struggle for existence, co-operation enabled them to buy as cheap, to produce as economically, and to sell as dear, as the large farmers. The movement began in Western Europe and spread far and wide. There are co-operative societies for various purposes in almost every village of Germany and Austria and Switzerland and Denmark. About 5,000 in the Balkan States, 7,500 in Russia, over 20,000 in France and 1,000 in Ireland. Record progress is however returned from Germany with its 25,000 societies and Austria-Hungary with 16,500. Co-operative principles have been applied to collective land renting and cultivation in Italy, to the supply of domestic requisites in Switzerland, and to the promotion of home industries in Germany. It has become clear that co-operation is the corner-stone in the development of modern agriculture. The ryots of India have to face the same problem, the same life and death struggle for existence as the small farmers of Europe. The smaller the size of his holding, the greater, of course, the ryots' need for co-operating with his fellows. The average size of a holding is 8 acres in Madras, 3 acres in the Punjab and only half an acre in parts of Bihar. To our agriculturists therefore, co-operation is no less necessary than to those of Western Europe. They must practise self and mutual help, as in Denmark, in everything that pertains to an agricultural life,—in the supplying of seeds, manures, implements and machinery, and of the requirements of their households; for conveniences of marketing their produce; for insurance of their livestock and perishable products; and lastly for the education of their sons and of the labourers employed in their farms.

The practice of co-operation, of self-help and mutual aid is nothing new in Indian agriculture. Collective cultivation has been carried out in India to an extent unknown in most parts of Europe. It is within living

memory that, in various parts of the Madras Presidency in the last generation, the people of a village put their oxen together for ploughing, and had a common store of seeds and manure. But such crude co-operation is fast breaking down. Motives of self-interest have destroyed the spirit of self-sacrifice which was the necessary condition of its existence. Where individuals owned capital and implements it was but natural that those who owned the better sort should hesitate to cast in their lot with their less well-placed neighbours and that petty jealousies and bickerings should ensue. What we want now is co-operation based on the mutual service of all rather than on the self-sacrifice of some—a system where people *collectively* own the things that are required and charge themselves *individually* for the use of them at the prevailing rates, dividing the profits in accordance with the extent to which the things were used, and not in accordance with the amount of the capital subscribed by each, allowing capital only the market rate of interest, and giving the whole net-profit over for the benefit of the members who helped in building it up; these are the main principles which distinguish truly co-operative from pseudo co-operative and capitalistic concerns.

There are various ways in which the forms of agricultural co-operation may be introduced under present conditions. Thanks to our benign government, co-operation for credit has made rapid strides in recent years, and is destined to spread yet more rapidly in the future, the District Banks and unions minutely supervising the work of the village societies. Meanwhile Act II of 1912 has made possible the formation of any association whose object is the furtherance of the common economic interests of the members. Local conditions must be considered in settling the question whether the credit society should develop new sides to its activities or new associations be formed for the purchase of agricultural re-

quirements and the sale of agricultural commodities. On the one hand, it is not desirable to combine several functions in the hands of a society, especially of un-advanced agriculturists, as such a combination would make their management the more complex and difficult. On the other hand, there would be considerable waste of effort in multiplying associations for similar purposes in the same locality. Diversity in the working and unity in the management is the prevalent form of co-operative enterprise in Germany and multiplicity of societies for various co-operative purposes is the order of the day in Denmark. In India, we have an excellent example of a co-operative society developing new functions in the *Gauria Kalan Co-operative Bank of the United Provinces of Agra and Oudh*. This bank took up the supply of ploughs and other agricultural implements, got the services of a well-borer at its disposal, and helped largely in marketing the produce of its members. Later on, it made arrangements also for the purchase and distribution of pure wheat seed, and it practically established the ground-nut crop in several villages. In some Provinces, there is a general complaint that the agricultural associations started a few years ago have not been doing good work or even justified their existence. There is absolutely no reason why they should not take a lesson from this Bank in the United Provinces. Such a system is probably the best suited to Indian conditions, provided that there are separate committees of members to deal with the various distinct branches of business.

In whatever way it is introduced the co-operative movement is sure to be accepted by all and sundry ryots and farmers. It is not necessary to dwell on the economic advantages which co-operation entails, such as cheap supply of good articles and fair terms for saleable products; "better-farming, better-business, and better-living" for the tiller of the soil. But co-operation is ethics applied to economics and

its moral effects are even more important than the economic. The aim of the movement is not simply the creation of capital and the encouragement of its accumulation and fructification in the pockets of the people. Its aim is social service, the making of happy and cheerful men and women, with honest ways of doing business, with their energies fixed not by competition for existence but by emulation for excellence. There is all the difference in the world between the present farmer gradually emerging from accumulated indebtedness, and enveloped in the midst of ignorance and superstition in the narrow lanes of customary conflict and suicidal selfishness; and the enlightened and self-conscious agriculturist uniting with his fellows for common advantage and utilising the blessings of peace in the ordering of the affairs of the locality in the ordinary business of life. It may take long indeed for the mist to lift in all its entirety, but the result will be an eternal summer glorious and never fading, which will fill the heart with glee and chase the moon shine from the muddy head.

And such a day is bound to come. We hear the flappings of the wings of that angel who proclaims the boons of co-operation trumpet-tongued. The small farmer is bound to succeed and much more easily too than the small producer or manufacturer. The large farmer who competes with him cannot pile surface on surface in a small area so that operations may be performed under the guidance of a single directing eye. We need say nothing in reply, to those scoffers and sneerers, of whom some there be in every society, who smell difficulties where there are none and go on declaring that every measure must fail until they make it impossible for it to succeed. We will steer clear of such men, and reply them by *succeeding* and not by talking of success. But there are some, apparently well disposed people, to whom human nature is not the same the world over, to whom what has happened in

other lands cannot happen in "this blessed place". To them the Indian ryot is "a living emblem of inertia". We cannot tell who is responsible for this fashionable notion; it will certainly not be any one who could swear to a first hand knowledge of the Indian ryot. The Indian cultivator is not slower to move than his compeers in European countries. In France, Government prodding, and, in Denmark, sheer necessity were the nurses of agricultural co-operation. The Finns and the Poles sought refuge in it, goaded through years by humiliation and oppression. The fact that improved

ploughs are being used in various parts of the country, that Cambodia cotton fills broad acres of Indian ground, that extensive areas of barren soil are covered with ground-nut crops, and lastly, that the co-operative credit movement has made such giant strides in the last few years—these facts do *not* prove that the Indian ryots are enemies of change when they are convinced that the change would be for the better. You can as well maintain that the pur-blind beggar will refuse the blessings of vision when he knows that it will light his way and be his guide to the Land of Promise.

INDIAN FAMINES, A REVIEW.

By V. G. KALE, M.A.

Owing to a variety of causes, India has been from time immemorial exposed to the ravages of droughts and famines. The problem of coping with the calamity has always exercised the wits of the rulers and their success in saving human lives and relieving human distress has varied with the extent of the calamity and the power of organization. Only a few exceptionally favoured provinces of India may be said to be immune from famines which are caused by the failure of rains. The bulk of the country is subject to peculiar vagaries of climatic conditions. That famines in India are not more disastrous is due to the vastness of the country and its varying elevations. The failure of rains is attributed by the mass of people to the inscrutable ways of Providence and is regarded as an indication of divine displeasure. Charity and philanthropy have never been lacking in India and the indigenous rulers have regarded it their sacred duty to relieve distress and save human life. The advent of British rule in the country with its organized Government and its susceptibility to the urgent need of making arrangements for systematic relief and prevention of the occurrence of

famines, invested the question of famines with a new importance. The Government has, during the past sixty years, struggled hard to evolve a regular system of famine relief till at last it is now in a position to assert, proudly that the machinery has been perfected. Like the story of poor relief in England, the development of the famine relief policy in India has been a series of experiments and the adoption and rejection of certain principles. Economic conditions in India will not allow the making of famines a thing of the past. The State has, at any rate, the comfort that, with its perfected machinery, it is always prepared to meet a calamity whenever it may come and to meet it with a large measure of success.

The story of Indian famines and of the development of the State policy concerning them has been related in a most interesting manner in a book* that has been just published by Messrs. G. Bell & Sons. Mr. Loveday has, however, given not only an account of the famines that have overtaken India from the oldest times—of which there are any number

* "The History and Economics of Indian Famines" by A. Loveday, B.A., G. Bell & Sons. Price 2/6 Net.

of records--and of the relief measures taken to meet them, but also his views in respect of the economic conditions which determine the occurrence and the extent of famines in India. Among the causes of famines there are some which no Government can remove, such as the failure of rains, and floods and violent storms of hail and there are others the power of which can be diminished only by the gradual evolution of economic and social conditions. The author has made a careful study of the official and non-official literature bearing on the subject of famines and the economic condition of India generally and appears to have obtained a deep insight into the whole question. Much has been written on Indian poverty, and the indebtedness of the ryots, the benefits of the construction of railways and canals and of the poverty and industrial helplessness of the people. There is, however, a welcome freshness about what Mr. Loveday states concerning the economic evolution that is going on in India and that is responsible for much of the economic weakness of the Indian masses. "Poverty in England, or America, or Germany," he says, "is a question of the distribution of wealth. In India it is a question of its production." There are two distinctly opposing schools of thought in India who hold views on the question of Indian poverty which are at daggers drawn with each other. The official school always speaks of the lightness of the land assessment and elasticity in the collection of revenue, the extravagance of the ryot and the selfishness of the money-lender while the Indian school of economists points to heavy

assessments, the disappearance of indigenous industries, the demoralization of the country and the consequent helplessness of the average ryot. Mr. Loveday takes note of both these views and states that the period of transition through which we are passing, has certainly been productive of much hardship though it may lead in the future, to greater efficiency and productivity. The position may thus be summed up in the author's own words:—"Land tenure has become insecure, home industries have been struck by English competition, prices and often the standard of living, have risen, and temptation to expense and to borrowing that wealth they could not produce has beset the path of those very classes of society which have morally and mentally developed the least." The author's chapter on "protective measures and wider economic problems" is highly suggestive and furnishes food for reflection. His analysis of the present economic position in India and the evolution that is going on in the country is very valuable. It would take us too far even to touch upon the several interesting points Mr. Loveday has raised in his last chapter. They are the perennial questions at issue between the Government and its critics. The author is, however, eminently fair to both sides, never hesitating to show the weak points wherever they occur. We are sure students of Indian economics will derive considerable benefit from a perusal of Mr. Loveday's book whose value has been much enhanced by a copious bibliography and notes added at the end.

Notable Speeches and Writings.

Why Europe is at War.

A Continent where peace and plenty were reigning for a long time is all on a sudden transformed into a field of battle. There is not a turf of ground in this wide expanse of earth which has not felt the rude shock of the present war. The Orient as well as the Occident is 'surprised' completely. Throughout the world denunciations of a war "so senseless," "so insane so utterly without cause" have been heard on every hand.

THE RUSSIAN VIEW.

The explanation of Russia's being involved in the quarrel is found in the word "Pan-slavism" self-interest and sympathy with men of similar race and kind. "We have stood this sort of thing for seven years and a half," the Russian Czar is said to have remarked to his Ministers at a conference on the Servian crisis; "that is enough." In this time, Austria has forced an important rail-road concession from Turkey, seized Bosnia and Herzegovina, and interfered with the Balkan States, both during and after their war against Turkey. "The fraternal sentiment of the Russian people for the Slavs" were "awakened with perfect unanimity and extraordinary force," says the Czar in a manifesto, "when Austria knowingly addressed to Servia claims unacceptable for an independent State." Austria, he adds, paid no attention to Russia's "benevolent intervention." As a "precautionary" measure, the Russian Army and Navy were put on a war footing, while negotiations looking toward a peaceful solution were carried on with both Austria and Germany. But Germany demanded the "immediate cessation" of the mobilization measures, and "being rebuffed in this demand, Germany suddenly declared war on Russia."

THE GERMAN VIEW.

But if we take the German view, the history of these negotiations is different. To sum up the case as presented in statements from the Kaiser, the Imperial Chancellor, and other high official sources: Germany vainly protested against warlike preparations in Russia. She even tried to mediate, but, to quote the Chancellor's speech, "while we, at Russia's request, mediated in Vienna, the Russian forces were raised on our almost open frontier, and France, though she did not mobilize, admits that she took some military measures." The Kaiser, says the *New York Herald*, "up to the very last moment almost went down on his knees to Russia to induce her to desist from mobilization." The final refusal meant war on the Russian frontier. On the French frontier, according to these official statements, French aviators and cavalry patrols first broke the peace. The German Government then felt compelled to act in self-defence. "The invasion of Luxemburg and Belgium is justified as a military necessity (to prevent a French invasion and to secure an easier entrance into France), though the wrong is to be made good when the military object is achieved. Germany, says the Kaiser, "goes into the battle with a clear conscience." The present situation he calls "the result of ill-will existing for years against the strength and prosperity of the German Empire." A press statement by Professor Hugo Munsterberg strongly supports the official German documents. He thinks the conflict between "the on rushing Slavic world and the German world" was inevitable. Russia was bound to help Servia. She knew herself unequal in strength to the German nations, but knew also that she "could rely on France's latent longing to revenge itself for Alsace and on England's grumbling jealousy

of the great German rival in the world's markets."

THE FRENCH VIEW.

The French official statements accuse the German Government of "forcing the war upon her." Here is the pronouncement of the French Ambassador in London: "The German Ambassador at St. Petersburg notified Russia of the declaration of war by his Government when negotiations were pending between Austria-Hungary and Russia, and at the very moment when Austria-Hungary had declared that she was prepared to consider the matter of the Austro-Serb conflict with Serbia or with a neutral Power on behalf of Serbia."

"France was asked to tell what she would do in case of war between Russia and Germany, and the German Ambassador at Paris began to prepare everything for his departure from the French capital."

"July 31, Germany called to the flag the last five classes of her reservists, and...mobilization was going on in Germany."

"In spite of this, France waited until August 1, at five o'clock in the afternoon, to order a general mobilization. This was done, for the purpose of making it clear that she was not the aggressive Power, and also that she might be able to claim British support."

THE ENGLISH VIEW.

England at first held a neutral position, only stating that if a German fleet were to descend on the French coast "we could not stand aside." Sir Edward Grey and Asquith explained in notable speeches in the House of Commons that Germany had entered into negotiations on this point and on the neutrality of Belgium to ensure England's neutrality. The English reply, according to Sir Edward Grey, was that "we could not barter our interests or our obligations." The final declaration of war was said to be "owing to the summary rejection by the German Government of the request made by his Britannic Majesty's Government,

that the neutrality of Belgium should be respected." All parties have rallied to the support of the Government. John Redmond gave assurance of the loyalty of Ireland. And public opinion, in England, as in Austria, Serbia, Russia, Germany, and France is solidly in favor of war.

THE BELGIAN VIEW.

Belgium was confronted with the alternative of letting German armies march through her territory to the French border, thereby incurring French hostility, or of arming to repel them. She chose the latter course, in spite of the guarantees and inducements offered by Germany. Said King Albert, on taking command of the Army:

"A neighbour, haughty in its strength, without the slightest provocation, has torn up the treaty bearing its signature and has violated the territory of our fathers because we refused to forfeit our honor. It has attacked us. Seeing its independence threatened, the nation trembled and its children sprang to the frontier, valiant soldiers in a sacred cause."

THE AMERICAN VIEW.

The *New York Herald* observes: "It was merely the war on Serbia that supplied the spark which set in motion those irresistible forces which are dragging five of the great nations in the world into a war of annihilation."

The *Springfield Republican* remarks: "Europe is full of racial rivalries, suppress imperial and national ambitions, religious hates, economic pressure, trade jealousies, internal strains and stresses, and lines of cleavage which run across frontiers."

"Many an editorial finger," according to the *Literary Digest*, "points at William II as responsible for letting the Austro-Servian crisis precipitate a European war. Others divide the blame among the rulers at Berlin, Vienna and St. Petersburg. Little fault is found with the course pursued by the French and British Governments."

The *New York Times* points out that each warring power proves to its own satisfaction "by ultimatum, ukase, decree, address or proclamation, "that it is the injured party, the victim of aggression by another, that it desires peace above all but is unwillingly forced to self-defence." Our trans-Atlantic contemporary continues: "Germany proves to herself that she longs for peace, but that Russia's mobilization is 'an action which she should not ignore.' Russia longs for peace, but finds Germany mobilizing and 'delaying the official notice of her mobilization' so that 'to hesitate longer would have been to court disaster.' France longs for peace but finds Germany's demands couched 'in terms so harsh as to merit the recall of our Ambassador.'"

There is a wide spread tendency on the part of the American press to hold Germany and her ruler very largely responsible for the war, says the *Literary Digest* which quotes a typical editorial utterance from the *New York Globe*.

"It is difficult to admit that German interests were menaced beyond reasonable tolerance, that Austria took a stand against her diminutive neighbour which was arbitrary in the extreme without full sanction of the Kaiser, or that there was any doubt in Wilhelmstrasse that Austria's attitude would compel Russia and France to intervene. It is for these reasons that American opinion is almost solidly arrayed against Germany as the aggressor, ruthlessly plunging Europe into what looks like the bloodiest of wars to satisfy the overwhelming ambition of the Emperor. Hailed but a short year ago as the man of peace in Europe, he is now denounced as the veriest firebrand of the continent."

The War and Indian Loyalty.

Among other things, the war has furnished absolute proof to the indubitable fact that the power which alienates England's sympathy must reckon with 'a world in arms.' Never more will any one talk that the British Empire is only in paper, not in actuality.

India's attitude towards England has been brought out very clearly by the present crisis and her willingness to make sacrifices for the welfare of the Empire will be found detailed in the Viceroy's statement read by Mr. Roberts in the House of Commons. From the Himalayas to the Cape Comorin, there is only one thought—to do the best for the Empire so that it may come out victorious. In the face of this magnificent outburst of undoubted loyalty, England is delighted to praise Indians, Indian Princes, Indian Sepoys and Indian sentiment.

Lord Curzon spoke the truth when he said at a recruiting meeting at Glasgow that "the Viceroy's message would ring down through the ages as the most remarkable pronouncement ever made in Parliament."

The *Times* remarks that "in all its long annals, the House of Commons has never been more moved. The Indian Empire has overwhelmed the British by the completeness of the unanimity of its enthusiastic aid. The proudest Princes of India have tucked on their swords and are hastening to the battle. Such is India's glorious answer to the Kaiser."

The *Daily Telegraph* avers that "the Indian leaders of all ranks represent the chivalry and ingrained respect for honourable dealing which for ages has been a part of their moral being. The ancient civilisations of India would be the last on earth to acquiesce in the doctrines of faithlessness and deliberate violence which form the base of the Prussian creed."

Another contemporary has it: "never has India had so great a triumph as in England now. For the first time since John Company set foot on Indian shores, England has seen India as she is."

With "almost breathless wonderment and admiration," the Viceroy's message was received; "A day worth living for" was the title given by the *Daily Mail* for its remarks on India's offers.

We cannot better conclude this theme than by quoting the declaration of the *Daily News*.

"The bread of Freedom which we have cast upon the waters is returning to us after many days." That is true, for England has inspired India with the modern love of Freedom though she has not yet fed her with its bread and it is the passion of strong hearts panting for Freedom, and feeling that they can reach it best with England's help within the Empire, that is behind the joyous springing forward of India to-day.

Indian Troops to Europe.

Our readers are no doubt aware that a force of over 70,000 combatants and a cavalry brigade have already been despatched to France to fight against the enemies in the war now going on in Europe.

The Daily Telegraph gives a summary of the fighting qualities of the stalwart Indian soldiers:—

RAJPUTS.

"To take what is probably the smallest part of the expedition first—as is their historic due—*The Rajputs* are the representatives of the Kshatriyas, or the second great caste of India.

The history of Rajputana is the history of Indian chivalry, and there is not a man in our Rajput regiments to-day who does not feel in his veins the same martial challenge that made the defences of Chitor run red. For Englishmen the mere fact that Sir Pertab Singh, ex-Maharaja of Idar, Regent of Jodhpore, and idol of English crowds, is a Rajput of Rajputs, will be sufficient to show the intense military honour of those who are included in this great expedition.

"It may be said that the Rajput dies before he surrenders. His honour—from the Maharana of Udaipur to the lowest camp follower who can claim the Kshatriya caste—is so vitally concerned that life after defeat is as impossible as life after dishonour is to his womankind. They are a fighting caste, with a gigantic tradition behind them, and for a forlorn hope, they would volunteer to a man.

SIKHS.

"Next in order come the Sikhs. These men are a military order drawn from the Punjab, with their centre at Amritsar. They are essentially a fighting race, and they believe that a blow is better than a prayer, though all the year long the orisons round the sacred Granth, or Holy Book, rise from the golden island temple of Amritsar. For many years the Sikhs have been one of the principal stays of our Indian Army. They have also been drawn upon for police work, from Karachi to Hong-Kong. Their long, lithe bodies and impassive faces have stood for the London police of Eastern Asia, and their loyalty through sun and shade has become proverbial.

The Sikhs are steadier men than the Rajputs, with an almost equal contempt of death. Their undying loyalty to the English was best shown when a few years after our own victories in the Sikh wars they definitely allied themselves with us during the Indian Mutiny of 1857. They live for fighting, and have always prayed for a chance of helping the British Raj across the seas. They have their chance now, and they will take it.

GURKHAS.

"Last of all, but, in the opinion of most of our antagonists, by no means least, come the Gurkhas. Little men in rifle-green uniforms, with forage caps aslant, and an eternal smile upon their bronzed faces, they are perhaps the most terrible opponents that any fighting race could fear. By day they shoot like champions, and take cover like cheetahs. By night—well, by night they could and would ruin the moral of half Europe. Their favourite weapon is the kukri, and they have no fear of death in any form whatever.

"The Gurkhas are recruited from Nepal. There are some 20,000 of them in the Indian Army, and it will be recollected that the first offer of military help came from the Maharaja of Nepal, who could send another 40,000 of these grim little warriors if need should be."

APPRECIATIONS.

In the words of our benevolent Viceroy, "India has gladly given her sons to fight the common foe side by side with the sons of Great Britain, Canada, Australia and New Zealand and we may with confidence and with pride look forward to their achievements on the battlefield, being worthy of the best and highest military traditions of this country."

Lord Crewe paid a high compliment to the Indian troops when he spoke of them in the House of Lords as "high-souled men of first-rate training and representing an ancient civilisation; and we feel certain that if they are called upon they will give the best possible account of themselves side by side with British troops in encountering the enemy."

Highly appreciative were the words of the Premier when he said "We welcome with appreciation and affection their proffered aid, and in an Empire which knows no distinction of race or class, where all alike are subjects of the King-Emperor and are joint and equal custodians of our common interest and fortunes, we here hail with profound and heartfelt gratitude their association side by side and shoulder to shoulder with the Home and Dominion troops, under a flag which is the symbol to all of the unity that a world in arms cannot dis sever or dissolve."

Lord Curzon hopes that the Indian troops will be "in at the death." He would like to see "the Bengal Lancers in the streets of Berlin" and "the Gurkhas taking their ease in the garden of Potsdam."

The Nation writes—"these Indians will bring with them an Aryan tradition of gallantry, and will deserve the respect that belongs to the heirs of an ancient civilization."

As the Times has it, the Indian troops are magnificently efficient, "equal to the flower of the European Armies."

It may be remembered that our esteemed contemporary announced, sometime back, that

these troops had been warned for active service. "It was then understood that they would be employed in replacing and releasing our forces in Egypt and Malta. But the new spirit shown in India has determined the Cabinet to grant the Indian soldiers their dearest wish. This declaration of military policy, the most momentous that has yet been uttered on behalf of the Government, was explained by the Secretary of State for India, who spoke later. Lord Crewe told the House of 'the wonderful wave of enthusiasm and loyalty which is now passing over India.' It had been made clear to the Government, he said, that this feeling was largely based upon 'the desire of the Indian people that Indian soldiers should stand side by side with their comrades of the British Army in repelling the invasion of our friends' territories.' Lord Crewe did not quote, but most of us will remember, the message sent by the Maharaja of Rewa immediately after our declaration of war. The heroic brevity of it has never been surpassed. 'What orders from His Majesty for me and my soldiers?'"

The Morning Post says that "the despatch of an Indian contingent to the front will give the very highest gratification to our Indian Empire, and it will also give the world an illustration of the underlying strength and unity of the British Empire. Our enemies little suspected when they flouted us so contemptuously that they were bringing against them the armed opposition not only of England but of the British Dominions all over the world. And not only have the daughter nations of our race answered to the bugle call, but the people of India, who are not of our kin, showed themselves equally willing to stand in the ranks against the enemies of the British Empire. The Indian contingent is as much a symbol of our unity as a proof of our strength. As for the Indian troops, they have high traditions both of valour and good behaviour in the field. They are officered by Englishmen and trained

to fight according to European standards. They belong to races of a high and ancient civilisation, and we have every confidence that in the present war they will add fresh lustre to their arms, and will show by their conduct that they are worthy to be placed alongside European troops."

According to the *Daily Mail*, "ever since the war broke out, a great wave of loyalty has swept from the Himalayas to Cape Comorin; native Princes have made more than princely gifts and offers of help; internal discontents have been borne away in an outburst of genuine Imperial sentiment; and the consciousness has miraculously deepened among all races and creeds that this is India's war no less than Great Britain's. The Government have done well to respond to and to lean upon this passionate desire to serve the Empire in her hour of need. Nothing but good can come of it, both for India and for ourselves. If it is an innovation to use native troops on European soil, we refuse to regard it as an experiment. The personal loyalty to the Emperor and the military instinct of the warrior races, two of the strongest of Indian emotions, will alike be strengthened by it; while we in Great Britain will never forget that at a moment of Imperial trial and difficulty our Indian fellow-subjects were among the first to proffer their service."

Thus the *Birmingham Daily Post* :—"Side by side with their British comrades on European soil India's native soldiers are to fight. The announcement has by now fired the millions of the King-Emperor's Indian subjects with a wild pride and joy. And it will give the liveliest satisfaction to the people of this country also. Now, if ever, we want to feel the loving bonds of Empire, to behold the vindication of their benevolence, and the recognition of the sacred compact—each for all and all for each, it is something in the hour of Britain's need that in every region of the earth's surface where England's flag protects the weak and gives

liberty to all, be their colour what it may, the plea goes forth for the privilege of bearing arms in her cause. . . . To the front rank of battle we have called the brave Moham-medan and Hindoo soldiers who, a few years ago, saw and welcomed on their native soil, with heartfelt loyalty, their King-Emperor, and we know we have not called unworthy comrades. The Indian soldiers of His Majesty have proved their mettle in many a severe frontier struggle."

England has welcomed with "appreciation and affection," our "proffered aid." England has hailed with "profound and heart-felt gratitude" the association of Indian troops "side by side and shoulder to shoulder with the Home and Dominion Troops."

May we not hope that one result of the present war will be to remove once and for ever racial prejudice and misunderstanding which has so long obscured Indian claims, and bring the cause of India nearer to the heart of England than ever before? That may mean the opening of a new era, "planting another milestone on the road to the federation of the British Empire."

The War and Indian Industries.

One way of checking German influence and aggression is to strengthen India industrially, financially and commercially. The *Jayagi Pralap* considers that the efforts made in this behalf will be "India's greatest possible service to the Empire."

The *Wednesday Review* is anxious that "those efforts ought not to be spasmodic or directed by a stray whiff of enthusiasm."

Germany's difficulty is our opportunity. The *Jayagi Pralap* observes "that this is the time when some of the industries such as paper mills, dyeing factories, indigo cultivation could be advantageously started in India. We import £50,000 worth of synthetic indigo, and the curtailment of this supply should encourage trade in natural Indian product. We

import £6,00,000 worth of iron and steel, £150,000 worth of cheap glassware, and we import paper and paste boards of the same value, we import commercial spirits, cheap textiles and toys."

SUGAR.

"Revive at least some of the decadent industries", bursts out the *A. B. Patrika*. Our contemporary takes a long retrospect of the history of the "destruction of the sugar industry of Bengal, which, if maintained, could have provided thousands of Indian labourers with food and employment in a critical moment like the present."

"A modification of the Free Trade principle to which the Government is pledged" is the remedy which our contemporary would suggest.

"There is a large possibility of attaining success if the date forests in Central India could be successfully tapped" whispers another contemporary.

According to the *Bengalee* "this is the time for our cotton mills to make profit. The proprietors of the several mills in Bengal which are in a moribund state should be communicated with a view to finding out their weak points. As cotton is now being produced in the country, yarn manufacture should be taken in hand on an organised scale; and the handloom weavers should be encouraged to use them in the lower counts."

JUTE.

Brooding over the practically unmarketable commodity, i.e., jute, which is "lying stocked,"—"a burden in the hands of the producer", the *Bengalee* is of opinion that the producer certainly ought to be helped to keep the stock in hand until prices rise and better times come. The Government and the Co-operative Credit Banks may help him with such financial assistance as he may require for the purpose. "In the meantime" remarks our contemporary "is it not possible to use jute in other ways than

those now adopted such as paper making, &c. Jute may be substituted for coir-matting. Jute may be used for the manufacture of *Daris* and *Saltranjis*. We believe this is actually done in the Rungpur District."

'Bayard' writing in the *Commerce* specifies the Wool Industry as one to which attention might advantageously be directed.

PUNJAB WOOL.

"The Punjab is, at present, the only province where the wool industry is of any importance. The Hindus consider the material ceremonially pure, and have been acquainted with it from the remotest times, but its comparatively high cost has stood in the way of its extended use. The supply of wool in the Punjab is large, there being about 4½ million sheep in the province, and there are several firms in the province dealing with the product. The Cawnpore Woollen Mills and the New Egerton Woollen Mills, Ltd., of Dhariwal are the most important of these and they have a flourishing trade, supplying the Army, Police, and other departments largely with woollen goods. The handloom industry is in the hands of the lower orders of the weaver class, but is largely confined to the manufacture of blankets; "pattus" a rough, but excellent cloth, are also made.

INDIGO DYES.

"Another important industry, which has been seriously injured by German competition, is the manufacture of indigo dyes, which were driven out of the European markets by the German chemical product."

We import into India under normal conditions £50,000 worth of synthetic indigo, and the curtailment of this supply should encourage trade in the natural Indian product.

GLASS.

A writer in the *Bengalee* contributes his quota of suggestions.

"There is already phenomenal rise in the price of phials and glassware. Even though the Himalayan Glass works are closed, we

have the Kashi Glass Works and the Poona Glass Works both of which with encouragement might do well. The old Glass Works at Sodepur have just been renovated and brought to the stage of active work, but the proprietor is handicapped for want of working capital. If the institution were helped financially we could easily add glass to our other industries.

CELLULOID.

"The Jessore Comb Factory was doing well. But for want of celluloid which is imported from Germany, the work is likely to be stopped. It is time that Government should help with expert advice the manufacture of celluloid as much for this industry as for others."

HOPEFUL PROSPECTS.

On opening the Swadeshi Bazaar in Calcutta the Hon'ble Mr. Surendranath Banerjee said: "we are within measurable distance of the realization of our ideal." He made an appeal to "to our capitalists, to our middle class men, to all who have money, to lay by, to invest their earnings in Swadeshi enterprise. It would be the noblest service to the motherland."

He spoke the truth when he said that we have to sit at the feet of our western masters "as Japan did" for the industrial regeneration of our country. "Our ladies must be trained to take a personal interest in Swadeshi industries."

Points from Our Leaders.

INDIA'S DUTY.

"War in Europe. What is an Indian's place in it? We are a people of the British Empire. Let us see what our duty and position are. If ever India expects to attain again the former glory on the advanced character and scale of the modern British civilization of liberty, humanity, justice and all that is good, great and divine, it shall be at the hands of the British people and as self-governing members of the British Empire. We are all British

citizens of the great British Empire and that is at present our greatest pride".—*Mr. Dadabhoi Naoroji.*

LOYAL AND DEVOTED SUBJECTS.

"At this juncture of supreme gravity we have met together here to-day in the public hall, men of different races and religions, of different creeds and communities, English and Hindu, Parsee and Mussalmans, to proclaim with one heart, one soul and one mind that these differences distinguish but do not divide us, and that in the presence of this solemn situation, we are merged in one general and universal denomination, the proud denomination of loyal and devoted subjects of the British Crown. As such, we are met together to lay at the feet of our august Sovereign, our beloved King-Emperor, our unswerving fealty, our unshaken allegiance and our enthusiastic homage. As such, we have met together to proffer with cheerful and eager alacrity all our national resources and our individual services".—*Hon. Sir Pherozeshah Mehta.*

LOYALTY WILL BE UNDOUBTED HEREAFTER.

"Though this war will inflict incalculable harm on all the parties concerned, yet out of such evil good must come and will come. One of the advantages which India will gain may be said to have already accrued. For no one however malicious he may be will, in future, be able successfully to suggest doubts as to our loyalty to the Empire. No one can hereafter twist our representations, as to our wants and requirements as ebullitions of deep discontent and hidden disaffection. And this to my mind is no small advantage, as it will conduce to render the relation, between the Indian people and the great British nation one of true brotherliness. And I trust, I may without inappropriateness, add that nothing will contribute to make the tie unbreakable than the grant, in due course of a concession which is uppermost in the minds of most of us at this moment."—*Dr. Sir S. Subramania Aiyar.*

Official Pronouncements.

The Viceroy on Emigration.

The following is the full text of the Viceroy's speech on the subject at the opening of the Legislative Council Session in the New Council Chamber at Simla on the 8th September 1914:—

I would now like to say a few words upon another question which has seriously occupied the attention of the Government of India during the past 12 months, a subject to which we attach the very highest importance. I allude to the question of migration from one part of our Empire to another. Before dealing with this question, I would like to remind you that in a speech which I addressed to you in Council on the 24th March last, I informed you of an announcement made in the Union House of Assembly at Cape Town that the Government of the Union would introduce in the following session legislation based on the report of the mission which had been sitting to enquire into the grievances of Indians in South Africa. As all of you are aware the proposed Indian Relief Bill has since become Law and I think that we may regard the passing of the Bill by both Houses of the Union Parliament with grateful satisfaction. If the new law does not satisfy every Indian aspiration, it certainly removes the principal grievances from which Indians for many years have been suffering. The solution of this very difficult problem is a matter upon which we may legitimately congratulate the Government of General Botha, and I would like to say in particular that the bold and generous statesmanship which inspired General Smuts and the skill with which he piloted the Bill through the South African Legislature have earned our warm admiration.

RIGHT TO SETTLE ANYWHERE.

I will now revert to the general question

which is one of far-reaching importance. It cannot be dealt with satisfactorily from merely a local standpoint. It is a question for which, in my opinion, a practical solution may be found, but it is essential that such a solution should be based on a reasonable apprehension of the requirements of other parts of the Empire. At the outset of the discussion of the problem, which has arisen, we are faced with this difficulty. It is being commonly asserted, whether on historical, legal, or constitutional grounds, that the full rights of citizenship of the British Empire include the right to settle in any part of that Empire irrespective of the existence of local legislation barring or limiting access to the Dominion to which access is sought. But it must not be forgotten that to such a doctrine a political impediment exists of an almost insuperable character.

LIMITS TO THE DOCTRINE.

Our Empire is largely composed of self-governing units. The Dominions have been given their own legislatures by the Imperial Government in order that they may regulate the management of their internal affairs as may seem best to them. It is beyond question that the control of immigration is primarily an internal question, for each self-governing unit must know best what materials it desires to provide its future citizens. Thus indeed, it must clearly be seen that the right of free movement within the Empire is conditional on the exercise by the local legislature of their undoubted powers, just as it is restricted even more rigorously by the physical characteristics of certain parts of the Empire.

NO HOPE OF ITS ADOPTION.

The principle of free migration between all parts of the Empire may have attractions and

many advantages. It is indeed the principle for which the Government of India have long and consistently contended, but I have shown that to reduce this principle to practice would involve the most serious difficulties and the course of events has made it more and more clear that there is no hope of its adoption. On the other hand, when we review the whole situation and the policy that we have consistently followed for many years past, I fear that the obvious conclusion at which we must arrive is that the result of this attitude has been to force the Colonies to undertake more and more drastic legislation and thus to produce the present situation in Canada which has brought the problem to an acute stage.

SOME MISCONCEPTIONS.

This being so, it seems to me that the time has come when we must change our course and we have to consider whether, if we cannot get all we wanted, the alternative is not feasible to relieve at least the present situation which already is unsatisfactory from the point of view both of India and Colonial interests, and may in the future lead to serious trouble. I think that such an alternative can be found and I shall indicate presently what it is. I desire first to try to correct any misapprehension that may exist in this country regarding the attitude of the Governments of the Dominions towards Indians as a whole and towards the position of the Government of India in this difficult matter. It is often stated that the Colonial Governments, in formulating their measures for exclusion, are actuated by feelings of animosity towards Indians and that these would not apply to residents of the United Kingdom any of the restrictions they freely impose on the residents of this country. I do not think that such a statement is quite fair. To be impartial, it must be admitted that the Colonies naturally place above all other considerations the interests of their own country

as they understand them, just as we in India should put the good of India in the front of our motives for legislation, but time after time, the Colonial Governments have given evidence, whether during the discussions in their legislative assemblies or in their attempts to negotiate with the Government of India, that they are by no means unmindful of the possible effects of their action on the Government and people in this country, and I think I may say with justice that they are quite willing to consider India's requirements once they are satisfied that the interests of their own country have been adequately secured. Then, as to the right of residents of the United Kingdom to enter the Colonies without restriction, I can assure you that the Colonial Governments, both in theory and in practice, maintain their full right to reject such immigrants and use this right without restrictions they may think their local conditions require. So much is this the case that the freedom, with which Canada excludes labourers of inferior physique, while encouraging by every possible means the emigration of the fit, has been described as constituting a serious drain on the United Kingdom. I would also remind this Council how, some years ago, three English hatters were turned back from Australia on the ground that the local labour market for hatters was overstocked. At the present moment an Ordinance is in force in Canada which forbids any labourer, whether from the United Kingdom or elsewhere, landing in that country. Recently, the Government of South Africa actually removed by force from their territories certain English labourers whose presence was felt to be undesirable. In the face of such incidents, it is out of place to assert that the policy of exclusion is directed against Indians alone, and that there is therefore an Indian grievance against the Colonies.

THE "KOMAGATA MARU" INCIDENT.
I should like to add that I have seen a state-

ment recently made by the Hon. Mr. Roche, Canadian Minister of the Interior, which I believe to be substantially correct, to the effect that during the past ten years previous to the arrival at Vancouver of the "Komagata Maru," 917 English people had been rejected at the Canadian ocean as compared with 376 Indians. I will now touch lightly on the incident of the "Komagata Maru." The despatch of this vessel from Shanghai to Vancouver with 400 Indians on board was carried out without the cognisance or approval of the Government of India. The object of the promoters of the expedition was undoubtedly to challenge directly the legality of the Canadian Immigration Laws on the lines that the would-be immigrants were British subjects and had, therefore, the right to enter Canada. Such a proceeding was in direct contravention of the existing embargo placed on all labourers of every nationality arriving in British Columbia and in violation of the condition that the immigrants should arrive by continuous voyage from their place of origin. It is unfortunate and to be regretted that such restrictions should exist, but when they do exist they cannot be ignored without causing suffering and distress. We must all regret the discomfort suffered by the 400 Indians on board the "Komagata Maru" for which the organisers of the expedition were, in my opinion, culpably responsible. They must have known perfectly well that entry would be refused and the sending of the ship could only be regarded as most unwise. The promoters should have remembered that they who fail to consider the rights of the Colonies can in return claim little consideration for their own. The Canadian Immigration Act gives the Government of Canada very wide powers and anybody with any knowledge of its contents would realise how futile it would be to contest them. The case was taken as a test case before the Canadian Law Courts and was lost as was inevitable, the result being that with very few exceptions,

all those on board the "Komagata Maru" were deported. There were unfortunately some breaches of the peace committed by some of the Indian passengers on board, but in the end they left peaceful. In this connection, I would like to mention the fact that the Canadian Government very generously gave £800 worth of supplies to the Indians on board for the return journey. This point should not be forgotten. I may add that the developments of this incident were watched by the Government of India with the closest attention, but as the question at issue was of a purely legal character there was no cause for intervention. When, however, there was an apparent likelihood of the compulsion of the Indian passengers by armed force, I addressed a communication to the Secretary of State deprecating the use of force on our fellow-countrymen, and as you are aware no force was used. Within the last few days, I have learnt that these unfortunate people have been left stranded in Japan. I have therefore requested His Majesty's Consul-General at Kobe to repatriate them to India and at the expense of Government in the case of those without means.

AN ALTERNATIVE SOLUTION—RECIPROCITY

Having now cleared the ground of possible misunderstandings, I will revert to the alternative policy to which I referred a few minutes ago as a possible solution. I think I have shown clearly that we have drifted into a position of isolation, and it is evident that, if we are to secure for our Indian fellow-subjects any of the advantages that are now denied, we must substitute for this a policy of co-operation. This can, in my opinion, be achieved only by negotiation with the Colonies on a basis of complete reciprocity. Taking Canada, for instance, we know that a certain number of Japanese are admitted annually on a passport system.

Surely India may claim at least the most-favoured-nation treatment in any negotiations

that are opened and secure equally favourable terms for Indians. It should not be difficult to limit by agreement the number of passports to be issued, which, while providing very fully for temporary residence as in the case of students, tourists and the like would, at the same time, strictly limit the right to settle permanently in the country. Those attempting to secure admission without such permits or passports would be rejected at the port of entry after ample warning in the country of origin that such rejection would be inevitable. Clearly, no reciprocal arrangement for controlling emigration at both ends can be outlined or considered in detail without full discussion with the Colonial Governments concerned, and it would obviously be undesirable to commence negotiations with the Colonies unless there was a reasonable prospect of some practical outcome of the discussions. If the alternative policy commends itself to the people of India, it would be futile to consider any other line of action until it has been tried and has failed, but with the knowledge in our possession that the Colonies have on various occasions shown themselves alive to the necessity of giving such consideration as is possible to the wishes of the Government of India, I am full of confidence that they would be willing to go to some length in giving facilities to a moderate number of Indian immigrants, while obtaining through such a compromise certain restrictions in India on free emigration to the Colonies. This is the policy which the Government of India would advocate at the present time, a policy based on a scheme of complete reciprocity, and it is for the consideration of the Hon. Members and of the Indian public that I have developed our views here to-day. If these views meet with general approval, the Government of India are ready to recommend them to the Secretary of State with a view to opening negotiations with the Colonies concerned. I appeal to the

Indian public to view this question in no narrow light. India has her rights, but equally have the Colonies. Should it be decided to negotiate with the Colonial Governments, I am confident that they, with their strong imperial instincts, will meet us in no mean or niggardly spirit, provided that we on our side show our readiness to meet them half way. The fact that in a few weeks' time our splendid Indian soldiers may be fighting side by side and shoulder to shoulder with our Colonial fellow-subjects against the common enemy is a guarantee of fair and generous treatment on both sides in a controversy of this nature.

The Viceroy on India and the War.

On September 9th in the House of Commons Mr. Charles Roberts read an important statement from the Viceroy of India.

The statement was as follows :—

The following is a summary of the offers of service, money, etc., made in India to the Viceroy. The Rulers of the Native States in India, who number nearly seven hundred in all, have, with one accord, rallied to the defence of the Empire and offered their personal services and the resources of their States for the war.

From among the many Princes and Nobles who have volunteered for active service, the Viceroy has selected the Chiefs of Jodhpur, Bikaner, Kishangarh, Rutlam, Sachin and Patiala, Sir Pertab Singh, Regent of Jodhpur, the heir-apparent of Bhopal and a brother of the Maharaja of Cooh Behar, together with other Cadets of noble families.

A WARRIOR OF SEVENTY.

The veteran Sir Pertab would not be denied his right to serve the King-Emperor in spite of his seventy years, and his nephew, the Maharaja, who is but sixteen years old, goes with him. (Loud Cheers.)

All these have, with the Commander-in-Chief's approval, already joined the Expeditionary Forces.

The Maharaja Scindia of Gwalior and

the Chiefs of Jaora and Dholpur, together with the heir-apparent of Palanpur were, to their great regret, prevented from leaving their States.

Twenty-seven of the larger States of India maintain Imperial Service Troops and the service of every corps was immediately placed at the disposal of the Government of India on the outbreak of war.

The Viceroy has accepted from twelve States the contingents of Cavalry, Infantry, Sappers and Transport, besides the Camel Corps from Bikaner, and most of them have already embarked.

As particular instances of the generosity and eager loyalty of the Chiefs the following may be quoted :—Various Durbars have combined together to provide a hospital ship to be called the *Loyalty*, for the use of the Expeditionary Forces. The Maharaja of Mysore has placed fifty lakhs of rupees at the disposal of the Government of India for expenditure in connection with the Expeditionary Force.

INDIAN CHIEFS.

The Chief of Gwalior, in addition to sharing in the expenses of the hospital ship, the idea of which originated with himself and the Begum of Bhopal, has offered to place large sums of money at the disposal of the Government of India and to provide a thousand horses as remounts. From Hoharu, in the Punjab and Lasbela and Kelat in Baluchistan come offers of camels with drivers to be supplied and maintained by Chiefs and Sardars. Several Chiefs have offered to raise additional troops for military service should they be required, and donations to the Indian Relief Fund have poured in from all States. The Maharaja of Rewa has offered his troops, his treasury, even his private jewellery for the service of the King-Emperor. (Cheers.) In addition to contributions to the Indian Fund, some Chiefs, namely, those of Kashmir, Bundi, Orchha, Gwalior and Indore, have also given large sums to the Prince of

Wales' Fund. The Maharaja of Kashmir, not content with subscribing himself to the Indian Fund, presided at a meeting of twenty thousand people held recently at Srinagar, and delivered a stirring speech in response to which large subscriptions were collected.

OFFER OF HORSES.

The Maharaja of Holkar offers free of charge all horses in his State which may be suitable for Government purposes. Horses have also been offered by the Nizam's Government, by the Jam of Jamnagar and other Bombay States.

BOMBAY CHIEFS.

Every Chief in the Bombay Presidency has placed the resources of his State at the disposal of Government and all have made contributions to the Relief Fund. Loyal messages and offers have also been received from the Mehtar of Chitral and the tribes of the Khyber Agency as well as from the Khyber Rifles.

REMOTE STATES.

Letters have been received from most remote States in India, all of them marked by deep sincerity, of a desire to render some assistance, however humble, to the British Government in its hour of need. (Cheers.) Last, but not least, from beyond the borders of India have been received generous offers of assistance from the Nepal Durbar. The military resources of the State have been placed at the disposal of the British Government, and the Prime Minister has offered a sum of three lakhs of rupees to the Viceroy for the purchase of machine guns or field equipment for British and Gurkha regiments proceeding overseas, in addition to large donations from his private purse to the Prince of Wales' Fund and the Imperial Indian Relief Fund. To the fourth Gurkha Rifles, of which the Prime Minister is Honorary Colonel, the Prime Minister has offered thirty thousand rupees for the purchase of machine guns in the event of their going on service.

THE DALAI LAMA.

The Dalai Lama of Tibet has offered a thousand Tibetan troops for service under the British Government. His Holiness also states that Lamas innumerable, through the length and breadth of Tibet, are offering prayers for the success of the British Army and for the happiness of the souls of all victims of the war. (Cheers.)

BRITISH INDIA.

The same spirit has prevailed throughout British India. Hundreds of letters and telegrams have been received by the Viceroy expressing loyalty and a desire to serve either in the field or by co-operation in India. Many hundreds of messages have also been received by Local Administrations. They come from communities and Associations, religious, political and social, of all classes and creeds and also from individuals, offering their resources or asking for an opportunity to prove their loyalty by personal service. The following may be mentioned as typical examples. The All-India Moslem League, the Bengal Presidency Moslem League, the Moslem Association of Rangoon, the Trustees of the Aligarh College, the Behar Provincial Moslem League, the Central National Muhammadan Association of Calcutta, the Khoja community and other followers of the Aga Khan, the Punjab Moslem League, the Muhammadans of Eastern Bengal, the Citizens of Calcutta, Madras, Rangoon and many other cities, the Behar Landholders' Association, the Madras Provincial Congress, the Taluqdars of Oudh, the Punjab Chief's Association, the United Provinces Provincial Congress, the Hindus of the Punjab, the Chief Khalsa Dewan representing the orthodox Sikhs, the Borah community of Bombay and the Parsee community of Bombay.

A FIELD HOSPITAL.

The Delhi Medical Association offer the field hospital that was sent to Turkey during the Balkan war. Bengali students offer

their services for ambulance corps, and there were many other offers of medical aid.

The Zemindars of Madras offered five hundred horses.

EFFORTS TO KEEP DOWN PRICES.

Among other practical steps taken to assist the Government may be noted the holding of meetings to keep down prices and maintain public confidence and credit.

INDIAN CHIEFS AND STUDENTS IN ENGLAND.

Mr. Roberts added that in addition similar offers had been made by Chiefs who happened to be at present in Europe. The Gaekwar of Baroda and the Maharaja of Bharatpur, to mention two only, had placed the whole resources of their states at the disposal of His Majesty's Government. The Indian community in England, including Indian students, had made loyal offers of service.

APPRECIATION OF INDIA'S LOYALTY.

Mr. Roberts concluded. "I feel confident that the House and the country will feel deep appreciation of this magnificent demonstration of loyalty with which the Princes and people of India have identified themselves with the cause of the Empire. (Loud cheers.)

The Viceroy on Indian War Expenditure.

The following is H. E. the Viceroy's speech accepting the financial help proffered by India in aid of the war:—That Hon'ble Members should desire at the same time to share the financial burden cast upon the United Kingdom by the war is a very natural and legitimate aspiration and one that I cannot commend too highly. I speak for the Government of India, when I say, that we are in full accord and complete sympathy with the wish expressed and will be very pleased to gratify it, as far as we legitimately can, having due regard to the interests of the taxpayers. You are, no doubt, aware that we are bound to suffer financially from the war and the consequent dislocation of the trade entailing, as it will, a falling off in

our customs returns and railway receipts. We could, however, under ordinary circumstances, have asked the Home Government to bear the whole cost of the expeditionary force as in the cases of the forces sent to China and South Africa and in this way, we could have effected very considerable counter savings. But I must tell you that we actually had this matter under our consideration and we felt that it would not be in accordance with the wishes of the people of India that in a crisis like the present, India should gain a material advantage at the expense of the Home Government in the savings effected, on the despatch of a large expeditionary force to Europe, a feeling which has received full confirmation in the resolution which has been moved and in the speeches which have been made. On behalf of the Government, I accept the resolution and will strengthen our hands in the recommendation we felt disposed to make and shall now proceed to make that, under present circumstances, we should accept such portion of the cost of the expeditionary force as would have fallen upon India, had our troops continued to be employed in this country under normal circumstances.

ONE MILLION WANTED.

So far as a rough estimate can be framed at present and it must necessarily be a very rough one, the net amount which the Government of India would, in this way, contribute to His Majesty's Government, assuming that the war lasted till towards the end of the current financial year, would be about one million sterling. The Hon'ble Members would have seen the announcement in the press of the splendid offer of 50 lakhs as a contribution to the cost of the expeditionary force made by His Highness the Maharaja of Mysore. I cannot sufficiently commend this striking and patriotic action on the part of His Highness whose loyalty, generosity and liberal views are so well known. The money so

offered will be placed at the disposal of His Majesty's Government as an additional contribution and has been earmarked for meeting the cost of transport for taking our troops overseas. Any other similar offers that may be made will be treated in a like way. I trust that this solution of this somewhat difficult question will prove satisfactory to the Hon'ble Members and to the country at large. We shall, thus, besides placing at the disposal of His Majesty's Government a large portion of our army primarily maintained for the defence of India, also present them and that at a time when, as I have said, the war is likely materially to affect our budget arrangements with a sum which may run to about a million sterling. A contribution on more liberal lines than this would not, we think, be fair to the Indian taxpayer but that we should go to this extent in helping the mother country, is, I believe, a measure which will be in unison with your wishes and with Indian sentiment generally.

OUT OF EVIL COMETH GOOD.

There is, I believe, nothing like comradeship in arms before the enemy and joint participation in the dangers and the hardship of war, to level all distinctions, to inspire mutual respect and to foster friendships. This, I regard as the bright side of the despatch of our troops to Europe and of the heavy material sacrifices that are being made by India for the sake of the Empire. I cannot help feeling that as a consequence better relations will be promoted amongst the component parts of the British Empire, many misunderstandings will be removed and outstanding grievances will be settled in an amicable and generous manner. In this sense, out of evil good may come to India and this is the desire of all.

In conclusion I accept on behalf of the Government of India the loyal and patriotic resolution moved by the Hon'ble Sir G. M. Chitnavis and if the Hon'ble Members agree, shall have very great pleasure in tele-

THE DALAI LAMA.

The Dalai Lama of Tibet has offered a thousand Tibetan troops for service under the British Government. His Holiness also states that Lamas innumerable, through the length and breadth of Tibet, are offering prayers for the success of the British Army and for the happiness of the souls of all victims of the war. (Cheers.)

BRITISH INDIA.

The same spirit has prevailed throughout British India. Hundreds of letters and telegrams have been received by the Viceroy expressing loyalty and a desire to serve either in the field or by co-operation in India. Many hundreds of messages have also been received by Local Administrations. They come from communities and Associations, religious, political and social, of all classes and creeds and also from individuals, offering their resources or asking for an opportunity to prove their loyalty by personal service. The following may be mentioned as typical examples. The All-India Moslem League, the Bengal Presidency Moslem League, the Moslem Association of Rangoon, the Trustees of the Aligarh College, the Behar Provincial Moslem League, the Central National Muhammadan Association of Calcutta, the Khoja community and other followers of the Aga Khan, the Punjab Moslem League, the Muhammadans of Eastern Bengal, the Citizens of Calcutta, Madras, Rangoon and many other cities, the Behar Landholders' Association, the Madras Provincial Congress, the Taluqdars of Oudh, the Punjab Chief's Association, the United Provinces Provincial Congress, the Hindus of the Punjab, the Chief Khalsa Dewan representing the orthodox Sikhs, the Borah community of Bombay and the Parsee community of Bombay.

A FIELD HOSPITAL.

The Delhi Medical Association offer the field hospital that was sent to Turkey during the Balkan war. Bengali students offer

their services for ambulance corps, and there were many other offers of medical aid.

The Zemindars of Madras offered five hundred horses.

EFFORTS TO KEEP DOWN PRICES.

Among other practical steps taken to assist the Government may be noted the holding of meetings to keep down prices and maintain public confidence and credit.

INDIAN CHIEFS AND STUDENTS IN ENGLAND.

Mr. Roberts added that in addition similar offers had been made by Chiefs who happened to be at present in Europe. The Gaekwar of Baroda and the Maharaja of Bharatpur, to mention two only, had placed the whole resources of their states at the disposal of His Majesty's Government. The Indian community in England, including Indian students, had made loyal offers of service.

APPRECIATION OF INDIA'S LOYALTY.

Mr. Roberts concluded. "I feel confident that the House and the country will feel deep appreciation of this magnificent demonstration of loyalty with which the Princes and people of India have identified themselves with the cause of the Empire. (Loud cheers.)

The Viceroy on Indian War Expenditure.

The following is H. E. the Viceroy's speech accepting the financial help proffered by India in aid of the war:—That Hon'ble Members should desire at the same time to share the financial burden cast upon the United Kingdom by the war is a very natural and legitimate aspiration and one that I cannot commend too highly. I speak for the Government of India, when I say, that we are in full accord and complete sympathy with the wish expressed and will be very pleased to gratify it, as far as we legitimately can, having due regard to the interests of the taxpayers. You are, no doubt, aware that we are bound to suffer financially from the war and the consequent dislocation of the trade entailing, as it will, a falling off in

our customs returns and railway receipts. We could, however, under ordinary circumstances, have asked the Home Government to bear the whole cost of the expeditionary force as in the cases of the forces sent to China and South Africa and in this way, we could have effected very considerable counter savings. But I must tell you that we actually had this matter under our consideration and we felt that it would not be in accordance with the wishes of the people of India that in a crisis like the present, India should gain a material advantage at the expense of the Home Government in the savings effected, on the despatch of a large expeditionary force to Europe, a feeling which has received full confirmation in the resolution which has been moved and in the speeches which have been made. On behalf of the Government, I accept the resolution and will strengthen our hands in the recommendation we felt disposed to make and shall now proceed to make that, under present circumstances, we should accept such portion of the cost of the expeditionary force as would have fallen upon India, had our troops continued to be employed in this country under normal circumstances.

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The foe is upon thee,
 And grave is the day.
 The monarch Ambition
 Hath harnessed his slaves;
 But the folk of the Ocean,
 Are free as the waves.
 For Peace thou art armed,
 Thy Freedom to hold:
 Thy Courage as iron,
 Thy Good-faith as gold.
 Through Fire, Air, and Water,
 Thy trial must be:
 But they that love life best,
 Die gladly for thee.
 The Love of their mothers,
 Is strong to command;
 The fame of their fathers,
 Is might to their hand.
 Much suffering shall cleanse thee;
 But thou through the flood,
 Shalt win to Salvation,
 To Beauty through blood.
 Up, careless, awake!
 Ye peacemakers, Fight!
 England Stands for Honour,
 God Defend the Right!

ROBERT BRIDGES,
Poet Laureate

War Oratory.

SIR EDWARD GREY.

The following are extracts from Sir Edward Grey's speech on the present war.—

"I ask the House, from the point of view of British interests, to consider what may be at stake. * * * "If, in a crisis like this, we run away from those obligations of honour and interest as regards the Belgian Treaty, I doubt whether, whatever material force we might have at the end, it would be of very much value in face of the respect that we should have lost. * * * "For us, with a powerful fleet, which we believe able to protect our commerce and to

protect our shores and to protect our interests if we are engaged in war, we shall suffer but little more than we shall suffer if we stand aside. We are going to suffer I am afraid, terribly in this war, whether we are in it or whether we stand outside. * * *

"At the end of this war, whether we have stood aside or whether we have been engaged in it, I do not believe for a moment, even if we had stood aside and remained aside, that we should be in a position, a material position, to use our force decisively, to undo what had happened in the course of the war, to prevent the whole of the west of Europe opposite to us, if that had been the result of the war, falling under the domination of a single power. * * *

"There is but one way in which the Government could make certain at the present moment of keeping outside this war, and that would be that it should immediately issue a proclamation of unconditional neutrality. We cannot do that. * * *

"If we did take that line, and said we will have nothing whatever to do with this matter under any conditions—the Belgian Treaty obligations, the possible position in the Mediterranean, the damage to British interests, and what may happen to France from our failure to support France—if we were to say that all those things mattered nothing, were as nothing, and to say we would stand aside, we should, I believe, sacrifice our respect and good name and reputation before the world."

PARALLEL FROM PITT.

The speeches of the great supporters of the war against Napoleon are as pointed out by a writer in the *Saturday Westminster Gazette* singularly apt to our present crisis. Pitt's speech against the aggression of Bonaparte in 1797 is in substance the counterpart of Sir Edward Grey's statement above. The argument is identical: "If I could look at this as a dry question of prudence, if I could calculate it upon the mere grounds of interest, I would say if we

love that degree of national power which is necessary for the independence of the country and its safety, if we regard domestic tranquillity, if we look at individual enjoyment from the highest to the least among us, there is not a man whose stake in the country is so great that he ought to hesitate a moment in sacrificing any portion of it to oppose the violence of the enemy—nor is there, I trust, a man in this free and happy nation whose stake is so small that he would not be ready to sacrifice his life in the same cause. If we look at it with a view to safety—this would be our conduct. But if we look at it upon the principle of true honour, of the character which we have to support, of the example which we have to set to the other nations of Europe; if we view rightly the lot in which Providence has placed us, and the contrast between ourselves and all other countries in Europe, gratitude to that Providence should inspire us to make every effort in such a cause. There may be danger; but on the one side there is danger accompanied with honour; on the other side is danger with indelible shame and disgrace; upon such an alternative Englishmen will not hesitate."

Germany Sues for Peace.

In view of the telegrams that have appeared stating that Germany has asked for terms of peace the following great sentence concerning peace, pronounced by Canning in 1813 will doubtless be read with interest.

"Peace is safe now, because it is not dictated; peace is safe now, for it is the fruit of exertion, the child of victory! Peace is safe now, because it will not be purchased at the expense of the interest and the honour of the Empire; it is not the ransom to buy off danger, but the lovely fruit of the mighty means we have employed to drive danger from our shores."

Literature for Indian Moslems.

The *Hablul Matin* publishes an interesting article entitled "Indian Moslems: their National Literature." It is a well-known truism that a

national literature is the true embodiment of the nation's character. Literature is a great force in building the character of a nation. It is also the most permanent land-mark of a civilization, and lasts long after the nation itself has vanished. The evolution of a national literature is, therefore, of the greatest importance. What then shall be the rallying point for all Indian Moslems?

The Moslems in this country number over eighty millions. They have the advantage of a common speech in Urdu. It is perhaps the most modern of all the spoken languages in the world. It owes its inception to the intercourse of the Moslem rulers with their Hindu subjects. It is a new language composed of two elements, one of Sanskrit and the other of Persian origin. It possesses all the melody and reasonance of its parent tongues. It has blended the harmony of the sweetest languages in the world. Its vocabulary is copious, and it is capable of expressing the most noble sentiments in the most eloquent and attractive manner. It is also marked by great potentiality and flexibility. Foreign words and expressions can be engrafted upon it without the least difficulty.

Urdu literature has made considerable progress in recent years. There are numerous books published in this language which can be appropriately classed among the world's masterpieces. Many first class newspapers and periodicals are published in this tongue.

But the literature in Urdu is of recent origin, and in the present stage of its development a great deal must be borrowed from the classics of older languages. Urdu may thus be developed into a language which will combine the best characteristics of English, Arabic and Persian languages. Originality will be evolved by such a process in the future. For the present, the literature of the Islamic vernacular in India should be made copious and exhaustive.

The *Hablul Matin* therefore exhorts the Mos-

lem graduates to do something to improve their mother tongue.

Our contemporary appeals thus:—"No Moslem ruler showed such a zeal for the Islamic faith as Aurangzib, yet his character was maligned by foreign historians, and it is the fashion among our Hindu fellow countrymen to look upon him as a cruel bigot. It was left to a Bengalee Hindu graduate Prof. Jadu Nath

Sircar to vindicate the memory of one of the greatest Moslem Emperors and present him in true light before posterity. The history of the Moghul rule has been written by Mr. Kennedy, a Muzefferpore Vakil. How is it that our Moslem graduates are sleeping over such important matters? Have they not a duty to their ancestors, who ruled this country for seven centuries?"

REVIEWS AND NOTICES.

Mysore Industrial and Commercial.

This is a lengthy survey of the resources of the Mysore State made by V.S. Sambasiva Aiyar, B. Sc. L.C.E., Professor of Geology on special duty. It indicates clearly the large economic possibilities of the Province. The author has studied the resources of the province in its soil and raw products, labour both skilled and unskilled, capital, communications and facilities for trade.

The volume is in three parts, totaling over 300 pages of foolscap and includes sixteen maps and graphs and over one hundred elaborate tabular statements. The first part is devoted mainly to a study of the resources in materials and in power and of the economic condition of the more important sections of the population. It concludes with a summary of all the main suggestions offered together with a programme of further continuation work. From the second part which is a descriptive account of the various industries, one can know a great deal about the industries connected with cotton, silk, wool, dyeing, tanning, working in metals and wood, sugarcane, oils and perfumes. The third part is devoted to a discussion of the sources of trade and other statistics, and to a detailed review of the trade and commerce of Mysore.

The book is exceedingly well-arranged and well-written and we congratulate Mr. Sambasiva Aiyar and the Mysore Durbar on the publication of this valuable book of reference which is at once informing and interesting.

The Investor's India Year Book.

We have to thank Messrs. Place Siddons and Gough, the well-known Stock Brokers of Calcutta for sending us a copy of the Third Annual Edition for 1914 of their most useful publication, the Investor's India Year Book. A detailed notice of the previous edition appeared in our Journal last year. The present edition maintains its level of excellence. The history of the most notable existing industrial concerns in India is fully recorded in this book and people who are now talking of starting industries to snatch the trade of Austria and Germany will do well to make sure by reference to this book how far their projects will succeed. The India Investor's Year Book is bound to become a standard work of reference and we would suggest to the publishers the insertion of an index of the companies mentioned in the book. It is priced Rs. 5.

Co-partnership and Profit Sharing

Williams and Norgate, Home University Library, 1/ nett.

In this little book the author has explained the principles and sketched the history in Europe and America of this solution of the perpetual discord between labour and capital. The movement towards co-partnership seeks to transform industrial autocracy into democracy of a peaceful and profitable character. Co-partnership is in a very full sense one of the forms of voluntary co-operation. The author's connection with both movements gives his work the stamp of authority while his clear and lucid expression makes the book readable and interesting. The book may indeed be styled perfect, if a little more attention had been devoted to Germany and to the productive societies of labourers in England, by whom co-partnership was first made a practical success.—S. V.

The Educational World.

Female Education in Bengal.

The number of public institutions of all classes for girls in Bengal in the last official year increased from 6,957 to 7,263, and the number of girls, including those reading in mixed schools, from 222,576 to 222,749. The increase in the number of schools occurred chiefly under the heads of Primary schools and Special schools which rose from 6,572 to 6,779, and from 315 to 427, respectively. A pleasing feature of the year's progress is that the number of Mahomedan girls attending schools increased by 1,423.

Mathematics and Education.

In the course of a lecture on the "Place of Mathematics in Education" the Hon. Mr. R. P. Paranjpe observed, "Mathematics is a very useful subject, but the value of a subject cannot be fixed by its mere usefulness. In order to put a value upon a subject from the educational standpoint—from which alone the relative importance of subjects can be settled—one has to see how far the subject demands the use of intellect."

The problems in Mathematics create the habit of thinking, and even if the problems are afterwards forgotten, the habit of thinking remains. The value of each subject can be gauged from the way in which that subject helps to develop and direct the mental faculties. All sciences are now going on the line of mathematics, so much so that biology, physics, astronomy, etc., may each be called the science of mathematics. Lord Kelvin, the great expert in the Science of Physics, was also a mathematician. Mathematics is of great use in Political Economy. Science of probabilities helps in the insurance business. Mathematics, thus does great service to other subjects. There are imaginary numbers in mathematics, but they are very useful

in preparing maps. Good mathematicians have been considered as among the great people of the world. Lord Justice Molten is a great mathematician.

Mahomedan Education in Bengal.

The following resolution has been issued on the appointment of a Committee to consider the question of the education of Mahomedans by the Bengal Government:—

The question of the education of Mahomedans has long been engaging the attention of Government. The Government of India have, of late, observed that in the matter of primary education the Mahomedan community now holds its own, but in respect of higher education their numbers are still far below their proportion to the population. The Government of India are therefore anxious that all reasonable facilities should be provided for the education of this backward community and have made certain general suggestions and indicated specific lines of action which they consider likely to prove useful. The Governor in Council has accordingly decided to appoint a Committee of official and non-official representatives of the Mahomedan community to consider the suggestions made by the Government of India regarding the education of Mahomedans, the resolutions passed by the Provincial Mahomedan Educational Conference which met in Dacca in April last, and any other matters relating to the furtherance of Mahomedan education which the Director of Public Instruction, Bengal, may wish to place before them.

School Visits.

The *Times* Educational supplement for June 2nd, 1914, contains an account of an experiment in the Curricula of Elementary Schools, which has been encouraged by the Board of Education with very satisfactory results. Visits

to places of educational interest are now being paid during school hours by the children in some towns; as early as 1895 the Board recognised these visits for the purpose of school attendance, but it is only recently that many such visits have been paid. The London County Council has set apart a sum of £500 annually for the travelling expenses of children and teachers. As a rule half a day is occupied by the visit, and both boys and girls are taken, not more than twenty-five children being placed under the care of one teacher. The scholars are instructed beforehand, are encouraged to make notes of what they see, and their knowledge is subsequently tested in the school. The interest aroused has been most encouraging. The visits appear to act as a stimulus to teacher and taught alike.

Education in Behar and Orissa.

The report of the Committee appointed by the Behar and Orissa Government to report on the subject of Primary education has been published. The committee attaches great importance to Middle English schools, and consents to the Government assuming their control and maintenance, provided a definite policy be laid down, not only for improvement but expansion. The question of the expansion of Primary Education engaged the best attention of the Committee. The Committee, following the Resolution of the Government of India, decided to double the number of pupils at present at school in the near future. At present about 27 per cent. of boys of school-going age are studying at school and the Committee decided to work up to 50 per cent. The Lower Primary Standard having been decided as the stage of instruction which should be brought within the reach of all boys, the Committee decided to place a Lower Primary School within accessible distance of every boy.

There is an influentially supported movement to establish a Women's College in Bankipur, ultimately to develop into a University.

Monthly Grants to Primary Schools.

The Government of Madras have sanctioned a system of payment of teaching grants from Provincial Funds to Elementary Schools by monthly instalments. This has been introduced only as an experimental measure in the four districts of Guntur, Bellary, Chingleput and Madura, with effect from the beginning of the official year 1914-15. Monthly payments shall be made only to schools recognized and aided for the three years immediately preceding the official year to which the grant relates, and only those schools shall be put on the list which have had no reduction of grant during these three years, other than for insufficiency of funds, closure on account of epidemics, or other similar causes. The grant on behalf of teachers only shall be paid monthly and the total amount of this grant shall be calculated on the number of teachers on the 31st March preceding the official year to which the grant relates. Grant for average attendance of pupils shall be paid once a year, and shall be included in the final payment which shall become due on the 1st March, after making any adjustments that closure of the school or irregular or inefficient working or changes in staff may render necessary.

The Crippling of Education.

We learn from a contemporary that Mr. Stapleton, Inspector of Schools, Dacca Division, has ordered the Managing Committee of several unaided schools, some of which contain more than 700 pupils, to reduce the number to 500. In this connection, the *Modern Review* quotes figures to show that the schools in Japan and England contain more students, the strength of one primary school coming up to 2,300.

The question of increasing the efficiency of education is receiving attention in England and India but in the former country, efficiency is not sought, as in the Dacca Division, by depriving a large number of pupils of education altogether.

The authorities there know full well that

every child is too valuable an asset of the state to be wasted for want of proper education. Mr. Stapleton's policy seems to be not only detrimental to the spread of education in India but is also politically inexpedient; for even those who hold "education to be responsible for the present political unrest," must concede that a young man who has received education and has been enabled thereby to earn a decent living is far less likely to be a danger to the state than one who is compelled from want of education to lead a life of ignorance and indolence, misery and discontent.

Primary Education in U.P.

Sir James Meston has passed orders on the recommendations of the Committee on Primary Education which sat last year at Naini Tal under Mr. Justice Piggott's presidentship.

The orders deal with the question of the constitution and location of primary schools, the provision and pay of teachers, the curriculum of education for special classes, school buildings and hygiene, aided and indigenous schools, Girls' Primary Schools, control and inspection, finance and general aspects.

His Honour says in the course of a long resolution, that on account of financial limitations, the task of the Committee was to consider the means of securing the attendance of roughly 800,000 boys at the public primary schools in place of the enrolment of something under half a million.

The elementary schools are to fulfil two definite objects:—(1) The schools must not be so designed as necessarily to make pupils discontented with and averse from pursuing their ancestral callings which, with the vast majority, are all that they can possibly look to for their maintenance in life. (2) They must give boys such education as will have lasting influence on their intelligence and will equip them better for their work in the world. Any system of primary education which fails in these aspects

is either treachery to the people or the gravest waste of their money or both.

The position is that between 80 and 90 per cent. of the boys leave school at what is called the lower primary stage, *i.e.*, from the second class or earlier and it is incontestable that this vast number of children carry nothing away with them which is of any lasting value.

For the future, therefore, the lower primary will cease to be a recognised stage in the system of elementary education.

Free and Compulsory Elementary Education.

In the course of a learned article on the above subject published in the Special Education Supplement of the *Commonweal*, the Hon'ble Mr. V. S. Sreenivasa Sastri says that as soon as the war is over, we must take up this matter of compulsory education once more in right earnest. A long time must pass after its introduction for any good result to be perceptible. One entire generation must have been under its influence before the figure for literacy shows a material advance. The school habit takes several generations to take root. It will be long, long indeed, before the character, the self-reliance or the economic efficiency of the people show any marked improvement. Not a day therefore should be lost which could by any possibility be saved in securing this great blessing for the poor dumb millions of India.

Every person engaged in the work of ameliorating the condition of the people is brought up almost at the beginning of his labours against the dead wall of ignorance. Ask the man charged with spreading co-operative credit in rural areas, he says: 'Educate the people.' Ask the agricultural expert whose business is to teach new methods, he says: 'Educate the people.' Ask the enthusiastic sanitarian who after all is abroad, he says 'Educate the people.' Ask the intelligent employer who is anxious to improve the efficiency of the labourer, he says: 'Educate

the people." Ask the temperance reformer, he says. 'Educate the people.' Ask the social worker who would free the rustic from fear of the policeman, the forest guard, the sowcar and the curmudgeon, he says: 'Educate the people.' Blest indeed is this movement for universal popular education which is the indispensable condition of all progress.

The German System of Education.

A writer in the *New India* has a fine series of extracts on the subject from Charles Tower's "Germany of to-day." A uniform system of education has grown up in Germany, says he, at the very outset.

ELEMENTARY EDUCATION.

Elementary education is general and the proportion of the illiterate is small. There attention is paid primarily even to the formation of character. But the character that the elementary school teacher strives to form is by no means that of upright manly independence; it is rather the character of a patient and obedient link in a chain. Obedience and discipline are the two moral lessons of the Elementary school. Elementary education is free. One-third of the cost is borne by the State and two-thirds by local authorities. These schools are under the management of the Minister of Trade and Commerce. There are also improved type of Elementary Schools, called Middle Schools.

CONTINUATION CLASSES.

Continuation classes are provided for those who pass out of the Elementary schools and in them are taught commerce, agriculture, domestic and farm service and handicrafts.

ELEMENTARY TO SECONDARY.

The bright students pass on from the Elementary to High Schools. These are managed either by the State or Municipalities, and are therefore under the control of their officials. A final pass from these schools is absolutely necessary for anyone to enter the university, the professions or the Public Service,

THE TRAINING OF TEACHERS.

The teachers of both the Elementary and High Schools have to undergo long and severe training and are but poorly paid. They have not the same social status, as for example, as in England. The German system simply cramps into the teaching profession a number of men who, having been taught along the line laid down by the State for the future professor or first-class teacher, naturally drift along to teaching as being the line of least resistance, and, on the whole, the shortest cut to a miserable pension. *The profession is not popular.*

The German system is not based on the building of the character and, despite its acknowledged merits as the basis of a general education, is only education in the narrow sense of the word.

The results of the system on the physique are injurious. "About 40 per cent. are ultimately rejected as unfit for military service."

HIGH SCHOOL TO UNIVERSITY.

The next step from the High School is a University or a Technical High School. The education given in these is not for completing general education. It is a special education given for a special purpose. In the universities there are some twenty four faculties, including the military. The Technical High Schools are models of their kind and intended to train people to industrial pursuits. They rank with the universities and confer degrees. The universities as well as the technical schools are state controlled and seem to act on the dictum "Man is a productive animal".

THE RESULTS.

If the system is the root-cause of the admirable progress Germany has made in recent times in the field of industry, it is equally responsible for the defects of education shown in recent events in a want of balance, judgment, self-control and dignity. One should not be surprised to find in such a character a lack of initiative and hesitation to take responsibility. The effects on the manners of the nation are "opponent"

What wonder if men nursed in the lap of such a system of education behaved like barbarians in Belgium and France!

The Scientific World.

Reading by Ear.

It is now possible for a blind man to "see," to read by ear.

This is due, says the *Mail*, to great improvements made by Dr. Fournier d'Albe in an electrical instrument which he showed at the British Association meetings last year. In brief, the instrument transforms the action of light into sound.

The principle of the invention depends on the peculiar property of the element selenium, by which the strength of an electric current passing through it varies with the amount of light falling on the element. Suppose a plate of selenium is in electrical connection with a telephone receiver—ordinary speech is, of course, transmitted by electric currents. Then according as more or less light falls on the selenium, so will the electric current passing through the telephone receiver vary and also the sounds heard in the receiver. When the plate of selenium is in a strong light sounds are heard, when it is in the shadow all is quiet.

By the aid of the instrument, it is possible to differentiate by the different sounds the intensity of the light falling on the instrument. For instance, if the instrument is placed first before a large window and then before a small aperture through which light is coming two different sounds are heard. By shining a powerful light on the type of ordinary printed letterpress, it is possible to differentiate between the letters by the different sounds in the receiver. When the instrument was shown last year it was necessary for the type to be about two inches in height. Now ordinary newspaper type can be read. The instrument is called the "type-reading octophone."

Moon's Influence on Vegetables.

A writer in the *Scientific American* mocks at

the superstition of the people who believe that the moon has a potent sway over the animal and vegetable kingdoms. He asks, "does the moon have any effect on the growth of vegetables? Does it make any difference when potatoes are planted in reference to the moon? I have been told by several successful farmers that the time to plant potatoes was in the dark of the moon. If planted in the light of the moon, they would all grow to tops. Does the moon have any effect on the killing of pigs for pork? Some claim that if killed during a certain time of the moon, the meat will all curl up when fried, other times it will not. Does the moon have any effect on the weaning of children or stocks?"

All these sound very foolish to a man with a tinge of reasoning. The writer sees no connection between the moon and the garden stuffs or pigs and children. He remarks:—The moon is there all the time, but the people I talked with were very indignant when I doubted them. There is not a shadow of evidence of a scientific nature to show that the moon has the slightest influence on the weather, or the growth of potatoes, or the cooking of pork, or the weaning of stock. When you think of it that thousands of hogs are killed every day in the year, moon or no moon, in the large slaughter houses of the West, it is evident that the packers have no respect for the moon in selecting a day for the killing of hogs. In the other matters of your inquiry, the same is true. Men do not generally look to the moon for portents for planting. They plant when the ground is in the proper condition.

Remarkable Archæological Finds.

Facts of fascinating interest were disclosed in Dr. Marshall's lecture before the Punjab Historical Society on his recent excava-

tions at Taxilla, the ancient capital of the Greek and Persian conquerors of Northern India. Not only has Dr. Marshall unearthed a whole quantity of priceless jewellery and carving, dating back to Greek and Persian times and traced the remains of fire worshipping and Greek temples besides other interesting buildings, but he has discovered.—

(1) the foundations of a tower with Assyrian characteristics comparable to those of the Biblical Tower of Babel;

(2) relics which claim to be some of the veritable ashes of Buddha, the testimony in this case being at least as authentic as that on which some small fragments of incinerated bone found near Peshawar some years ago were accepted as belonging to this same saint.

The Buddha relics were found in a small gold casket inside a silver vase in an earthenware vessel buried beneath a Bodhisattva image in one of the stupas. Along with the ashes was a silver scroll which when deciphered and translated with infinite learning and labour disclosed the following statement:—

In the year 136 of Aze on the 15th day of the month of Ashadhr. On this day relics of the Holy One (Buddha) were enshrined by Dhurasakes, the son of Dhitasattva, a resident at the town of Moachax. By him these relics of the Holy One were enshrined in the Bodhisattva chapel at Tenna in Taxilla of the Holy Realm for the bestowal of perfect health upon the great King, King of Kings, the divine Kushana, for the veneration of all Buddhas, for the veneration of individual Buddhas, for the veneration of the saints, for the veneration of all sentient beings, for the veneration of his parents, for the veneration of his friends, advisers, kinsmen and associates, for the bestowal of perfect health upon himself may this gift be for the attainment of Nirvana.

Industry and the Chemist.

It would be interesting to inquire, writes the *Westminster Gazette*, if there is more than a

mere handful of industries which are entirely independent of chemical reaction or considerations. As far as they employ human beings it might be said that all industries are chemical. No workman is at his maximum of efficiency unless he is properly fed, and it is recognised that in the case of those who are exposed to certain industrial diseases there are some foods which it is well to avoid and others which may be taken with safety. The employer does not neglect the proper feeding of the horses he uses for the transport of his goods without paying the penalty. And food problems must be tackled by the chemist. But if we pass from what some may consider a matter of comparatively small moment we come to relations between chemistry and industry upon which all will be agreed. Take the production of power. We cannot ignore what chemistry has taught us with reference to the mysteries of combustion, the selection of coal suitable for a specific purpose, fuel economy, composition of flue gases, and utilisation of blast-furnace gases. The appeal to chemical analysis settles the question of the quality of the raw commodities purchased, and of the value and quality of the finished product. The chemist can deal in a systematic manner with all the materials entering into a manufacturing process, and with the product itself in each successive stage until it is in the hands of the salesman. He determines the chemical reactions at every step, and shows how they may be retarded, accelerated, checked, or completed with advantage to the manufacturer both in respect of actual profit and quantity and quality of output. He can suggest further profits in the successful disposal or utilisation of waste-products. The old rule of thumb methods, in which manufacturing losses of material were accepted with resignation or indifference as a law of nature, is rapidly passing away. As was said by Dr. Thompson in his address to the Society of Chemical Industry: "The chemist valiantly attacks this belief. He asserts that losses occur for material

reasons. . . . In developing new uses for regular products, waste products and by-products, the chemist has left his indelible mark upon industry. Here he is in the lead and his constructive mind is not satisfied with announcing his immediate discoveries, but in pointing the way to the rich fields of possible discovery that lie before him." Alluding to the tremendous profits that have resulted to industry owing to the influence of the research laboratory, the speaker remarked that the real value of such laboratories lies in their contributions to general progress, in the impulse they give to a proper understanding of the needs of the trade, and in the destruction of those trade superstitions which have for so long clogged the wheels of progress.

The Force of Suggestion.

The social influence of suggestion was the subject of a lecture given on 10th June by Mme. Lipinska, M.D., Laureate of the Academy of Medicine, Paris.

Mme. Lipinska said that from his birth, before the first signs of intelligence, man was subject to suggestion from those around. Before he had any will, reason, or feeling, he suffered unconsciously the daily and continuous invasion of the will, reason, and feelings. The whole of human evolution from prehistoric times rested on suggestion; but in order that suggestion might be realized, the individual or the community must be in a condition of receptivity.

In every suggestion there were two elements—first, the idea, and, secondly, the state of receptivity of the individual or of society as a whole; that was to say, their capacity to receive in a greater or smaller degree the ideas promulgated by great minds. Our historical past and our present social tendencies were the soil on which fresh ideas might come to fruition. Just as the environment exerted an unconscious influence on the individual, so remarkable personalities, people of genius,

worked in the environment, acting on the masses and imparting suggestions to the general population. Such men were Alexander, Cæsar, Charles XII and Napoleon.

The most intelligent persons were the easiest to treat with intellectual and reasonable suggestion, but the weakest characters were the most open to suggestions and impressions. In a battle the most timid might become the bravest when suggestion, influencing their whole being, veiled the danger from them. The fact was that collective suggestion was a force which rushed like a torrent carrying with it the timid as well as the brave, the coward as well as the audacious, even the reserved and those who were considered well-balanced. On the other hand, fear and terror were contagious, as was evident in cases of panic. The lecturer instanced the terrible fire at the Charity Bazaar in Paris, when the most distinguished and self-sacrificing men, unconscious of what they were doing, trampled upon their friends, upon women and children. All were hypnotized by one idea, one wish—to escape.

Legislators of every age had recognized this mental condition, and it had not been without reason that they had attached so much importance to insignia. Even a uniform had an unrivalled power of suggestion. There was the famous case of the "Captain of Kopenick," who presented himself suddenly at the municipal offices announcing the retirement of the burgomaster and carrying off the cash-box. None of those present moved a finger to prevent him. The prestige of his uniform had worked that kind of suggestion. What was the reason of the success and vogue of so many advertised remedies? Nothing but suggestion which compelled people to try the advertised article.

Impressions which struck the senses reacted on the mentality and caused it to vibrate, sometimes unconsciously and without any participation by the will. The lecturer instanced the

cases of epidemics of suicide, of which there were a number of historical examples. In medicine collective suggestion had always been recognized. In a hospital ward one patient had only to have a nervous seizure for another to have the same thing. It was precisely nervous contagion which explained how invaluable for nervous subjects it was to live for a time among healthy people. In Belgium and in France there existed colonies for the treatment of sick persons by this method. It was not rare for these patients to recover their sanity in a few months or years. We should facilitate good inclinations by immediate and persevering environing influences. We must set up a barrier to injurious suggestions by developing the forces of resistance to evil, by forming character and will through moral hygiene.

Grey Hair.

The whitening of hair which accompanies old age, or which may occur in earlier life, was shown many years ago by Metchnikoff to be due to the activity of special wandering cells in the epidermis which take up the hair-pigment into their interior and carry it away. To these cells the name of chromophage was given. The stimulus to this enhanced activity on the part of the chromophages, Metchnikoff found in these same microbic toxins. How far this hypothesis of Metchnikoff will stand the test of time is difficult to say. In recent years much work has been done by Metchnikoff and his pupils with the view of establishing the thesis on a sound foundation of experimental fact. That desideratum has, however, not yet been realised, and years may elapse before a definite pronouncement can be made as to the validity of the theory. None the less, says a writer, all admit with gratitude the stimulus which his fascinating hypothesis has lent to medical research.

Water Hot In Ten Seconds.

Here is an idea for a little apparatus by

means of which a glass of water can be heated in ten seconds and boiled in less than a minute. A metal cylinder is fastened to a wooden handle from which projects a wire ending in a plug that can be inserted in any electric light socket. When the current is turned on, the electricity heats the metal cylinder and this heats the water. The same apparatus can be used for deodorising or perfuming the air of a room, a pastille of incense, lavender flowers, or any other similar substance being put into the cylinder before the current is turned on.

It is a convenient article for travellers, who often want a little hot water in a hotel where none is immediately available, but where there is electric light. Any electric bulb can be unscrewed, the socket of the electric heater inserted in its place and the current turned on.

Protection from Flashes of Lightning.

Rubber on one's heel as a protection against a flash of lightning, commended by some, gets no support from Flammarion, who has specialised on the behaviour of thunderstorms. Even an India-rubber suit he thinks childish, as childish as silk umbrellas without iron ribs. Among his rules for safety, not generally recognised, is one forbidding us to run during a storm, for running causes movements of the air, and lightning is easily diverted along such a path. Don't ring bells, and avoid animals and telegraph posts, are among his hints.

The Seven Wonders.

The seven greatest wonders of the modern world have been chosen by a total of 151,764 readers of a Berlin paper in the following vote. Wireless telegraphy, 17,148; the Panama Canal, 16,259; Zeppelin's dirigible airships, 11,296; the cinematograph, 6,847; the steamship *Imperator*, 6,276.

The seven wonders of antiquity, it will be remembered, were the pyramids of Egypt, the temple of Diana at Ephesus, the hanging gardens of Babylon, the Colossus at Rhodes, the Mausoleum at Halicarnassus, the statue of Zeus by Phidias at Olympus and the Pharos or light-house at Alexandria.

The Sanitary World.

Infant Mortality.

One of the appalling features of modern life is the enormous proportion of children who die in the first 12 months of life, or who never come into the world at all, although under proper conditions they would be living and healthy. The statistics are frightful. In England in the first 12 months of child-life, the death rate is 108 per thousand. But that is not so bad as the rate relating to children who might come into the world but die before they are born, which is perhaps not less than 150 per thousand.

These still-born children are due to evils which can be coped with. It is a horrible fact, but the experts have ascertained that not less than half the still-born children are still-born owing to syphilis. That accounts not only for the still-born but for the deaf and dumb and the maimed and horribly deformed children who never have a chance in life. Phthisis accounts for another large proportion. Both of these diseases are in large measure curable. If people only knew—if they would only come for treatment, as they would come if they knew how, and had the chance—much of that might be reduced.

Anti-Malarial Measures.

In his last report on sanitation in Bengal, Major Clemesha says that the various anti-malarial measures that have been undertaken throughout the Province have so far been unproductive of any permanent advantage, and in many places they have been discontinued. The clearance of jungle and tanks and the destruction of mosquitoes have not proved successful measures.

In view of the above remarks, the *Leader* is not very hopeful about the anti-larval operations which are being undertaken by the various Governments.

In this connexion, it is pertinent to note that Mr. H. C. Wilson, piscicultural expert to the Government of Madras, contributes a valuable paper to a recent number of the *Indian Journal of Medical Research*. Mr. Wilson has profound faith in the utility of fish as larvicides, and he suggests that, "but for the activities of fish, we would have millions of mosquitoes where we now have hundreds." Well, it can be asked why when Bengal is so rich in fish of various kinds, *Haplochilus* not excluded, that particular province is the most favourite haunt of Malaria. Mr. Wilson's reply is that many breeding grounds exist which are unsuitable for fish and that in waters in which fish are found, the larvæ are protected by surface weeds and that when the weeds are removed, it is possible that the fish would destroy the larvæ. Mr. Wilson has hardly any faith in oiling tanks with kerosine. The oil, in his opinion, kills the fish and unless the treatment is frequently renewed, the tank becomes a worse haunt of larvæ than before. Kerosine should be reserved for small temporary accumulations of water where fish cannot exist. With regard to borrow pits, which railways, Irrigation Engineers and District Boards have freely constructed incidentally helping in the dissemination of Malaria, Mr. Wilson recommends draining or filling when possible, and when either is not feasible, the linking of borrow pits by means of open trenches. The pits should be kept clean, they should be stocked with fish, and fishing should be prohibited. Mr. Wilson proposes to deal with swamps by draining them into a pond at their lowest level and then applying the methods already mentioned.

Position of Sanitation in India.

The *Asiatic Review* for July 1914 contains a paper read recently at a Meeting of the East

India Association, by Colonel W. G. King, C.I.E., formerly Sanitary Commissioner with the Government of Madras, together with a discussion thereon.

Tracing the history of sanitation in India from the Royal Commission of 1859, the Colonel is surprised to see that in 1914, organised efforts are confined to Municipalities only, which have a population of 17 millions leaving a total of 227 millions in British India without any "sanitary care" worth the name! Some of the facts presented by Colonel King in relation to the vital statistics of India are remarkable: The death rate of the whole of India, he said, is more than double that of England. It varies in 64 towns from 80 to 70 per mille, and the expectation of life of the Indian at birth is twenty-three and a half years less than that of an English child. There are annually one million deaths from Malaria, and over 250,000 deaths from Cholera; Small-pox destroys thousands of lives annually and since plague began sixteen years ago some 8 million deaths have occurred from that disease. The lecturer pointed out very clearly that this high mortality in India is due to preventable causes. He emphasised, the creation of an executive sanitary service organised on a basis suitable to the locality and races dealt with is, in all countries, the A. B. C. of disease prevention, and asked why, in the face of the above appalling figures, does India not possess a sanitary organisation both in rural and urban areas for the prevention of disease. The attitude of the Government of India towards sanitary organisation has been, he said, chiefly one of inhibition and of devolution. They have slowly but surely deflected the organisation foreshadowed between 1863 and 1868 by the Royal Commission and by the Secretary of State. Colonel King deplored that an officer of the Indian Medical Service without any special training in preventive medicine should dictate the policy and indicate the direction in which sanitary research should proceed.

One consideration weighing with the Government of India against a separate Sanitary staff appears to be the impolicy of "letting loose of Sanitary enthusiasts." But it should be remembered that in organised services both methods of procedure and discipline are capable of rigidity. They seem to reject an extension of an Executive Sanitary Service to rural areas on the ground of opposition of caste prejudices, and they further hold that finances are not available for sanitation. Referring to the opposition of caste prejudices, Colonel King quoted the Laws of Manu and the Institutes of Vishnu and showed how excellently they fit in with applied hygiene and other allied sciences of the West. He drew also largely from his own personal experiences in the South of India to show that it is not difficult to secure the support of leading Hindus to the refinements of hygiene. Again the objection to employment of an Executive Sanitary Service for rural areas, can be met by employing technically qualified men of the race or of not lower caste than the people dealt with.

As regards want of funds, Colonel King said that it was so because other departments commandeered the bulk of the available funds leaving the remnants alone for sanitation. Colonel King next examined the position of the Government of India that sanitation must be worked through education. This position, Colonel King said, on the face of it cannot be maintained as it would take several years before education could proceed to the desired extent. Colonel King wished it to be fully understood that he believed in the efficacy of education in advancing sanitation, but what he desired to urge was not an objection to education *per se*, but, in this particular case, to the absolutely hysterical manner in which its claims have recently been advanced as a substitute for sanitation "whilst sanitation—the foundation of economic progress, and of contentment of populations—has been treated with a *placebo*."

Town Planning.

India is now being industrialised and the problem of housing town-dwellers is becoming more and more pressing. What with the erection of the new capital at Delhi and the growth of sanitary ideas among the educated classes, town planning as a Science and as an Art is receiving more and more attention. It is not alone the engineer but the surveyor and the architect as well are interested in the problem.

The question of the needful co-operation between the various interests which must be associated in a town planning scheme is well dealt with by that prince of town planners, Mr. Raymond Unwin, in his recent communication on the subject to the Institution of Municipal and County Engineers at the Dunfermline meeting.

ARCHITECT AND ENGINEER.

As Mr. Unwin says, a few individual architects may know enough of engineering and surveying to handle the whole problem just as some engineers and surveyors may have enough architectural feeling to confer that growing quality of beautiful design on their schemes; but the knowledge required by these different professions and the cumulative effect of their practice is so different that usually it will be necessary for a successful result that representatives of the different professions should work together, so that the total contribution of skill may be higher than can ordinarily be expected from an individual who knows a little of each branch. But if this co-operation is to be effective each party must have sufficient knowledge and appreciation of the importance of the other departments to give due weight to their representations. The engineer must not sacrifice main architectural matters for quite minor considerations of gradient or convenience; nor must the architect sacrifice the utility of roadways by piling them up on embankments in order to maintain some preconceived effect not

suitable to the particular problem in hand. In the main it will be found that while the aims and purposes of the architect, the engineer, and the surveyor are different, they are not conflicting: and that a simple, definite scheme with wide, handsome roads and well-designed crossings and road junctions will be the best form in which to provide easy and convenient thoroughfares.

SCHEME OF ROADS.

In considering the scheme of roads it is important to remember the two main purposes for which they are required; to accommodate traffic and to afford frontages for buildings. Roads generally serve both these purposes, but their treatment depends largely on the relative importance of the two functions; those that are required to serve as the main roadways for traffic should be planned primarily for the convenience of traffic and their junctions should be considered from this point of view first. On the other hand, those roads, the traffic on which is mainly concerned with the buildings fronting upon them should be considered primarily from the point of view of affording economical, serviceable, and, therefore, valuable building frontages. As far as possible such roads should either follow approximately the lines of the contours or travel at right angles to those lines, so that the plane of the land in whichever direction it may slope may be nearly square with the building. Both the satisfactory placing of the building on the ground and the convenient treatment of the garden depend considerably upon this. Not only is the importance of traffic secondary in these roads but it is even desirable that they should not be planned so as to afford short cuts for main lines of traffic. The only way in which it is possible without great total cost, to secure adequate width for main arterial roads is to design the minor roads so that they cannot become trafficways; the actual width of the carriage ways and footways in these may safely be reduced to

a minimum, and the saving in land and cost thus effected can be set off against the extra width and cost of the main traffic highways. This does not mean of course, that the width between the building lines on minor roads should be reduced, not even that the width dedicated to the roadway should always be reduced.

It is hardly necessary to emphasise the degree to which the health and attractiveness of dwelling-houses depend on the planning of the roads. The spacing of the roads influences the frontage given to the houses, and the area of open ground available to provide air, light, and outlook for the windows. Their adjustment to the nature of the slopes of the ground

will have a marked effect on the cost of roadway per house; careful planning will preserve the residential roads from through traffic, thus reducing both noise, dust, and danger, and will, moreover, keep open many attractive views of open spaces and distant objects of interest or beauty. The orderly arrangement of the houses themselves and the decoration of the streets with trees and shrubs will add enormously to the pleasantness of the dwellings; and at the same time a good system of main traffic-ways, by adding to the facility for getting from place to place, will increase the efficiency of the people as industrial workers, and add to their opportunities of enjoying social life and culture.

USEFUL MEDICAL AND SANITARY NOTES.

Constipation.

We are not sure that any doctor has cured or can cure constipation, *i.e.*, *habitual* costiveness of the bowels. The fact, is, it is mostly the creation of habit, and regularity and proper attention to diet will soon set matters right. "The most common cause of constipation is some fault in the quality or quantity of food. Though no statistics are available, it will be generally allowed that constipation is increasingly prevalent in the upper classes. It is probable that this tendency is mainly due to the steady intentional elimination from food-stuffs of all particles which are not nutritious but are all the same required for the proper working of the bowels. In this way the bulk of the residue is diminished. Further, it is possible that there has been an undue substitution of protein for carbohydrate material which results in a decreased formation of organic acids. Another widespread cause is a disregard of the calls of nature, due either to laziness or business exigencies which impose irregularity of hours."

Stutterers Talk Too Fast.

Dr. Marage of Paris says that stuttering which is an intermittent nervous con-

dition of all the sound-producing organs, lungs, larynx and mouth—can be cured by making the victim understand his affliction and the means by which he can rid himself of it. Dr. Marage showed moving pictures of the mouths of normal and stuttering persons and of the vibrations of their voices. These show that stutterers speak their words three times as rapidly as normal persons, that the words are separated by intervals only half as long, and that there is no division of syllables. The stutterer talks rapidly because he breathes badly and is always out of breath. Therefore, the first treatment for him is to teach him to breathe correctly. This can be done by exercises that any physician should be able to devise.

Avoid Blisters.

When going on long walks, slightly soften some soap and rub it on the inside of the foot and ankle of your stockings, and let it dry well. You will not get blisters in this way.

An Anodyne for Pain.

A medical authority states that saponated coal tar, in water, 5 parts to 20, applied to carbuncle or boil, "acts like an anodyne, and soothes to sleep."

The Economic World.

Rural Improvement.

A writer in the *Commonweal* of 11th September, points out that on the model of the West, the work of rural improvement in India should concern itself *first*, with general questions regarding (a) the importance and the place of agriculture in the general economy of the villages (b) the encouragement offered to agriculture, commerce and industry by the villages; (c) the needs of farmers in regard to agricultural associations; and (d) propaganda.

Secondly, the improvement of public services from a rural point of view. This includes railways and tramways, roads, lighting, postal and telegraphic services, public hygiene, public relief, village amusements, games, fetes, etc., village inns and security of rural districts. The *third* factor in the improvement of rural life has relation to questions of food, labour, village industries, primary education and technical instruction calculated to foster a love of home, agricultural libraries, morality and thrift, family life and relations of farmers with one another, their labourers and landlords.

Economic Progress in Mysore.

The experience of the past three years having shown that, in order to attain the objects of the Economic Conference more fully, it is desirable to appoint a full time officer in each district to study and investigate local conditions and organize economic activities in the district, the Government of His Highness the Maharaja has sanctioned, as a tentative measure, for a period of two years for the present, the appointment of eight District Superintendents, one for each district, to assist the Deputy Commissioners in stimulating and systematizing Conference work.

The officers will work directly under the Deputy Commissioners of the districts and will serve as their Personal Assistants for

Economic Conference work. The District Superintendent will be an additional *ex-officio* member of the District Committee of the Economic Conference and his principal duties will include the following:—

(1) He should study the economic condition and needs of the district, collect information and correct statistics.

(2) He should attend meetings of the District Committee and help that Committee with information collected from various sources.

(3) He should keep close touch with the Secretaries of the Central Committees of the Economic Conference and the progress of Conference work generally in the whole State.

(4) He should explain the aims and objects of the Economic Conference and of the corresponding departments of Government to the people and help them to get a clear idea of their more important wants under Education, Agriculture, Industries and Trade, and in devising measures to meet such wants with the help of the Committees and the Departments concerned.

(5) He should travel in the district frequently, come into contact with all people likely to take an active part in the progress of Education, Agriculture, Industries and Trade, and organise developments in all these directions.

(6) He should endeavour to rouse the enthusiasm of the people, prepare them for the initiation of measures and schemes by the departments of Education, Agriculture and Industries, and obtain the help of experts through the departments concerned wherever the local people may want them.

(7) He should guide the work of Village Committees and Taluq Progress Committees on right lines by attending the Committee meetings whenever convenient and by suggestions in other ways.

A New Ideal of Taxation.

Mr. James Cunnison, in the *Hibbert Journal*, shows how in recent Budgets a new ideal of taxation has been set up because the old static ideal of taxation by ability on a money income basis is given up, and he emphasises the tremendous change in principle which it involves.

The new elements of taxation which I have indicated as forming an important part of recent Budgets, when taken together, yield a new ideal of taxation—the ideal of taxation as a dynamic power, which may be used to further social justice in its wider sense. Taxation of unearned at a higher rate than earned income, however it may work out in detail, (and that must be tested) is, at any rate, aimed at altering things. It gives up the *simple ideal of equal sacrifice on the basis of existing incomes*. It substitutes for it the dynamic idea of reducing certain incomes which come to their possessors in certain ways. The system of death duties, likewise, has departed from the old ideal, and aims at altering the degree of wealth of different people. Together these two items are aiming at a redistribution of wealth; they are being used as a dynamic to bring about a greater expression of social justice.

Similarly, the re-valuation of the land of the country with the purpose of imposing taxes on the basis of the new valuation has in view an economic result. It is probably an attempt at forcing land into more productive uses. Again, the particular method of obtaining the result is open to criticism. But the idea of using taxation as a means of changing economic conditions is obviously in the mind of our Chancellors. It would seem, therefore, that we have substituted a dynamic for a static ideal of taxation.

We are giving up the attempt to express an abstract justice within a system of taxation based on a distribution of wealth conceived to be fixed and eternal. We are substituting for it the attempt to use taxation as one instrument among others for furthering social justice. It

were well that the change should be generally recognised, that we should not simply slide into the new system unaware of the tremendous change of principle which it involves. Are we prepared to throw up our old theory? Are we prepared to say that taxation is a proper instrument to use for the purpose of changing social relations, even in order to bring about a greater realisation of justice in society?

Mr. Cunnison asks: "If taxation can be used to alter the distribution of wealth and to effect other social changes, where is the line to be drawn?"

Revenue Settlement.

In the course of his presidential address, in the Kurnool District Conference, Dewan Bahadur C. Karunakara Menon said:—

Unless the whole conception of land revenue is changed in accordance with history and common sense, it is useless to expect increment of the revenue to be made dependent on legislative sanction. The rent theory of land tax, of which we are now-a-days more frequently told, would be opposed to the idea of legislative sanction. It implies the right of the owner, who is said to be the state, to raise or lower rent as he likes. We will try to find out how far the theory of rent has any foundation. It seems impossible to find from the early records of the British Government any trace of the rent theory. The Court of Directors emphatically repudiated the doctrine of State Proprietorship when, in December 1856, they said that the "right of the Government is not a rent, but a land revenue only." Thus, it will be seen that there is no justification, in the practice or conception of the British Government, for the assumption of the right of State ownership of land and the consequent right of re-assessing the revenue as it likes without resort to legislation. The older settlements were all made in perpetuity.

Every conceivable evidence precludes the idea of State ownership; every conceivable fact

establishes beyond mistake that the State never claimed ownership. If ownership was exercised by the State, if the tenant was liable to be ousted from land, we should have expected the State to take possession of any land it needed by merely giving notice to the tenant. We should have expected the State to exercise its right of ownership when it undertook to provide the requisite land free of charge to Railway Companies, by merely giving notice to tenants to quit. But the State was all the time unconscious of the right of ownership; and it actually passed laws in order to enable it to acquire the land required for railways; it paid the price of land.

Two things are thus clearly established. The ryot and not the Government is the owner of the soil, and perpetuity was the principle agreed to be observed by the Madras Government. Both these are against the right of revision at pleasure, as claimed by the latter-day officials.

Continuing, Mr. Menon confessed that his inclinations were naturally against revision and he thought it would be sound policy and consistent with modern principles of taxation to fix the land revenue permanently and look for additional revenue in cesses. The cesses will not be imposed on the poor ryots, those for example, who pay Rs. 10 and below per annum as land tax, and who form a large proportion. There is no sense, in their case, of speaking of increasing prices, because they cannot benefit by the increase as they have nothing to sell and a good deal to purchase. From land tax it is impossible to exempt them. From cesses they can be free. Both for this purpose and for the purpose of fixing a statutory limit on the power of Government to periodically increase the tax on land, it is necessary that the State must renounce the right, which so many people now claim for it, of ownership in land and therefore the right to revise the rent without the special authority of the law.

Why Prices have Risen.

Mr. L. G. Chiozza-Money, M.P. gives the following explanation for the rise in prices in *The Future of Work*:—Guarding ourselves carefully against coming to any dogmatic conclusion, I think we may usefully turn to the commercial and industrial history of the world in recent times to gain light upon the causes of the movement of prices. What was the cause of the fall in prices in the eighteen-eighties and eighteen-nineties? Broadly, the answer is that it was a period in which the resources of the world were laid under contribution more rapidly than effective demand increased in the white civilisations. We should not use the just word if we said that the world's resources were rapidly harvested, for harvest implies a precedent of seed-time. It would nearly express the truth to say that the best resources of the world were rapidly exploited as though they were unlimited in quantity, without regard to the fact that men were reaping where they had not sown, and without regard to the future. The large-scale scratch-farming, the creaming of the world's richest mines, the hewing of the world's best timber, were assisted by the invention of a host of labour-saving appliances. The quickly and cheaply gathered wealth was distributed to the world's markets with the aid of improved ships, the freight charges of which tumbled down in such fashion that, whereas in the eighteen-seventies it cost 7d. or 8d. to take a bushel of wheat from New York to Liverpool, it came to cost no more than 1½d. a bushel.

For a short period in modern times this new large-scale world exploitation proceeded more rapidly than increase of population, or the effective demand exercised by increased population, but the continuous cheapening of products by the opening up of new lands could not proceed far without a check. The use of machinery and the extended use of capital in large units raised the standard of living of a considerable proportion of the world's white

peoples. Emigration took place on a large scale from poor ancient lands with small natural resources to rich new lands of promise. It is hardly realised upon what an enormous scale the transplantation of white men on the globe has been proceeding. Millions upon millions have left countries in which they consumed the cheaper cereals, scarcely any meat, and very little leather, or metals, or other commodities, to establish themselves in new countries with high standards of living, where they made a new and enlarged draft upon the world's wealth. Thus, what between natural increase of population, a rising standard of life all over the world, and a great emigration from low-wage to high-wage countries, the time soon came when world exploitation, although rapid and continuous, ceased to keep pace with the world's demands for many important commodities. That is the explanation which seems to me to cover the greater part of the ground. It is an explanation which, if traced in detail in connection with each and every commodity named above, will, I think, be found to have a reasonable relation to the facts of the case. If it is the true explanation, as I am inclined to think it is, it is consistent with the rise in price of many articles in which supply could not keep pace with the demand, and the fall in price of other articles where supply, owing to the nature of the commodity and the circumstances of its production, was equal, or more than equal, to the occasion.

What of the future of prices? I think we may rely upon scientific endeavour to be equal in the long run to the production of an enduring cheapness. The weapons of science have not yet been taken up in earnest by the nations of men. It is no more than haphazard and careless effort which has been applied to world's resources. Men in a hurry to get rich have despoiled territories and wasted natural wealth in so far as the law of the conservation of matter has permitted them to waste. There

can be no reasonable doubt whatever that the production of organic commodities, whether foods or materials, will be so greatly magnified by scientific method that the men of the future will produce ample supplies of all necessary things of this kind with little labour. As to inorganic supplies, we may have faith that science will also show a way to the practical utilisation of low grades of ore which cannot now be commercially employed. The economic employment and perhaps the colonisation of tropical lands may, it is quite probable, add enormously to the world's supply of consumable goods. As to manufactured commodities based upon either organic or inorganic materials, the road to cheapness is already quite plain, given the material supplies. Thus, whatever the course of prices in the near future, the end is not uncertain. The new dearthness will pass, and be succeeded sooner or later by an enduring cheapness—by a scientific plentifulness which may or may not be expressed in terms of gold.

Cornering of Food.

Mr. Runciman, the new President of the Board of Trade, got through the House of Commons a bill to stop the 'Cornering' of food-stuffs on account of the war. The one main clause of the Bill is as follows:—

If the Board of Trade are of opinion that any food-stuffs is being unreasonably withheld from the market they may, if so authorised by His Majesty's Proclamation generally, or as respects any particular kind of food-stuffs, and in manner provided by the Proclamation, take possession of any supplies of food-stuffs to which the Proclamation relates, paying to the owners of such food-stuffs such prices as may in default of agreement be decided to be reasonable, having regard to all the circumstances of the case, by the arbitration of a Judge of the High Court selected by the Lord Chief Justice of England.

The Financial World.

Enemy's Subjects and Banks.

The following Press *communiqué* was issued from Simla on the 28th August:—

It is understood that the following action has been taken by the British Government, with a view to controlling the banking operations by the enemy's subjects in the United Kingdom:—

An Order in Council was issued on August 10th, which prohibited Germans from carrying on Banking business except with the permission of the Secretary of State for Home Affairs and subject to such conditions as he might direct. It also prohibited such aliens as had been engaged in banking from parting, except by permission, with moneys or securities in their banks and warned them that they might be required, if necessary, to deposit the same in custody.

In the exercise of the power conferred by the Order in Council the Secretary of State for Home Affairs has now authorised British branches of the *Deutsche Dresdner* and *Disconto Gesellschaft* banks to carry on business under the following conditions:—(1) The permission only covers the completion of transactions of a banking character entered into before August 5th, or a new transaction necessary or desirable for the completion of such transactions. (2) Business is to be restricted to making realisable assets available for meeting liabilities and discharging them as far as practicable. (3) All transactions are to be subject to the supervision of a Government nominee, with complete discretion to disallow payments contrary to national interests and any transaction whatsoever. (4) The assets of both banks remaining after discharge of their liabilities are to be deposited in the Bank of England to the order of the Treasury.

The Order in Council refers solely to the United Kingdom and does not apply to India.

Prof. V. G. Kale on the Gold Question.

In the June issue of the *Modern World*, Prof. V. G. Kale writing about the gold question in India says that the volume of India's hoarded wealth has been variously estimated and the most conservative calculation does not put it down at less than 400 crores of rupees. Even accepting the larger figure, say 800 crores, he adds, we do not find that it makes out India to be a rich country, having some Rs. 25 per head of the population in the hoards. He notes the fact that a large portion of these hoards is the property of princes, chiefs and landlords and that the share of the mass of the people is infinitesimal. Whatever be the amount of the hoards, the writer says, hoarding now stands condemned in this country. They ought to come out and be invested in industries.

On the question of currency, the opinion of Prof. Kale is clear. He says that the justification of the existing currency system given by the Chamberlain Commission is not quite acceptable. He says that the present system is not one that is approved by the people, India had long been accustomed to gold currency. The writer also urges that in a country which has claims upon other nations for the supply of so much gold as the price of its exports, it is not desirable that we should have a currency which consists mainly of silver rupees. He adds that, for a long time to come, the people of India will continue to favor metallic currency to instruments of credit such as Cheques and Notes and this demand ought to be satisfied not with token coins but with a gold currency. The writer also refers to the fact that the present system is not automatic but managed artificially with a view to what is called "convenience of trade."

this chiefly because a vast quantity of bills is in connection with foreign trade, and, as the Continent is at war, is likely not to be met punctually. Traders and manufacturers are therefore in this position: they are practically debarred from discounting their bills or selling stock in order to meet their liabilities. The proclamation of a moratorium saves business men from going bankrupt through inability to meet their bills, and to that extent averts a complete industrial and commercial collapse.

EFFECTS OF THE MORATORIUM.

The effect of the limited moratorium must not be exaggerated. An enormous amount of British industry and commerce is devoted to foreign trade. Germany, and other important customers like France, Russia, and Austria being at war, their trade with England shrinks violently and since England has joined in the issue that trade has disappeared. The banks, the traders, the manufacturers engaged in this commerce, find their business crippled. That must mean ruin to many, heavy contraction to others, in all cases the discharge of hosts of employees. This shrinkage of the business of those directly engaged in foreign trade must have immediate reactions on those engaged in other branches of trade. The moratorium, in short, can do nothing to avert the loss and consequential unemployment and suffering due to the annihilation of some of England's best markets. The moratorium, again, cannot help those who have liabilities to meet other than in the form of bills of exchange—loans, for instance, or interest on mortgages.

Those who have any familiarity at all with the subject know that vast sums of money are earned by Great Britain owing to its being the money market of the world. The moratorium, by making the meeting of obligations uncertain, cripples this source of national income. So long as England kept out of war, the loss was not and could not be permanent, for it was

then in no worse a position than any other neutral. As it has been forced into war, however, it seriously endangers its future position as the money market of the world.

The Banking Crisis and its Moral.

A writer in the *Hindusthan Review*, ably defends Indian banking against the attacks of Anglo-Indian critics and expounds the true moral of the recent failures. He says that the defects of Indian banking are only those which are to be found in the banking institutions of every country and of every nation in its commercial infancy. And adds that the European Banks in this land have carried on business in the same manner and with the same methods as the much condemned Swadeshi banks. The writer asks.—

“What for instance was the cause of the failure of the well-known firm of Arbuthnot in Madras, and of its English sister-firm Macfadyen & Co., as well as a year or two later of the ill-fated Bank of Burma? Wild-cat speculation in industrial shares, loans on personal security or on scrip of very doubtful value, and similar unsound methods, not essentially different from those which caused the fall of, *for example*; People's Bank of India. And were the window-dressing methods employed by the Bank of Burma in any way dissimilar to those whose frank acknowledgment by the late Mr. Chunilal Saraya caused such a vociferous cry of moral indignation from a certain section of the press? I think not. Why then this insistent attempt to prove that the defects of Indian banking methods are something peculiar to this country; something hitherto unknown and unheard of; of a moral turpitude so unnatural as to demand special attention of legislature?

He instances the history of several banks, both foreign and Indian, managed by Europeans, which have displayed greater slackness and inability than the present Swadeshi banks.

The Industrial World.

Industrial and Technical Education.

Some time ago, Mr. K. T. B. Tressler, then Acting Superintendent of Industrial Education, submitted a Note to Government dealing with the problem of Industrial Education in Madras, its limits, the future classification or grouping of Industrial Schools, their curriculum, staff, and other points. The Government decided that it would be advisable to have these discussed by a Committee of representative Managers of Industrial Schools and employers who would submit their views also upon the draft code drawn up by Mr. Tressler.

The Committee of representative School Managers met in Madras recently as also the Committee of those more directly interested in the employment of labour.

SCHOOL MANAGERS' COMMITTEE MEETING.

At the meeting of the School Managers' Committee Mr. Tressler dealt with the Grant-in-Aid Code for Industrial Schools, which he had drawn up, and asked for expressions of opinion upon the general policy to be pursued and the questions of detail which still required to be settled. He showed how the present industrial schools were working on highly impractical lines and that there was no machinery available for testing whether the pupils, after training, were qualified to take their place as efficient industrial workers. He mentioned that the scheme he had outlined did not attempt to deal with the higher forms of technical education, but was restricted to the simple question of improving the means whereby the lack of industrially efficient journeymen, foremen and workmen might be met. The idea was to alter the course of instruction in the schools, making it conform more to the actual requirements of industry, to provide well-equipped Industrial

Schools at convenient centres, and to provide means whereby a supply of efficient teachers in industrial subjects would be available for the schools in the Presidency.

THE DISCUSSION.

In the discussion, the feeling that some change in the present system was desirable was expressed, as the Indian artisan in general was “imitative,” without any real capacity for “thinking,” and was distinctly lacking in the “creative faculty.”

The opinion was expressed that the replacement of the present standards and grades in industrial education by a system based upon methodical training and examination by experts was to be welcomed. The extent to which general education was to enter into an industrial course was discussed and it was felt that although a certain amount was eminently desirable for workmen, the main thing was the attainment of skill, and that an extended course should be provided for better class workmen, who could afterwards qualify as foremen or master workmen.

It was felt that for an efficient teacher, it was necessary that the individual should have had practical experience in the subject and that it would be advisable to take the most intelligent men from the foremen's class and qualify these as teachers, by a further system of training. The Committee was strongly of the opinion that Government should provide for the training of teachers in a central, well-equipped school in Madras at an early date.

THE RESOLUTIONS.

Following are the Resolutions passed by the Committee:—

(1) Resolved that the Committee approve in general of the scheme of industrial education as drafted by the Director of Industries.

Land Mortgage Credit.

The *Monthly Bulletin of Economic and Social Intelligence* for May contains a critical summary of the United States Commissions' Report on land-mortgage-credit.

The report contains a discussion of land-mortgage credit and also a draft bill for the establishment of land-banks in the United States. Land-mortgage-credit is defined as "Credit to meet the capital requirements of the farmer such as money to pay the purchase price of the farm, to improve and equip it so as to bring his operations to the highest stage of efficiency."

The proposals contained in the draft Bill may be useful as revealing the principles and methods of land-mortgage-credit.

It is proposed to permit any ten persons to organise a land mortgage bank under a federal charter and under federal supervision with its activity limited to the territory of a single State. The minimum capital is fixed at \$10,000 in shares of \$100 each (except in the case of co-operative banks whose shares may be as low as \$25); and each bank would be authorised to issue bonds, guaranteed by first mortgages on farm land within the State, to an amount not exceeding 15 times its capital and accumulated surplus. The capital and surplus would be exempt from taxation: for the report says, it would ultimately fall on the farmers which would mean double taxation of the land.

For the supervision and control of the banks it is proposed to create in the Treasury Department a special bureau under the direction of a "Commissioner of Land Banks." The commission rejects the idea of a central national bank.

The conditions for issuing loans are thus laid down:—

(1) that such loans should be made for not more than 35 years;

(2) that the loans shall be on first mortgages only,

(3) that they shall not exceed 50 per cent. of the value of the land,

(4) that the mortgage shall contain a mandatory provision for the repayment of the loan by amortization.

(5) that the borrower may repay the amount at any interest period after 5 years.

They shall also be allowed to do banking business. In order to furnish the banks with the fluid working capital necessary in any kind of banking institution, they would be allowed to accept deposits to the extent of 50 per cent. of their capital and surplus; and to do ordinary banking within the limits set by the amount of such deposits.

What is a "Bank"?

The *Economist* writes in its issue of 18th June:—The popular use and connotation of the word "bank" differs in different parts of the world. In England and in some other favoured countries it indicates stability and attracts confidence. In countries where banks are accustomed to invest in risky undertakings or to lock up their money in investments from which it cannot be speedily withdrawn, or where they are merely concerns engaged in the issue of securities and in Stock Exchange business, the word does not attract the public, because the public is quite accustomed to seeing reports in newspapers of bank failures. The failure of the Charing Cross "Bank" made it seem very desirable that some statutory restriction should be placed upon the use of the term in this country, where the mere assumption of the name may attract large deposits from simple folk. We hope that something will be done before long, and meanwhile the Indian Government is understood to be taking steps to safeguard banking institutions in India from the discredit in which they have been involved by the recent scandalous failures of a number of native banking concerns. In the United States, bankers are much more numerous than in this country, and although the name does not command confidence, there is a general desire to raise

the standard, of which a new banking law just passed by the State of New York is a recent illustration. Section 143 of the Act runs as follows:—

No person, except a national bank, a federal reserve bank, an individual banker, or a corporation duly authorised by the Superintendent of Banks to transact business in this State, shall make use of any office sign at the place where such business is transacted having thereon any artificial or corporate name, or other words indicating that such place or office is the place or office of a bank; nor shall any such person or persons make use of or circulate any letter-heads, bill-heads, blank forms, notes, receipts, certificates, circulars, or any written and partly written and partly printed paper whatever, having thereon any artificial or corporate name, or other word or words, indicating that such business is the business of a bank.

As there are a very large number of persons who call themselves investment bankers, and as there is a bulletin issued at Chicago by the Investment Bankers' Association of America, this law has attracted a good deal of attention, and has been referred by the association to counsel for his opinion, the question being whether members of the association would be permitted to use the word bank if they had offices in the City or State of New York. The law, we understand, comes into force this month. After an ingenious argument, counsel comes to the conclusion, that even if by this statute investment bankers are forbidden to call themselves bankers, they are not forbidden to call themselves investment bankers; "the investment banker," he writes, "is not a banker in any correct sense, any more by analogy than a pawnbroker is a broker, or a mountain lion (puma) is a lion."

The Moratorium.

The partial moratorium established in England applies only to bills of exchange, and the term of postponement first limited to only one month has been extended by another. It is the usual practice to begin by fixing the moratorium for a short period, but to extend it as long as the financial crisis endures. It is usually when a country is at war that a

moratorium is proclaimed, and, as in the case of the Balkan States and of France in 1870-1, it is generally continued until the end of the war.

The moratorium is not obligatory. Those who care to meet their bills may, but those who cannot are relieved from having them presented on conditions of adding to the amount of their liability interest at the current rate.

A moratory law, is "a law passed in times of emergency postponing for a specified time the due date of bills of exchange and other obligations." The delay or period of grace allowed by the law is a "moratorium." The moratorium may roughly be of three kinds—(1) it may apply only to bills of exchange, as in the present case; (2) it may apply to other contracts, such as loans and mortgages, which impose upon a debtor the liability to make monetary payments to a creditor at a fixed time; (3) it may permit banks to suspend the payment of deposits to their clients. Its purpose, of course, is to prevent the collapse of the banks owing to a run. It is not quite the same thing as a suspension of cash payments.

THE FINANCIAL SITUATION IN ENGLAND.

The reasons which have prompted the Government to proclaim a moratorium in England may be briefly stated as gathered from an article in the *Commerce*. Practically all modern business rests upon two pillars—credit and an open stock market. Traders and manufacturers buy and sell, giving or receiving bills. These bills are turned into immediate cash for a consideration, by the discount houses or banks, which collect them when they fall due. Traders and manufacturers, again, find money by selling or mortgaging stocks. At the present moment these two pillars have fallen. The stock markets are closed, and neither individuals nor banks can sell. The business of discounting, except at the Bank of England, has ceased; no bank will take bills which a week ago were considered to be first class. They have done

(2) Resolved that the Committee request the Director of Industries to secure the assistance of individuals qualified to do so in the preparation of syllabuses for each of the trades and crafts included in the scheme for Industrial Education.

(3) This Committee strongly recommends that the Government of Madras arrange for the establishment at an early date of a Teachers' Training School at Madras, in connection with the scheme of Industrial Education.

(4) Resolved that the committee further recommends that Central Industrial Schools be established at convenient centres, as a part of the scheme of Industrial Education, to deal with local industries, as set out in the Resolutions of the Ootacamund Conference in September, 1908.

(5) Resolved that the Director of Industries be asked to gain assurances from the Director of Public Instruction that a maximum of six hours a week in manual training will be recognised and counted as school time, such work to be supervised and reported on by the Director of Industries and be eligible for Grants-in-Aid.

(6) Resolved that in the view of this Committee, the present Technical Examinations do not serve as satisfactory test of the capacity of a pupil in industrial subjects, and that special examinations in such subjects, to be conducted by practical men, should be arranged for.

(7) Resolved, in view of the extreme importance of keeping down cost in all classes of manufacturing industry, that provision be made for training in accountancy.

EMPLOYERS' COMMITTEE MEETING.

The Employer's section of the Committee appointed to discuss the question of the reorganisation of Industrial Education in Madras consisted of the Director of Industries, Mr. K. T.B. Tressler, as Chairman and the under-mentioned members,—Mr. W. H. James, Mr. C. B. Simpson, Rao Bahadur P. Theagaraja Chetty, Mr. H. B. Pierce, Mr. A. J. Leech, Mr. J. Scott

MacKenzie, Mr. H. A. Shore, Mr. T. W. Madeley, Mr. E. T. Hawkins, Dr. Marsden and Mr. Stewart.

The following Resolutions were adopted :—

1. This Committee being representative only of the interests of employers does not regard itself competent to express an opinion either on methods of Industrial Education detailed in the draft Industrial Code or on the Resolutions framed by the Educational Committee which have reference only to school methods and school detail.

2. This Committee is concerned only with results, and from this point of view, its interest in Industrial School training is limited to the character of the final test applied in order to ascertain the capacity of a pupil.

3. This Committee is of opinion that the existing Technical Examinations so far as they deal with trades and crafts do not constitute the test of practical capacity and accordingly recommends that a new series of examinations on the subjects be introduced on the lines suggested in the draft code.

4. This Committee considers it essential that the examinations should be conducted by individuals practically engaged in the trade or profession in which they are examiners; but the selection of examiners should in their opinion, be entrusted to a Board representative of employers interested and presided over by the Director of Industries.

5. The Committee is of opinion that the scope of the proposed Madras Engineering Trade School should be extended so as to include other trade subjects also.

In addition to the subjects to be taught in the proposed Engineering Trade schools *viz.*, Fitters work, Turning work, Blacksmith and Foundry work, the Committee recommends that provision should be made for the teaching of the following subjects also:—carpentry and joinery, plumbing and sanitary work, bricklay-

ing, masonry, electric fitting, electric wiring, motor car fitting, and motor car driving.

On the motion of Mr. P. Theagaraja Chetty, weaving and dying were also added to the subjects recommended.

6. The Committee considers the proposed Washermanpet site to be the most suitable centre for the teaching of Engineering Trade subjects, but it is of opinion that for general subjects another site would probably be more central and recommends that provision should be made in the Poonamallee High Road adjoining the Director's office for another branch of the Trade School provided the cost is not prohibitive.

7. The Committee considers that the training provided in the Madras Trade School should be limited to apprentices and workmen who are engaged in the trade or one allied to that in which they desire instruction.

8. The Committee further considers that two courses of instruction should be provided, one being a complete industrial course extending over a longer period, and the other an extension course consisting of extension lectures.

9. In the case of subjects where the demand for instruction cannot be readily gauged, extension lectures would, in the first instance, be provided, a complete course being arranged for when the demand warrants it.

10. The Committee considers a system of stipends to apprentices to be objectionable. It is, however, recognised that financial assistance may in some cases be necessary but instead of fixed stipends, it recommends the grant of scholarships to individual cases.

11. The Committee is not in favour of the provision of hostel accommodation, as it is regarded difficult to work and expensive in operation.

12. It is considered essential that for teaching purposes, every effort should be made to secure the partial services of individuals possessing practical experience of the subjects they

teach, and is of opinion that, provided suitable remuneration is given in most cases, it will be possible to arrange for the past time services of individuals actually practising the trade to be taught. The Committee regards it desirable to reduce the permanent staff of the Trades School to the minimum possible limit. With the exception of general literary and scientific subject, it will be unnecessary to employ any regular teachers. As it is improbable that there will be more than 80 apprentices in any one class, it will be sufficient if one teacher is provided for every technical subject taught and the following permanent additional staff for every 80 pupils under instruction, namely, one teacher for general literary subjects, one teacher for scientific subjects and one Drawing Master.

13. The Committee anticipates that a considerable time may elapse before a building scheme in connection with these proposals matures and it recommends, that if possible, work should be started in a rented building. There appears, however, some doubt as to whether a suitable building will be available near either of the sites proposed for these Trade Schools and the Committee accordingly recommends that permanent arrangements should be made as expeditiously as possible.

Mr. C. B. Simpson then moved the following Resolutions which were generally agreed to by the meeting :—

1. That this Committee learns with satisfaction that Mr. Tressler proposes visiting the Victoria Technical Institute in Bombay.

2. That when he has made his visit this Committee should reassemble to learn his report on (a) the class of pupils taught, (b) the system of instruction, (c) the approximate cost per annum per student, (d) what subjects taught in Bombay are suitable to Madras, (e) what additional subjects should be taught in Madras, (f) the approximate cost of building and equip-

ment of a Technical Institute on the Victoria School lines adopted to Madras needs.

3. That this Committee does not recommend that a Technical Institute shall give instructions that will in any way encroach on the Engineering College, but should rather aim at training a class of workmen and foremen to take the place of the present maistry. This will not prevent the Technical Institute from giving instruction on the higher standards if there is a demand for it by the workmen for which the Institute caters.

4. That this Committee would then be in a position to make definite recommendations to Government with an approximate estimate of cost for Government orders.

5. That this Committee recommends night classes be started in Poonamallee Road, Washermanpet, or any convenient centre for working men to give theoretical teaching on the trades on which they are employed.

6. That no charge shall be made for admission in the first instance to night classes and the only qualification for admittance be the employer's certificate.

7. That the teachers of the night classes may be available for lecturing in any existing night schools in Madras giving theoretical instruction on manufacturing processes to working men.

The Committee then appointed Sub-Committees for the drawing up of the syllabuses for the study of the various subjects.

The meeting then dispersed after deciding to meet again sometime about the middle of November to receive and discuss the sub-committees' reports.

INDUSTRIAL EDUCATION FOR WOMEN.

In this connection it may be mentioned that there was also a conference of ladies to discuss the scheme with reference to those subjects which deal more with the problem of Industrial Teaching for Women.

The ladies present were Mrs. Firth, Miss

Forbes, Miss Grove and Miss Cassies of Chingleput. A discussion took place with regard to the nature of the subjects which should be included in the scheme, the length of time to be devoted to training in the various stages, the nature of the syllabus and the question of ages of admission, grants and examinations.

It was decided that among the subjects to be dealt with by the Industrial Education Scheme, Needlework, Dress-making, Embroidery, Lace-making and Cooking should be included and a Sub-Committee was appointed to draft syllabuses and make recommendations upon the question of the appointment of examiners in these subjects.

Tanning and Colouring Matters.

A simple process for the detection of tanning materials and dyes has been investigated by the "Jardin Colonial" of Nogent-sur-Marne. It consists in the use of the "Mulhouse band"; this is a piece of cloth 8 inches wide, divided into five zones treated with different mordants, with a small untreated piece between every two zones. The mordants are: (1) strong iron salts, (2) weak iron salts, (3) half iron, half alumina, (4) weak alumina salts, and (5) strong alumina salts.

Tannins, precipitating iron salts, show up specially on the first zones, which become tinted with some colour between black and brown or green; the true colouring matters show on the alumina zones.

The Mulhouse band is put into boiling water containing some of the substance to be examined; another band is treated in the same way, but using some standard tanning or colouring material. If, on comparing these two bands, it is found that the substance seems to contain valuable materials, it should be sent to some laboratory for proper analysis.

Mill Labour in Bombay.

Mr. D. E. Wacha's statistical analysis on the subject of the labour supply to mills in Bombay, published in the Bombay Press, reveals the fact that the influx of boy and girl labour during the past five years has been proportionately greater than that of adult labour, and that the shortage in this class of labour is not serious.

The Commercial World.

Indian Trade.

The chief characteristics of the year 1913-14, says the Director of Statistics in his review of the year's trade, were, (1) a failure of the rainfall in some parts of India; (2) Bank failures which were confined chiefly to the Punjab and Bombay; (3) a glut in the piece-goods trade; (4) some difficulty in railway transport especially in the case of coal. With the possible exception of Australia, India possesses the most precarious rainfall in the world, and the year under review was no exception to this rule. The monsoon of 1913 was irregular, defective or excessive in various parts of India and these abnormal seasonal conditions are reflected in the harvests. It is a well-known fact that the trading power of India depends on the success of her crops, and climatic conditions thus determine not only the volume of exportable produce, but the capacity to purchase imports.

BANKING CRISIS.

The banking and commercial crisis in Northern and Western India began in September with the failure of the People's Bank in the Punjab, which had at the time of its failure deposits of Rs. 1½ crores and a network of 72 branches. The Credit Bank of India failed in the first week of October, and this was the first real sign of the spread of the bank failures to Bombay. The Indian Specie Bank—the one purely Indian Bank which had a branch in London—was also unable to weather the storm, and some 13 more Banks failed. An examination of the liquidation proceedings, which have already been published with regard to the statistics of paid-up capital, reserves, total deposits, the amount of cash in proportion to the total liabilities, and the

granting of loans on security of a not readily realisable nature, reveals a somewhat disquieting state of affairs. Timely assistance was given by the Presidency Banks, and Government were in very close touch throughout the crisis with the Presidency Banks of Bengal and Bombay, and increased considerably its ordinary interest-free balances which are kept with the Presidency Banks.

TOTAL SEA-BORNE TRADE.

The total imports (*i.e.*, including private merchandise and Government stores but excluding treasure) in 1913-14 were Rs. 191 crores or £127 millions. The total exports of Indian produce were Rs. 244 crores or £163 millions. The re-exports of foreign goods were nearly Rs. 5 crores or £3 millions. The total treasure imported was Rs. 43 crores, or £29 millions—a decrease as against the previous two years. For the five years 1909-10 to 1913-14 there has been a continuous rise in the imports of private merchandise, and in the exports of Indian produce and as regards these, the year 1913-14 may be considered a record one. The rate of increase for 1913-14 under exports is considerably below that of imports, which may be explained by the abnormal seasonal conditions of the year under review.

EXPORTS OF INDIAN MERCHANDISE.

The predominance of unmanufactured articles among the exports is quite as noticeable as their subordinate position among the imports. The principal increases and decreases of the exports of 1913-14, as against 1912-13, are shown below:—

	Rs. Lakhs.
Grain, pulse and flour	+15.13
Tea	+1.68

Seeds	+2,96
Cotton, raw	+12,71
Jute, "	+3,78
Opium	-7,80
Jute manufactures	+5,40
Hides and skins	-42

The articles of export are grouped under four main heads—(i) Articles of Food, Drink and Tobacco, (ii) Raw Materials and produce and Articles mainly unmanufactured, (iii) Articles wholly or mainly manufactured, (iv) Miscellaneous and Unclassified. The statement below explains the position :—

	1912-13.	1913-14	Increase (+) or Decrease(-)	Per cent.	Relative share of each class.
I. Food, Drink and Tobacco.	78,08	64,77	-13,31	-17	26.5
II. Raw materials.	103,48	122,46	+18,98	+18.3	50.1
III. Articles manu- factured	57,33	54,59	-2,74	-4.8	22.4
IV. Miscellaneous.	2,46	2,41	-5	-2.2	1
Total ...	241,35	244,23	+2,88	+1.2	100

It will be seen from the table that the only class in which the value (in lakhs of rupees) of the trade increased last year was Class II (raw materials and produce and articles mainly unmanufactured) and that the other classes had appreciable decreases. In this class the chief feature was the further large increase in the sale of textile materials, namely, an increase of nearly Rs. 12½ crores in the exports of raw cotton and of nearly Rs. 4 crores in the value of raw jute. Raw cotton showed a steady upward tendency. In the case of raw jute there was an actual decline in quantity. Of the seeds exported almost all are oilseeds, which are exported to Europe for utilisation in soap and candle factories. It is interesting to note the advance in quantity of linseed and cotton seed and the recovery of groundnuts.

RE-EXPORTS.

The re-export trade, is comparatively un-

important, and was valued in the year under review at Rs. 4,68 lakhs. It was mostly in manufactured goods imported from Western countries, the most important class being cotton goods, valued at Rs. 1,56 lakhs, which go chiefly to East Africa, Persia, Arabia, Bahrein Islands and Aden. The re-exports to Western countries are comparatively small, raw wool imported over the land frontiers being the chief commodity.

IMPORTS.

There has been a conspicuous increase in the aggregate value of imports in recent years. It averaged annually in the five years ending 1909-10 almost Rs. 116 crores, in the following three years Rs. 143 crores, rising to over Rs. 183 crores in the year under review. By far the largest proportion of the increase occurred in the class of manufactured articles, which constitute nearly 80 per cent. of the total imports. The relative dimensions of each of the large groups, and the change in the aggregate value of each during the year, will be seen from the figures (in lakhs of rupees) given below :—

	1912-13.	1913-14.	Increase (+) or Decrease(-)	Per cent.	Relative share of each class.
Food, Drink and Tobacco	23,41	24,66	+1,25	+5	13.4
Raw materials, etc.	12,40	10,56	-1,84	-15	5.8
Articles manu- factured	1,22,93	1,45,16	+22,23	+18	79.2
Miscellaneous...	2,26	2,87	+61	+27	1.6
Total...	1,61,00	1,83,25	+22,25	+14	100

When the items comprised in these groups are examined in detail it appears that in only three of the important articles there was a decline. They are coal, silk raw and piece-goods (in both of which a comparatively small decline followed the much inflated trade of the preceding year), and raw cotton. The principal increases and decreases of the

imports of 1913-14 as against 1912-13 are shown in the annexed table :—

	Rs. Lakhs.
Apparel and boots and shoes	+23
Carriages and carts, etc.	+23
Chemicals, drugs, etc.	+21
Coal	-14
Cotton, Raw	-1,95
Cotton Manufactures	+5,48
Cutlery, hardware, instruments, etc.	+96
Glassware, etc.	+28
Grain and pulse	+15
Iron and steel manufactures	+4,52
Machinery	+2,40
Oils	+41
Metals other than iron and steel	+2,03
Paper, pasteboard, etc.	+21
Railway plant, etc.	+3,63
Silk, raw	-45
Sugar	+68
Wood and timber	+18
Woollens	+79

The imports show a general increase in all directions, and indicate the growing purchasing power of the people.

The special feature of the import trade continues to be the great demand for Cotton Manufactures. Cotton goods have advanced until their values approximate to a third of the total import trade. The actual increase of imports has not been so great as the figures by value suggest. Taking cotton manufactures as a whole, the United Kingdom in 1913-14 supplied over 90 per cent. of the total and the percentages were higher in the case of piece-goods. Of other countries Japan has made a most marked advance, goods to the value of Rs. 1,20 lakhs in 1913-14 as against Rs. 81 lakhs in 1912-13. Under Articles of Food and Drink sugar retains a position of supreme importance. The imports of sugar are of special interest by reason of their bearing on the question of sugar cultivation in India. It is a striking fact that the production

in India is estimated to be some three million tons of cane sugar a year, and India is thus the largest single producer of sugar in the world. At the same time India imports increasing quantities, amounting in 1913-14 to nearly 10 per cent. of the total supply of cane sugar outside India. Cane sugar, which is imported from Java, Mauritius, the Straits Settlements, and China, was 90 per cent. of the total sugar imported. Beet sugar is imported from Austria, Germany, Belgium, and the United Kingdom.

Trading with the Enemy.

In view of the state of war now existing between England, France, Russia and Belgium on one side and Germany and Austria-Hungary on the other side, the export from India of articles and merchandise likely to be useful to the enemy in conducting the war has been prohibited and all commerce with the enemy's subjects have been forbidden by the Government of India. Details of the orders will be found in the Proclamations, dated 5th and 7th August last, published in the *Gazette of India*.

Business Enterprise in India.

The following is an abstract table of Companies Registered in the month of July, 1914.

	Nominal capital (in thousands of rupees.)
	RS.
1 Banking and Loan Companies	5,00
1 Insurance Companies	10
1 Printing, Publishing and Stationery Company	50
4 Trading Companies (other than speci- fied above)	3,95
2 Companies (other than specified above)	2,25
9	Grand Total . 11,80

A Profitable Study.

Scientific management, the detection and elimination of false effort, is a profitable study for employer and employee, says the *Co-operative News*. Efficiency means less labour and higher wages, and provides the soundest solution for the difficulties and differences existing between masters and men.

HINTS ON ADVERTISING.

Newspapers and Advertisements.

A number of leading American newspapers have adopted the following standards :—

1. To protect the honest advertiser and the general newspaper reader as far as possible from deceptive or offensive advertising.
 2. To sell advertising as a commodity on the basis of proven circulation and the service the paper will render the manufacturer or the merchant; and to provide the fullest information as to the character of such circulation, and how procured.
 3. To maintain uniform rates, according to classifications and to present these rates, as far as possible, on a uniform card.
 4. To accept no advertising which is antagonistic to the public welfare.
 5. To effect the largest possible co-operation with other newspapers in the same field for the establishment and maintenance of these standards.
- Mr. H. Holford Bottomley, of the *Daily Mail*, presented the views of the British advertising men on the above subject at the recent convention.

"We want to adopt the same standards of practice that you have over here," he said, "and we have come over to get your ideas on the elimination of objectionable advertisements and pictures. One great difficulty we have is that often a financial concern will bring in an advertisement late in the day for publication the following morning. At that hour we have no means of finding out whether the 'ad.' is legitimate or not."

The speaker added that certain papers would always refuse to subscribe to a given standard, but in accepting objectionable or untrue advertising they would ultimately kill themselves through losing the confidence of their readers.

The Art of Advertisement.

Genius may be found in every walk of life and distinct genius, writes the *Commonweal*, can be displayed in the department of advertising. The death of Mr. Thomas I. Barratt of Messrs. A. F. Pears took place quite recently. He was a partner in that great firm, and the moving spirit as regards its advertising. In his time the advertising expenditure increased from £80 per annum to £100,000. Every effort was made, every device was tried to spread the sale of Pears Soap. Now-a-days advertising has been brought to a fine art. Many large firms now advertise as extensively as Pears, and new methods are being devised every day. But Mr. Barratt may fairly well be, as the *Times* calls him, the pioneer of modern advertising, and had he not shown such spirit, and proved the success of such an adventurous enterprise, it may well be doubted whether the art of advertisement would have reached the high standard that it at present has.

A Novel Advertising Device.

A Novel Advertising Device has made its appearance. It consists of a polished metal cylinder shaped like a vase. Inside the receptacle is a small electric motor which makes a magnet turn about a shaft. Small articles for sale with pieces of iron imbedded in them are put on the cylinder, and the magnet causes them to travel around the surface. This movement attracts the attention of the passers-by, and still further attraction is caused by employing small figures of men or others of an amusing character which go through irregular evolutions around the cylinder. Small steel balls with flags stuck in them are found among the best for this use.

The Agricultural World.

Cultivation of Rice.

In an article on the cultivation and preparation of rice published in the last number of the *Imperial Institute Bulletin*, the following points are brought out :—

(1) Complete withdrawal of the water prior to the ripening period produces the conditions most favourable to the proper maturing of the crop.

(2) In Java, soils of only average fertility are chosen for seed-bed, as experience has shown that seedlings from rich beds receive a check, and grow less satisfactorily after being transplanted in less fertile soils.

(3) In such beds (*i.e.* "dry" seed-beds) seedlings may remain for as long as a hundred days and can then be transplanted without harm.

(4) It has been found that tillering is greatly encouraged and the yield thereby largely increased by keeping the soil saturated with water but not allowing sufficient to stand on the surface until after the plants have fully tillered.

"Dont's" for Milk Producers.

The *Bath and West Journal* has this pithy catalogue of "dont's" for milk producers :—

1. Don't use a food merely because it is in fashion, for the price may be higher than its contents justify.

2. Don't buy moulded and damaged cakes or meals because they are offered at a low price, for they are likely to be dear in the end.

3. Don't forget that some foods are usually sold at a high price in proportion to the feeding material contained in them, and, further, that there is an element of doubt regarding their digestibility and manurial value.

4. Don't forget the great importance of

"balance" in the ration, *i.e.*, the proportion of nitrogenous to non-nitrogenous material.

5. Don't forget that a mixture of meals usually gives more economical results than any single meal, and is less likely to taint the milk.

6. Don't feed cotton cake to very young animals, nor to milk cows near the time of calving.

7. Don't forget that salt forms a valuable addition to the ration for farm stock; it enhances its palatability, and in other ways acts beneficially.

8. Don't forget that palatability, though adding nothing material to the food, is of importance.

Agricultural Education in Madras.

In view of certain defects experienced in the course of studies in the Agricultural College at Coimbatore, the Director of Agriculture submitted certain proposals for altering the Curriculum which have been endorsed by the Board of Agriculture and accepted by the Government of Madras. The difficulty with the old system lay in the fact that instruction in science preceded training in agriculture. This arrangement was ill-adapted to those students who, while giving promise of becoming sound practical farmers, have insufficient previous education to enable them to follow the scientific teaching.

Now two distinct courses have been created—the first lasting for two years mainly devoted to the study of practical agriculture and the second lasting for a year and a half to technical instruction in the sciences allied to agriculture.

No educational qualifications are prescribed for admission to the first course except that candidates must satisfy the Principal that they possess a sufficient knowledge of English to

profit by the course of instruction. The second course is restricted to students who have (i) passed through the first course and (ii) possess educational qualifications of a prescribed standard, but the second of these conditions may be relaxed in special cases by the College Board, a body consisting of the heads of all the teaching sections at the College.

Among the advantages anticipated to accrue from the modified programme are :—

(i) the establishment of a simple practical course in agriculture suitable and sufficient not only for those who on leaving the college merely intend to manage the cultivation of their own land but also for students whose aim is employment in those subordinate posts in the Agricultural Department in which a high standard of scientific acquirements is not essential, and

(ii) the provision of extended facilities to meet the demand for agricultural education, admissions to the first course being allowed up to the number of 40 in each year, while 20 students will be admitted annually to the second course.

The Advantages of Deep Ploughing.

In an Address by Professor C. A. Ocock, at the International Dry Farming Congress, the lecturer said that ploughing is one of the principal factors in good farming and, is important for several reasons :—(1) to destroy and prevent the growth of weeds and other vegetables not desired upon the ground ; (2) to place beneath the surface manure, stubble and other organic matter where it will not be in the way, and where it may be converted rapidly into humus ; (3) to develop various degrees of openness of texture and uniformity of soil conditions suitable to the planting of seed and the setting of plants ; (4) in some cases to modify the movements of soil moisture and of soil air, and, (5) to change conditions so as to make the soil either warmer or colder.

Each of the objects just mentioned has more

or less to do with conditions in the semi-arid districts, but most important are those relating to soil moisture, as evaporation must be prevented. The problem is to conserve the moisture in the soil, and this is easily accomplished by keeping a dust mulch two inches deep on top. This prevents the air from getting at the moisture in the soil and taking it away. The soil seems to be quite willing to deliver up its moisture to the air, and even cracks open to great depths giving the air a chance to circulate far below the surface and carry the moisture away. The dust mulch is, therefore, a contrivance which seals the earth, as it were, and the finer the dust mulch the more effective it is in bringing about the desired results.

Making a dust mulch consists simply in following the plough immediately with what is known as a sub-surface packer, then with a harrow, and later, if need be, with a disc harrow.

The success of dry-farming depends upon keeping the dust mulch in condition. It should be gone over every week at the least and should never be neglected longer than two weeks. Immediately after a rain, when the dust mulch has absorbed its maximum moisture, the mulch should be gone over and another made. This operation conserves the moisture.

Ploughing continuously at one depth is injurious to plant growth. The frequent passing of the plough at the same depth forms a "hard pan," sometimes called the "plough pan." This pan becomes too hard for plant roots to penetrate with ease, and the result is a shallow root system spreading over a large area. The pan also prevents moisture from entering the soil as it should, thus forcing a greater "run off" under frequent rainfalls. Under most conditions, therefore, the principle of deep ploughing with a rigid bottom is the best safeguard against disastrous results. There is one reason, however, why deep ploughing is not always resorted to. The sub-soil does not carry

plant food elements in the properly aerated condition for immediate use. Before it will give off plant food readily, it must first be exposed to the air.

Three methods of deep ploughing may be considered. In the first of these the furrow widths vary from 10 to 14 inches, while the depth is about 14 inches. This system turns the soil over as in ordinary work, but should be inaugurated gradually. Too much soil from the lower levels at one time is apt to prove detrimental to crops. In the second, the furrow is 8 to 10 inches deep, while a sub-soiler is used to loosen up the bottom of the furrow. This system is good as far as it goes. While it adds to the looseness of the soil in the bottom of the furrow, it fails to throw any of the soil near the top. The third method employs two ploughs, the second being set deeper than the leading one. This system has the principal advantage of lifting the soil from the lower levels and mixing it with that near the surface.

The dry-farming system, especially where deep ploughing is to be done, suggests the use of the tractor, instead of horses or other animals, as the power required to plough 12 to 14 inches deep is about three times that needed to plough to the ordinary depth. The use of the gas or oil tractor for ploughing and farming generally gives three important results ; first, cheaper ploughing ; second, deeper ploughing, and third, ploughing at the right season of the year.

Agricultural Survey.

The *Jayagi Pralap* in urging a plea for an agricultural survey of the Gwalior State makes some very sensible remarks which may well be borne in mind by people interested in the subject elsewhere. The expression "Agricultural improvement" is not clear to many. Most people think that agriculture means exclusively the cultivation of food crops. As the crops are numerous, agricultural improvement to them is identical with improving their

cultivation so as to secure larger outturns, but this is not all agriculture. The term embraces many other important branches such as rearing of livestock, dairy farming, sericulture, apiculture, horticulture, sylviculture, etc., whose knowledge and help to cultivation of crops are invariably necessary ; growing of industrial crops and the agricultural industries also come under "Agriculture." For the successful pursuit of agriculture a sound knowledge of many of the natural sciences is necessary.

In these, many experts have worked all their life-time. Research work is ever going on. There are, in particular centres of cultivation, a few men who know the requirements of the particular crops they raise. They have acquired such knowledge not by any scientific education but by accumulated experience derived by long years of practical work. Such *knowledge extracted from them and recorded* would form valuable additions to agricultural science.

The agricultural classes being mostly uneducated, the experience acquired by them is not recorded, discussed or classified.

The starting point of all improvement is in studying the defects which require to be improved upon. We must know where we are before determining in what direction to move. Merits and demerits of cultivation cannot be made out unless a study is made in the field. Therefore, before trying to suggest measures for improvement, it is necessary to study the present methods of cultivation in detail and record the facts as they are and then suggest and carry out improvements. This, in other words, means that *an agricultural survey* of the country has to be taken up by which it will be possible to ascertain the existing merits and demerits in every branch of the agricultural art.

Agriculture is a practical art, and all investigation and experiments should be carried on in the field. As in America so in India, it is necessary to have small experimental stations

attached to important schools wherein the pupils of the schools may get practical instruction in the Agricultural Science. In a part of the school farm, experimental work may be carried out, setting apart another portion for the demonstration of established truths. It is easier to train younger generations in methods of improved cultivation than attempting to instruct elderly people who are too much wedded to their ancestral customs.

The objects of the Agricultural Survey are :—

I. To study the cultivation of crops as it obtains in each locality and in all its details of soil required, its preparation, manuring, sowing, season of sowing after treatment, harvesting, preparation and preservation of the produce. The several varieties under each kind of crop should be closely studied and the difference between them expounded. The information so collected should all be recorded.

II. To study the natural agricultural resources of the country which are now unutilized and turn them to advantage, e.g. :—

(1) Saltpetre could be found in some places which, when collected, would form a valuable nitrogenous manure to many crops.

(2) Different kinds of plants and leaves are found all over the country which, when used as manure, may enrich many crops. The plants differ vastly in their value as manures, some excel or are at least equal to sheep manure. For instance, pricklypear which was regarded as a pest for the eradication of which thousands of rupees were spent without effect, is now found by some raiyats to yield a manure as valuable as sheep manure; for this reason it has a market value now. When this knowledge spreads, it would not be a wonder if people begin to grow this plant for the sake of manure.

(3) Many tons of bones could be collected in the country to be used as manure; but as it is, no raiyat knows the value of bones as a valuable phosphate. If he knows that bone

meal when applied to field crops enhances the outturn of grains so as to nearly double the yield, he would not lose a single bone. Bones not only enhance but sustain the yield for a long number of years. Yet with all its high value, every bit of bone is collected to be sold by experts who reap the benefit to the loss of the raiyats. The value of bone meal has to be practically demonstrated at a very early date to prevent further loss.

III. To investigate the hidden causes and truths which contribute to successful agriculture and disseminate the knowledge so gained among the raiyats.

IV. To study the breeding, feeding and management of live-stock as it is practised at present and try to remedy the defects. For example—

(1) In most places breeding is left to nature and the worst deformed bulls cross and produce useless stock. This may be remedied by ruling that all bull calves unfit for breeding should be castrated before the 4th year, i.e. before they are capable of breeding.

(2) Feeding is in many places confined to natural pasturage. In seasons of drought or scarcity these pastures fail and the cattle get reduced or die in large numbers. No attention is paid to storing fodder even where plenty of self-produced grass could be collected from the neighbouring forests or grass lands. Interested people are to be persuaded to set example in this way.

(3) Cattle in disease are not generally segregated and properly treated or nourished, though there are some rare cases in which very efficacious remedies are resorted to.

(4) Cattle are kept in the open even in rainy weather and in some places they are made to stand the whole night in mire, knee deep.

V. To investigate into the present agricultural industries and study their defects with a view to suggest means to revive or improve and multiply them.

The Co-operative World.

The Ryot's Indebtedness.

Mr. Bradley Birt, I.C.S., Collector of Midnapore, in opening the fourth session of the Midnapore District Co-operative Conference asked the audience to realise under how heavy a handicap the cultivator lies. Always in debt, and often so deeply in debt at exorbitant rates of interest, that by no conceivable chance can he ever hope to escape from it: he is robbed of all incentive to strive after better things. There can be little improvement in the condition of the labourer and in agriculture generally while such indebtedness remains. It is to fight this great evil, Mr. Bradley Birt affirmed, that the co-operative credit system has been planned, and gradually the cultivator is beginning to grasp all the possibilities that it opens out to him. "With loans available at a reasonable rate of interest, he can hope in time to pay off his debts and improve his holding."

That is just the point on which thinkers like Mr. D. E. Wacha join issue. The ryot may and does get money at a cheaper rate of interest, but that will not relieve him ultimately of his indebtedness unless the money borrowed has earned more than the interest paid. How many agriculturists are there who earn in the practice of agriculture more than the interest they have to pay for borrowed capital invested in agriculture.

Co-operation for Postal Employees.

The formation of a Co-operative Credit Society for the benefit of the postal employees in the Bombay Presidency has been engaging the attention of the Postal officials for a long time. We understand that a big scheme was launched some time ago with the Postmaster-General, Bombay Presidency, as its President, and various other officials as the members of

the Committee. The chief object of the Society is to encourage thrift among the postal employees and to prevent them getting into the clutches of Marwaris and other money-lenders, by advancing loans at a moderate rate of interest. The shares are of Rs. 10. The Society is, more or less, a semi-official one, and its formation has been warmly welcomed. The members of the Society in addition to purchasing shares will be asked to subscribe a small sum every month in proportion to their salary. This system is rarely to be found in other Co-operative Credit Societies, and the object of it is to encourage thrift to a much greater extent than would be possible otherwise.

As the present scheme does not apply to the menials of the department, a separate Society for their benefit, on the same basis as the one which has sprung up, is in contemplation and most likely will be formed shortly.

Co-operative Credit in the C. P.

Mr. Renwick of the Allahabad Bank who inspected the Co-operative Credit Societies of the Central Provinces at the request of that administration has issued an interesting report. It appears "the cultivating classes and the people engaged in cottage industries are extraordinarily backward, prejudiced, and, almost beyond belief, illiterate." Not only are the people ignorant, but they have lost, if they ever possessed it, the instinct of co-operation. At the same time the old machinery by which agriculture was financed is, in Mr. Renwick's opinion, "sadly out of gear."

The co-operative system, if well organised is therefore of supreme importance in elevating their condition. Mr. Renwick, after thoroughly examining the central banks and after inspecting in detail the affairs of 250 rural societies, is

satisfied that a task which seemed insuperable has been accomplished and that in spite of all difficulties, the Central Provinces have been "well equipped with first class co-operative machinery specially designed for their peculiar needs."

"Actual inspection of the working of societies," he states, "makes it quite clear that if A is going to be responsible for B, he will not consent to allow B to obtain an advance of money beyond his means and beyond his powers of employing it to good advantage." Nevertheless Mr. Renwick affirms very emphatically that there ought to be no withdrawal of Government assistance "for an indefinite period of years to come," and he enlarges upon the necessity of gradually educating the people in the practice of co-operation. The inference seems to be that, in the Central Provinces, at any rate, the successful working of rural co-operative credit depends largely upon the supervision and sympathetic advice of the Registrar and his officers.

The Indispensable Basis of Co-operation.

It is a self-evident proposition that the success of co-operative banks depends upon their gaining the confidence of the public, and this they can only do if their methods of business ensure the safety of deposits. No system of banking, however carefully devised in theory, can guarantee absolute security when it is practised on a vast scale by human agents liable to error, but the evolution of co-operative ideals in Germany has reduced the risks to an almost negligible minimum. During the year 1909 and 1910, three societies only, out of a total of over 15,000, had to liquidate their affairs, while it has been estimated that failures of commercial banks are 55 times more numerous than those of co-operative concerns. Moreover, even where bankruptcy has occurred, the assets of the societies have usually sufficed to pay all creditors and no case is known in which depositors in rural credit societies have

lost their money. Of the causes that have contributed to this security must be added the nature of the liability assumed by members and the obligation of an independent audit imposed by law. Previous to 1889, the only form of liability recognised by law was unlimited liability by which every member was liable to the total value of his property—movable or immovable—for the debts of the society to which he belonged. The co-operative movement was by that time firmly established, and as both Raiffeissen and Schulze Delitzsh were strongly in favour of unlimited liability, the other forms have not as yet been widely adopted. There has, however, been considerable controversy regarding the respective advantages of limited and unlimited responsibility, but, generally speaking, the mass of opinion is in favour of the first form for urban districts and of the second form for small rural tracts. The close supervision, under which village societies are conducted, the security taken for loans and the non-speculative character of their business minimise the risks of unlimited liability, while its adoption attracts deposits and improves the credit of the societies when they themselves desire loans. On the other hand, it is apt to deter large property owners from membership, as the responsibilities they incur are hardly proportionate to the benefits they receive. In the event of bankruptcy, the debts of society are recovered by means of a uniform levy upon its members, and only in the case of this first levy proving too high for the poorest member does inequality occur. The institutions that have adopted limited liability attach a definite burden to each share which varies considerably between different societies; but a member's actual liability is considerably less than the nominal, since the co-operative act provides that, when the debts of a society amount to 25 per cent. of the collective responsibility assumed by its members, action must be taken to wind up its affairs.

It may be doubted whether the principle of

indefinite liability, collectively borne, will ever take firm hold in England, where the national instinct, as well as the tenure of land, is distinctly individualistic. In India, on the other hand, the associative character of many institutions, such as the village community and the joint family, as well as the collective responsibility imposed upon the revenue payers in an estate for the due payment of Government demands, pointed to the joint and several unlimited liability of all members as the natural basis on which Co-operative Societies should be founded; and experience has fully justified the adoption of this principle in rural areas. But, where German societies become affiliated to central organisations, which serve both as places of deposit for accumulated funds and as new sources of credit, the liability, undertaken by the unit for the engagements of the larger institutions, is always limited in amount, although sometimes fixed at a comparatively large sum. The conference of Registrars, held in Simla, accepted this principle as sound for Central Banks in India. This affiliation of units to Central Banks, run on business lines, is quite distinct from the combination of individual societies into unions for the purpose of furthering the common objects of the constituent elements. These unions are essentially advisory and propagandist institutions, so much so indeed that no union which engages in commercial transactions can undertake the legal audit of its local societies. And as the provision of expert auditors is the main object of their foundation, there are very few which make themselves ineligible for this duty by carrying on banking operations. The principle involved is an important one. Large organisations of units can do excellent work in supplying expert advice to and in representing the interest of isolated societies, whose members have often a very circumscribed knowledge of practical affairs. But there would be a danger of their advice not being disinterested if they had a financial stake in the bodies they advised and

in particular their auditors would not be free agents. The commercial value of an audit depends upon the persons who conduct it being disinterested and independent; and hence the Co-operative Act of 1889 provided that every society should be duly audited once in two years, and that the auditor should be appointed either by order of court or by private bodies, recognised by the Provincial or State Governments as fit institutions to make such appointments. In practice, the business of auditing is carried out almost entirely by the unions which make it their aim to provide specialists, acquainted not only with the system of accounts, but also with the methods and objects of co-operation. These auditors do far more than conform to the requirements of the law, which are confined to an efficient check of the accounts and to an enquiry as to whether the society has been conducted in accordance with law and its own articles of association. They bring the local officials into touch with the general movement, and from their training and experience are able to give valuable assistance as regards machinery, manures, improved methods of tillage, and other matters which affect closely the rural community. Further, they act as the channels through which the unions acquire information as to the administration of affairs in the affiliated societies, and if this is unsatisfactory, pressure can be brought to bear on recalcitrant committees to reform their ways. This pressure is of a two-fold nature. As an ultimate resort, the offending society may be excluded from the union; but the most powerful weapon is supplied by the fact that a union has often considerable influence with a central bank to which the society is probably a debtor. If the recommendations of the Union are consistently neglected, it can therefore arrange that the central bank should restrict credit. It is fortunate that unions possess these indirect means of enforcing compliance with their wishes in essential matters of reform, for, although the law im-

poses the obligation of a biennial audit on all societies, it provides no penalty if the defects, pointed out by the auditing authority, are not remedied. It is not surprising, therefore, that in matters of routine, the unions find it difficult to enforce obedience to prescribed principles. The issues are often too trivial to justify extreme measures, and the only course is then to issue objection sheets and reminders until a satisfactory answer is received. Municipal committees and district boards in this country are made familiar with this exasperating form of "damnable reiteration" by the similar methods of the Local Funds Department, and many would no doubt like to emulate the courage of those societies regarding which one union had to complain that a third of its communications remained unanswered. But despite these minor drawbacks, which merely point to the existence of a healthy spirit, usually denied to corporations, the periodical audit is a fact of the first importance. Mr. Cahill gives it as his opinion that "to a very great extent the present soundness and prosperity of German agricultural co-operation may be said to rest upon the successful accomplishment of the advisory audit." The Imperial Federation of Co-operative Societies went still further in a resolution passed at a Congress a few years ago, in which it enunciated the authoritative principle that "Auditing constitutes the indispensable basis, not only for the internal growth of the individual society, but also for the development and progress of all rural co-operation."

This subject is of paramount importance to Indian Societies, because there seems to be a tendency in some quarters to substitute private for official audit, the movement, of course, being only part of the general policy which aims at removing Governmental control over the co-operative movement, as soon as it has acquired the strength to stand alone. But once it is admitted that efficient auditing is "the indispensable basis of rural co-operation," it

follows that the power and the practice of scrutinising accounts must be maintained until societies can be granted complete internal and external autonomy. And the time for conferment of such power has certainly not yet arrived.

The essential qualifications for auditors are efficiency and independence; and in the co-operative sphere, these qualities can at present only be found in experienced officials employed by Government. The ultimate ideal at which to aim is suggested by the German system.

As the number of societies increases, unions should be formed which make it one of their main functions to supply auditors fully trained in the theory and practice of co-operation. For this purpose training institutions will be necessary, similar to the school establishment at Darmstadt where the subjects taught include co-operative law, book-keeping, economics and a knowledge of practical farming. Or, provincial agricultural colleges might supply the need by arranging for a course of study for suitable candidates. Those Unions, whose functions were not of a commercial character could then be empowered by Government to engage qualified men, who in addition to carrying on propagandist work, would act as auditors and advisors to local societies. They would be Union employees and not Government servants, but some measure of State aid might be granted, both in the form of scholarships tenable at the training schools, and of subventions to the Unions. The co-operative movement, however, has not attained the dimensions to render such a scheme practicable for the present, and it will probably be some years before this occurs. In the mean time its advent will be hastened, not by a concession to sentiment, but by an increasing insistence on the vital necessity of thorough audit. For, inefficient inspection makes for failures in individual societies, and frequent failures would strike a serious blow at the progress of co-operation.—*Pioneer*.

News and Notes.

RELIGIOUS.

The Cathedral at Rheims.

The following is a telegram received by the French Consul in Bombay from M. Delcasse, the Minister for Foreign affairs:—"Without being able to invoke even an appearance of military necessity, only for the lust of destruction, the German troops have directed against the Cathedral at Rheims a systematic and furious bombardment. At the present hour, the celebrated Basilica is nothing more than a heap of ruins. The Government of the Republic has the duty of denouncing to universal indignation this revolting feat of vandalism, which, in making a prey to the flames of a sanctuary of our history, robs humanity of an incomparable portion of its artistic patrimony."

The German head-quarters on the other hand have issued a statement protesting against the assertion that the Germans had destroyed historical monument from a lust of vandalism. The statement says that, if Rheims Cathedral had suffered in the bombardment, the French alone were culpable in making Rheims a fortress and a *point d'appui* of their defence line.

The latest reports indicate that the damage at Rheims is not irreparable.

The English newspapers say that the Pope has telegraphed to the Emperor William deploring the damage to Rheims Cathedral, saying:—"When you destroy temples of God you provoke divine ire, before which even the most potent Armies lose power."

The Vatican refuses to confirm or to deny the above.

Vedanta.

The Vedanta, as the late professor Max Muller had the courage to avow, is "the most sublime philosophy and the most satisfying religion," and according to Dr. Deussen "the

strongest support of future morality." Unless we Hindus take up its preaching in right earnest, the sin, selfishness, sensualism and strife of Kaliyuga, now rampant in the Western lands and spreading from them to India, and threatening the extinction of Indian spirituality, will only increase and scatter ruin and desolation everywhere.

Jews and their Religion.

In the course of an article on the "Evolution of Christianity" in the latest issue of the *Modern Review*, we read that in spite of the fact that they are usually held up as an intensely religious race, it has to be confessed that the Jews as a people never inclined towards asceticism, a strict form of religious idealism: they loved the world, the joy of conquest and of possession too much to be carried away by an ideal of religious ecstasy. Many of the psalmists were religious idealists, it is true, and found the secret of life in religious contemplation, in quiet communion with God. Then, too, many of the psalms, numerous proverbs and practically the whole of the book of Ecclesiastes, point in the direction of physical renunciation. But for all that, an ideal of worldly renunciation never seems to find great favour among the Jews.

A Defect in our Educational System.

One unavoidable and irremediable defect in education is that it has to be almost completely divorced from the Hindu ideals and methods of what constitutes education. We must therefore supplement it by private educational institutions, at which the ancient system of Brahmacharya is a living factor of education, so that such of our youths as are willing to enter them may receive a training in those practical methods of divine worship and divine meditation which bore noble fruit in ancient India, and which are even now not quite dead and gone beyond hope of recognition and recovery from this *Punyabhumi*. Those wonderful methods of spiritual culture, known as bhakti, tapas, yoga, dhyana, etc., which led to *Samadhini* and *siddhis* are ours to practise and to use for the welfare of humanity.—*New India*.

SOCIAL.

Social Reform.

Writing on the "Connotation of Social Reform," Mr. G. Subramania Aiyar, B.A., the late editor of the *Hindu* points out in that journal that liberty of woman, unification of different castes, raising the degraded classes, foreign travel and other reforms do not exhaust the subjects to which the attention of our leading men should be devoted. Whatever activity will tend towards the liberating of the poor and ignorant people from ancient thralldom, and elevating their standard of living, should be included in the term Social Reform.

The establishment of Insurance Funds for the benefit of the poorer classes, the granting of pensions to men of old age and bodily infirmities, the regulation of the working hours and wages of the labouring classes, the boarding and lodging at public cost of the lower classes of children that go to school, decent living accommodation for these classes in large towns, the creation of small agricultural farmers on easy and comfortable terms of life—all are called social legislation. In fact, the efforts made to destroy the existing differences among the various orders of the community and raising them as far as possible to a common standard of decent and comfortable living is at present engaging the serious thoughts of statesmen and philanthropists in Europe.

In India the necessity for such activities is more pressing. No question is so uppermost in the minds of our leading men as the question of the removal of ignorance, the worst foe of the cultivating and industrial classes. The Government have promised a good deal for the furtherance of popular education but Indians of light and leading should co-operate with the Government to induce the ignorant poorer classes to take advantage of the facilities provided by Local Boards and Government.

The growing habit of drinking among our working classes is another formidable social evil which those that are anxious to improve the condition of our society should try to combat and reduce. There is no doubt that the habit is extending and to its deleterious effects thousands of families fall victims. The educated and intelligent classes of our people have hitherto done little to open the eyes of the working men to the great evil of drink and to the blessing of temperance. The families of poorer men which would benefit from total abstinence or temperance among the bread winners, would be more numerous than the families of middle classes which would benefit by the abolition of the custom of Varasulkam or Kanyasulkam.

To the above may be added the raising of the degraded classes in the social scale.

Along with the education of the poor classes must proceed our efforts at sanitation. We can educate the people both in villages, and rural tracts by personal example and precept as to the benefits of cleanliness, good food, good air, good water, etc.

Another important branch of the social reform activity would be to undertake and carry on investigation into the economic condition of the people living in various parts of the country.

It is the educated classes that should prepare the way for social reform. They may have knowledge. But they have no leisure. On the other hand the wealthy land owning and commercial classes have plenty of leisure. But they have no knowledge.

If the educated class and the class possessing wealth and leisure would co-operate for common objects substantial results in the way of public good would follow.

PERSONAL.

Pandit Bishen Narayan Dhar.

In the United Provinces of Agra and Oudh, there never were worthier products of the Indian National Congress than the Hon'ble Pandit Madan Mohan Malaviya and Pandit Bishen Narayan Dhar, the latter of whom has just been elected to the Viceregal Council. The *Leader* avers "they are the two who have been honoured, and through whom our provinces have been honoured by election as presidents of our one national assemblage." Holding identical opinions on public questions, actuated by the same impulse, animated by the same sentiment of loyal patriotism, inspired by the same ideals for the future glory of the motherland, Pandits Madan Mohan Malaviya and Bishen Narayan Dhar are the foremost patriots of the United Provinces, equally single-minded, equally earnest, equally disinterested and devoted. One is the leading light of Allahabad—the other of Lucknow.

Incidentally, our contemporary notes that the election of Pandit Bishen Narayan Dhar will mean that the capital of Oudh has a representative at Delhi as it had in the late Hon'ble Rai Sri Ram Bahadur and as the capital of Agra has. If the Hon'ble Mr. Surendranath Banerjee designated Allahabad's leader 'the silver-tongued orator of the Congress', the Hon'ble Mr. Gokhale has applauded Lucknow's leader as 'one of the best public men, a vigorous thinker and a brilliant writer, a man of deep conviction, sound judgment and sturdy independence.'

If Pandit Bishen Narayan Dhar is a radical politician, he is also a thoroughly practical man keenly alive to Indian limitations.

Late Mr. Y. Krishnasami Aiyar, C.I.E.

Sir S. Subramania Aiyar recently unveiled at the Ranade Library, Madras, the portrait of the late Mr. V. Krishnasami Aiyar. Referring to the generous donations by the deceased worthy,

Sir Subramania Aiyar said: "I think some poet of ours has stated that of all the possessions which a man had, only that which has been given away by him for worthy objects should be taken as continuing to be his possession, while all the rest which continue to remain in his possession were the property of others. Of the many who have been during the last fifty years making large amounts of money, I have known none who made the sentiment of the poet an actual rule of life. From the time his practice became lucrative he began to give money to objects of usefulness, and during the decade which preceded his passing away, I know that his donations amounted to over Rs. 2 lakhs odd, as I had occasion more than once to point out. After his appointment as a Councillor, and when the question of his pension was settled, I know for a fact that he had made up his mind to use what remained of his salary after expenditure for his maintenance, for supporting his charities, which he had started, and for starting other and new ones, if circumstances permitted.

"Workers in the interests of the public are greatly needed. On every side defects are being brought to our notice, politically, socially and morally, a great deal has to be done, and it is perhaps only right to point out that there seems to be a paucity of workers. Some are disposed to point out that we are a nation of speakers and not doers. I for one would not endorse that judgment. I look upon that judgment as premature. I look upon the present disposition to talk as a precursor of action, and I am sure that we shall find many workers who will devote themselves to the task with all the vigour and devotion which marked Mr. Krishnasawmy Aiyer as a public man. I do not mean to suggest that he was not a talker. No one talked more than he did, and some of it was very impulsive and some of it by no means very pleasant. For all that, there lay behind a heart full of the milk of human kindness.

ECONOMIC PRODUCTS.

The Production of Rice.

According to the *Bulletin of the Imperial Institute* (January—March 1914), it is estimated that about 85 per cent. of the cultivated area of British India is under the rice crop. For 1911-1912, the Indian rice crop was some 26,100,000 tons, and in spite of a large local consumption India exports more rice than any other country in the world, the shipments for 1911-12 amounting to 2,625,000 tons. Rice in Ceylon is the staple article of food of the native population, and in 1910-11 the estimated area under the crop was roughly 680,574 acres. Rice cultivation is an important native industry in the Federated Malay States, Fiji, Queensland and Egypt. In West and East Africa rice is grown by the natives but not sufficient to meet the local demands. Experimental shipments for the purpose of ascertaining the commercial value of the produce has demonstrated the necessity for more care in the selection of varieties and in the cleaning and husking of the grain.

The Sunflower.

The Sunflower is one of those neglected plants which will easily grow on poor dry soil, and which is useful for its oil, for poultry, and for various kinds of live stock in the form of cake and meal. As pointed out by the *Agricultural Economist and Horticultural Review*, the Sunflower seed has long been known to be valuable by those versed in the lesser known food stuffs, and we have confirmation of it from continental sources, where such seeds are far more in use than they are with us. Sunflower cake is a good dairy food, and is even said to influence the amount of fat, which is very unusual, and this, favourably. Earthnut, Sesame, Palm and Coconut cakes are of a similar nature, and owing to a small demand are not expensive, and if fed in moderation they are capable of being very useful, as they are all rich foods; the two first and Sunflower exceptionally so.

HINTS AND RECIPES.

How to Heal Cuts.

A cut should not be closed. No mistake can be worse than to put a piece of adhesive plaster over a cut, for this simply imprisons the dangerous germs and prevents the cut from healing. The proper treatment for a cut—even a little one—is to wash it with clean water, then with an antiseptic and to cover it with sterilised gauze or any absolutely clean linen or cotton bandage.

There is a multitude of good antiseptics; alcohol is excellent; many surgeons say iodine is the best of all. But the most convenient for home use is peroxide of hydrogen, is the conclusion of the *Science Siftings*. The way this works is by forming a chemical combination with blood, lymph, pus and other fluids, which liberates oxygen rapidly. Pure oxygen is death to all germs.

It is sometimes a puzzle where to get absolutely clean bandages when chemist's shops are closed or far away. But it is easy if you remember that great heat will effectually sterilise a piece of a handkerchief, a strip of sheeting or the like. A flat-iron, so hot as almost to scorch, passed a dozen times over the stuff will serve the purpose. Boiling for 10 minutes produces absolute sterilisation, and this, of course, is essential to quick healing.

Weather Sign.

If, on picking up a newspaper in the morning, it displays a tendency to tear almost on its own account, a downpour of rain is not far off. Rain is also presaged when the contents of the salt-cellar are in a moist and cloggy condition. At such times your bootlaces have a more than ordinary tendency to snap, and your kid gloves will have a cold, clammy feeling and be difficult to pull on. Even the walking-stick or umbrella will act the part of a barometer. The handles before rain will reveal a slight deposit of moisture and be sticky to the touch. In this way the question whether it is the wiser to take a walking-stick or umbrella on leaving home will be settled for the observant person by an inspection of the articles themselves.

LEGAL.

Right to Light.

If building A has acquired by long enjoyment the right to light and air at some of its windows and if the erection of a neighbouring building B interferes with light and air of building A, when is such interference actionable? Does even the slightest interference give rise to a cause of action? This important question which must arise frequently in every big city where large sized building spring daily into existence side by side was decided by the Privy Council in *Paul v. Robson* (41 I.A. 180) which went up on appeal from the Calcutta High Court. It was found in the case that the erection of the new building, though it substantially diminished the amount of light that had been for a long time enjoyed by the building A, did not cause such discomfort and inconvenience as would render building A unfit for the ordinary uses it had been put to till then. The Original and Appellate Courts dismissed the suit on this finding and before the Privy Council the plaintiff's counsel made a desperate attempt to induce it to hold that the true measure of the right acquired by building A was not the one adopted by the lower Courts but the extent of the previous enjoyment. They contended on the authority of certain stray observations that appear in the judgments of some Lords in *Colls. v. Home and Colonial Stores* (1904 A. C. 179), that if a particular amount of light and air was enjoyed in the past for over the statutory period, even the slightest diminution of that quantity of light and air would become actionable. But Lord Moulton who delivered the judgment of the Board exposed the hollowness of this contention by a detailed reference to the case of *Jolly v. Kine* (1907 A. C. 1) which correctly interpreted the decision in *Colls* case as meaning that the proper measure of the right was what was required for the ordinary purposes of inhabitation or business of the building A, according to the ordinary notions of mankind and that the extent of actual user would neither increase nor diminish the right. The Privy Council has distinctly and definitely laid down the law upon this subject and all further doubts about it have become quieted.

INSURANCE.

With and Without Profit Policies.

At a meeting of the Institute of Actuaries, a speaker observed that in several public papers the gradual supplanting of with-profit by without-profit policies had been advocated. Such a change might be unlikely, but the experience of life offices proved that the companies and the policy-holders alike had benefited by premiums in excess of those required having been charged, and that the surpluses so produced had enabled life offices to weather many storms which institutions trading on the narrow non-profit margin would have been unable to withstand. That stability could not have been attained by the issue of non-profit policies alone, and it must be considered most unpolitic to charge non-participating rates, which, besides being perhaps inadequate, might tend to alter the public taste for participating policies. The present depreciation of securities would have had very unpleasant consequences for some offices had it not been for the strong reserves created partly out of past profit margins.

Another speaker said that in cases where the mortality in the non-profit class was worse than in the other class, it remained to be seen whether the loss on mortality as compared with the participating class was greater or less than the extra value given in bonuses. It was worth some trouble for a company to investigate and settle that matter, because it was important for each company to secure a proper share of both classes of business. The profit margins on the participating class in evil times were very important, as enabling a company to avert disaster; they constituted, in fact, the first line of defence, and therefore it was obvious that they required a sufficient proportion of with-profit business. On the other hand, in times of prosperity it was a great advantage to have on their books a reasonable amount of non-participating business, as their contributions to profits were all pure gains.

If the non-profit rates were too low there was a great inducement to under-average lives, which required the greatest amount of cover at the smallest outlay, to enter in large numbers.

Diary of the War.

- 28th June.—Archduke Franz Ferdinand and Consort assassinated at Serajevo.
- 24th July.—Austrian ultimatum to Servia.
- 28th July.—Austria declares war on Servia.
- 30th July.—Fighting on the Servian frontier. Russia decides upon general mobilisation.
- 31st July.—Kaiser proclaims Martial Law.
- 1st Aug.—King George intervenes at St. Petersburg to find a formula acceptable to Russia and Austria. German ultimatum to Russia. Germany declares war on Russia.
- 2nd Aug.—Italy announces her neutrality. Germany invades France at Cirey and marches troops through Luxemburg.
- 3rd Aug.—German ultimatum to Belgium to facilitate German operations against France through Belgium. Belgium rejects the ultimatum.
- 4th Aug.—German dirigibles over Belgium, violating her neutrality. Germany sends a second ultimatum to Belgium, Germans invade Belgium. Great Britain sends an ultimatum to Germany which Germany rejects, and Great Britain declares war.
- 5th Aug.—United States, Sweden and Turkey declare their neutrality. Germany declares war on England. The bombardment of Liege begins. Repulse of the Germans.
- 6th Aug.—H.M.S. *Amphion* sunk by a mine.
- 7th Aug.—German Cavalry Division crosses the Meuse and is practically annihilated by Belgian Cavalry.
- 8th Aug.—British and French Forces seize German Togoland.
- 9th Aug.—German submarine attack upon British cruiser Squadron in the North Sea. Submarine sunk. Russian troops enter Austria in north-east Galicia. British Expeditionary Force begins to arrive in France.
- 10th Aug.—H.R.H. the Prince of Wales joins the 1st Grenadier Guards. Rupture of Franco-Austrian Relations.
- 12th Aug.—The Mediterranean clear of the enemy (the two German cruisers there having fled into the Dardenelles). Great Britain declares war against Austria. Battle of Hælen. Belgians defeat Germans.
- 13th Aug.—French defeat and pursue Germans in a two days' battle (12th and 13th) south of Montmedy. The Austrians make an attack all along the Servian frontier and enter Servian territory in the north-west.
- 15th Aug.—French defeat Bavarian Army Corps at Avricourt and Cierj.
- 16th Aug.—French capture 1,500 prisoners and several big guns in the Vosges. Naval fight between French and Austrians in Adriatic. Austrian cruiser sunk.
- 17th Aug.—Japanese ultimatum to Germany.
- 18th Aug.—Russian mobilisation complete. Commencement of Russian advance.
- 19th Aug.—Servian victory over Austrians at Shabatz.
- 20th Aug.—Mutiny of Czech soldiers at Prague. Germans occupy Brussels without opposition. French victory in Alsace. Germans driven back from Mulhausen.
- 22nd Aug.—France protests against the use of Dum-Dum bullets by the Germans.
- 23rd Aug.—Rapid Russian advance in East Prussia and general retreat of the Germans. Japan declares war on Germany.
- 24th Aug.—Contact established between the main Armies on both sides in Belgium. British Expeditionary Force in action at Mons. Namur captured by the Germans.
- 25th Aug.—Servia clear of Austrians. Liege reported fallen. Germans bombard Malines and are driven off by Belgians. Austria mobilising on the Italian frontier.
- 26th Aug.—Austria hands the Japanese Ambassador at Vienna his passports.
- 27th Aug.—H.M.S. *Highflyer* sinks the German armed merchantman *Kaiser Wilhelm der Grosse*. The Russians drive back the advance guards of Koenigsberg Garrison.

- 28th Aug.—Naval engagement off Heligoland: three German cruisers and two German destroyers sunk and many others damaged. Germans burn Louvain. Russians capture 100 guns in East Prussia.
- 29th Aug.—Fierce fighting in France. Allies fall back on strong defensive line. Belgians join Allies. Battle of Mons. Heavy British casualties. Louvain burned to the ground. German cruiser *Magdeburg* driven ashore. Russian advance on Koenigsburg. Germans driven back. Russian successes in Austria. British sympathy with Belgians; Mr. Redmond's speech. British forces in France; Indian troops to take part. German attack on Belgian Congo.
- 30th Aug.—Naval fight off Heligoland. Daring and successful British attack. Details of fighting at Mons, Charleroi, and Cambrai. British detachment attacked at Tournai. Gallant resistance. Lord Crewe on Indian troops. Russians occupy Allenstein. Koenigsburg reported invested. Russian advance in Galicia. Operations in the Adriatic. Allies bombard Cattaro.
- 31st Aug.—British and French Fleets in Mediterranean. Admiral Boue de la Peyiere to command. German Samoa surrenders to force from New Zealand. Fierce fighting in East Prussia. Russians still advancing in Austria. Blockade of Kiaochao by Japan.
- 1st Sept.—Situation in France, statement by Lord Kitchener. Preparations to defend Paris. Franco Belgian operations. Official Report. German reinforcements in East Prussia. Germans take the offensive. Fierce fighting in Austria. Second Australian Contingent called for.
- 2nd Sept.—French Government remove to Bordeaux. Russian advance on Lemberg. Russians defeated in East Prussia.
- 3rd Sept.—British gallantry at Compiègne. Lord Hardinge's son wounded.
- 4th Sept.—Exodus from Paris. Russians occupy Lemberg. The Guildhall Meeting, the Premier's great speech, Germans checked at Verdun.
- 5th Sept.—German bombardment of Malines. Austrians routed by Russians and Servians. Japanese investment of Kiaochao. Pressure on Paris decreasing. German enveloping movement checked. Bombardment of Manberge. Allies' Peace Agreement.
- 6th Sept.—Loss of H. M. S. *Pathfinder*. German investment of Antwerp. Belgians flood the country. More Austrian reverses. Russians resume offensive in Prussia.
- 7th Sept.—Montenegrin victory in Herzegovina. Russian advance in Galicia. Heavy German losses at Malines. Big battle developing. Montenegrins defeat Austrians at Boljanitz. Russian progress in Galicia. Allied Armies drive Germans back.
- 8th Sept.—Sack of Dinant. Great Russian successes in Austria. Fighting in German East Africa. Germans refrain from entering Ghent. Rumoured death of Austrian Emperor. Desperate fighting on Austrian frontier.
- 9th Sept.—King's message. Viceroy's reply. Enthusiasm in Parliament. British Expeditionary Force. Sir John French's Despatch. British Army pursuing Germans, crosses the Marne. Recruiting enthusiasm in Great Britain. Austrians defeated at Tomaszow. German reinforcements in East Prussia. Wreck of the *Oceanic*. The British Retirement. Sir John French's Despatch.
- 10th Sept.—Commencement of the Battle of the Marne. Allies advance on the left. Germans retire.
- 11th Sept.—German retirement continues, pursued by British. Capture of prisoners and munitions of war.
- 12th Sept.—General German retirement. Allies' great victory, Russian successes in Galicia. Capture of Herbertshohe (Bismarck Archipelago) by Australian Naval Squadron.
- 13th Sept.—Germans decisively routed: headlong retreat. Heavy casualties, valuable French

captures. Belgian Army active again. Russian retreat in E. Prussia. Continued Russian successes in Galicia against combined Germans and Austrians.

14th Sept.—Germans continue to retreat. Fighting in the Vosges. Allies' advance unchecked. Russian decisive victory in Galicia confirmed. Fighting in German East Africa.

15th Sept.—Crown Prince's Army driven back. Belgian victory at Alost. Russians cross River San. Servian successes in Bosnia. The battle of Nish.

16th Sept.—Germans make a stand. Reinforcements from Belgium. Belgians continue aggressive. Alleged German atrocities. Belgian Commission's Report. Mr. Asquith promises official enquiry. Austrians entrenching on road to Budapest. Servian advance continued. The German cruiser *Emden* in the Bay of Bengal. Five steamers sunk. German cruiser *Hela* sunk by British submarines near Heligoland.

17th Sept.—German stand on the Aisne. German reverse at Alost. Russian invasion of Austria. Battle of Krusnik. Servian successes. Battle of Nish. Japanese capture Tsimo. *Emden* in the Bay. Further details.

18th Sept.—Belgians cut communications between Brussels and Antwerp. Austrians evacuating Galicia. General Delarey shot in South Africa. Kiaochao Railway Station captured by Japanese. Indian Expeditionary Force. Financial proposals sanctioned by Parliament.

19th Sept.—Parliament prorogued. Statement by Lord Kitchener. German Fleet in Baltic fire on their own ships. Battle raging from the Olse to the Meuse. Continued Russian successes. Japanese success near Kiaochao. Merchant cruisers in action; *Cap Trafalgar* sunk by *Carmania*.

22nd Sept.—German vandalism at Rheims; world-wide protests. Severe battle at Soissons. Servian successes. *Pegasus* disabled by *Koenigsberg* at Zanzibar. Another *Emden* raid on the Burma coast.

23rd Sept.—Battle of the Aisne still undecided. Heavy German losses. Austrian and German Armies; rounded up in Galicia. Bombardment of Madras by the *Emden*.

24th Sept.—Battle of the Aisne. Progress of the Allies, German right flank turned. Jaroslay taken by Russians. Three British cruisers, *Cressy*, *Aboukir* and *Hogue*, sunk by German submarines in North Sea. Armed German merchantmen captured in the Atlantic. Operations in German South West Africa. General Botha to command British troops in Africa.

25th Sept.—Annexation of German New Guinea by Australians. The Battle of the Aisne developing into a siege. Bombs dropped on Paris.

26th Sept.—Germans camp at Waterloo. Fighting round Antwerp. Austrians continue retreat; important Russian captures. Servians attack Surajevo. German advance on Russia checked.

27th Sept.—Japanese attack Kiaochao. Neutrality of Switzerland. German proposals rejected. German preparations at Antwerp. Bombardment of Malines recommenced. Naval operations in Adriatic. Bombardment of Cattaro.

28th Sept.—Fierce fighting round Antwerp. Germans repulsed. Mons on fire. German activity on the Aisne. Attempt to break the Allies' lines. Surrender of Duala, in German West Africa. Kaiser in East Prussia with 22 Army Corps, Germans checked at the Niemen.

29th Sept.—Aerial bombardment of Paris. Fighting in Belgium continues. Russians assume offensive against Germans. Siege of Przemyśl. Japanese success at Kiaochao. German raid in British East Africa, roughly handled. *Emden's* depredations off Minicoy, and Laccadives. Battle of the Aisne. Allies early victory expected in Paris. Pressure on German Right Wing.

30th Sept.—Fierce bombardment of Antwerp. Outbreak of typhus among Germans. German Naval activity in the Baltic. Reported Russian repulse in Hungary. Austrians driven from the Uzzek Pass. Servians recapture Semlin. Desperate Russo-German conflicts. Germans stopped at the Nieman. Japanese successes at Tsingtao. Bombardment of forts; Laoshe Harbour occupied. Austrian mines in Adriatic. Protest by Italy.

1st Oct.—Allies progress on the Aisne. Belgians' stubborn defence of Antwerp. Russian successes in East Prussia. Cholera increasing in Austria Hungary. Raid by H. M. S. *Camberland* off German West Africa; nine vessels captured.



THE WEALTH OF INDIA

A Monthly Magazine of Practical Information and Useful Discussions

EDITED BY MR. G. A. VAIDYARAMAN, B.A.

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The Wealth of India.

Current Topics

BY ECONOMICUS.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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The all absorbing topic of the hour is, of course, War. The operations and movements of the belligerent armies and fleets are being watched with the keenest interest throughout the civilized world. The present struggle has no parallel in history which records wars of various dimensions and degrees of political importance, in as much as it has drawn almost all the nations of the earth into its vortex, if not as belligerents, at least as sufferers and as most anxious and deeply interested spectators. To characterise the Germans who have inflicted so much loss and hardship upon the world as Huns is to do serious injustice to those barbarians who were innocent of the ideas of morality and human civilization. Those high minded lovers of peace and progress who were at one time inclined to deprecate England's participation in the war which, according to them, was a business for Germany and France to settle between themselves, are now convinced of the wisdom and the morality of the action Great Britain has taken. England could not have remained a passive spectator without bringing ruin and dishonour upon herself and this judgment is now endorsed by the general public feeling in America and other countries. The whole civilized world is scandalised at the reckless and brutal manner in which the

German military clique entered upon a disastrous war and thus committed foul outrage upon humanity and civilization. It is now clear that with god and peace upon his lips, the Kaiser has been steadily preparing to scout the one and violate the other. German philosophers and professors have been poisoning the mind of the nation with the war cult and the supreme necessity of territorial expansion and political domination for the fatherland. They sowed the wind and the misdirected and deluded German nation will reap the whirlwind. It is our profound conviction that in spite of the varying fortunes of the operations now going forward, the Allies must ultimately prevail and German militarism must be crushed. One of the most heart rending episodes of the war is the devastation and depopulation of Belgium at the hands of the relentless enemy and the sufferings of that small, gallant nation have evoked the sympathy of the whole world. But Lord Rosebery's remark that 'this war is a fine on the renewal of the lease for the British Empire' may also be used with reference to the peace and progress of the world in general as to the independence and integrity of Belgium.

The address presented by Mr. Visvesvaraya, the Dewan of Mysore, to the Dasara Representative Assembly on 30th September last, makes most pleasant reading. It records the rapid strides which the State of Mysore is making in various directions under the stimulating influence of the progressive policy of the Dewan. We have already had occasion to refer to Mr. Visvesvaraya's deep insight into the condition of the people of Mysore and the economic possibilities of the State, to his correct appreciation of the causes which are responsible for the backward condition of the mass of the subjects of the State and to the earnest efforts which are being made under his inspiration to promote all-round reform. No one who has given any thought to the economic decadence and stag-

nation of the people of this country can have failed to realize that it is necessary to employ radical remedies to cope with the deep seated ills from which India is suffering and it is encouraging to notice that the policy of the Mysore Durbar is animated with a due appreciation of this fundamental consideration. Mr. Visvesvaraya's address is divided into two parts; the first deals with the more important events and measures requiring notice and the second with matters which are of limited importance or are connected with the routine work of the administration. Reform and progress are writ large upon every page of the printed address. Take the department of agriculture, or education or industry or public works and you find reforming activity in full swing. The keynote of the policy of the Dewan is efficiency and the watchword of the administration is all round progress. One feels proud of a State which is inspired with such high motives and earnestly strives to promote the well-being of its subjects. The enthusiastic co-operation of the people with the Durbar is the most hopeful feature of the work of reform that is being attempted in Mysore, and we wish them every success.

In the republican United States of America, the people are not unfamiliar with 'Kings,' oil kings, steel kings and tobacco kings, who wield a powerful influence in the country, but there is another type of ruler in America, swaying her economic destinies, and that is 'King Cotton.' It is well-known that in normal years, cotton is there by far the most important agent for commercial prosperity, bringing, as it does to the United States, far more wealth than any other commodity produced. England being the largest buyer of American cotton, the people of the States were alarmed when war broke out and Great Britain was plunged into it. The people were anxious to relieve the situation by enabling cotton planters and dealers to carry their present stock over to a period when the abnormal war conditions would be ended, or

else by enabling the raw cotton surplus to be manufactured at home and exported to countries like those in South America which have drawn their supplies of piece goods largely from Germany in the past. It is estimated that one-fourth of this year's crop will remain on the hands of the planters and will have to be carried over to the next year. Measures have therefore been taken to increase the storage facilities for cotton and to make it possible for banks to make liberal loans on the security of the cotton thus stored. Cotton ware-houses have been constructed and the American legislature has passed an Act licensing cotton ware-house receipts which can be easily traded in and offered to banks as collateral on cotton. The financial and commercial advantages of this artifice are obvious, and the scheme reflects great credit upon the organizing capacity and economic genius of the American people, though the future alone will show how far the arrangement succeeds. It will indeed stop panic and prevent undue demoralization in cotton values.

If the Government in America could arrange to give such relief to cotton dealers and farmers, why should not similar steps be

taken by the State in India where the cotton trade is by no means inconsiderable? Our annual cotton crop is worth more than sixty crores of rupees, the value of the export of Indian raw cotton alone coming to forty crores. On account of the dislocation of business caused by the war and the lack of shipping, the bulk of this season's cotton crop must remain undisposed of or must be disposed of at ruinously low prices. All those who are concerned in the trade—exporters, middlemen, agents, cultivators, etc.—must consequently suffer, and thus, so far as cotton is concerned, India stands precisely in the same situation as America. It is therefore contended that the Government of India ought immediately to come to the rescue of the cotton trade which is

in the most pitiable condition and adopt measures like those followed in America. As soon as this outcry was raised by cotton dealers, other interests were up in arms strongly protesting against the special favour claimed from Government on behalf of a particular trade and pointing out that there were other dealers who deserved and required similar relief. Cotton merchants and middlemen have indeed made huge profits during the past few years and may be left to shift for themselves, but there are the poor cultivators who will be hit very hard and will not be in a position to weather the storm. The State will have to do something for the ryots—producers not only of cotton, but of oilseeds and other commodities. The jute trade in Bengal also claims careful consideration. The problem is therefore a large one and must be dealt with in a systematic and comprehensive way. The Government of India is making inquiries into the whole question and we hope its action will not give room for heart burnings, jealousies and dissatisfaction to traders and producers, though the latter must remember that the resources of the Government at a time like the present must be very much restricted and the efficacy of its measures limited by the means at its disposal.

The participation of Indian troops in the military operations going forward in the western theatre of the war, side by side with their British and French brethren is truly a land mark in the history of this country and of the British Empire. The bravery of the Indian soldier needed no demonstration—it has been so often proved on the field of battle. Yet an obstinate prejudice against the Indian people owing to their supposed inferiority in matters of race and civilization has long denied to the Indian soldier the justice due to him. No wiser, more statesmanlike and generous measure could have been taken by the Government of Lord Hardinge and by

Cotton Situation in India.

Indian Troops in France.

badly needed. Then again, the employers ought to consider how the conditions of work in the factories may be made more healthy, more congenial and more attractive to the operatives. So much about factory labour.

The problem of farm labourers and workers in other industries is equally important. There is the same inefficiency and dearness and we cannot hope to make any progress in our industries and economic conditions until our methods improve. The whole mass of people requires a shaking and business training without which our slipshod and happy-go-lucky-way of working will not mend. Very valuable light has been thrown upon the economic condition of certain classes of wage earners in Bombay by the inquiries which have been lately made by Mr. Devadhar of the Servants of India Society, the results of which were published in the *Times of India* sometime ago. As we have observed above, the state of things revealed by his figures may not be true of wage-earners in this Presidency and other parts of India or even of other workpeople in Bombay itself. But they bring out one important fact which, we are afraid, is only too common throughout the whole country. It is the heavy indebtedness of the labouring population. Indebtedness has been the bane of our cultivators all over India; it has proved the ruin of our artisans, craftsman and coolies. The co-operative credit movement has been designed to give them relief, but however gratifying its progress, it cannot aspire to eradicate the evil, at any rate for several years to come. The people to whom Mr. Devadar's statistics relate, appear to have been a fortunate lot inasmuch as they are said to be very frugal in their habits and are not given to drinking. "Some of them are literate and the rest do not seem to have any hostile attitude towards education. They are devoted to their work and honest. It is only the financial difficulty under which they continuously labour which stands in the way of their social and

moral amelioration." Whatever causes may have been responsible for their indebtedness, according to Mr. Devadhar's showing, the earnings of these low-class families are decent enough to allow them to live a life of comfort and independence. A co-operative credit society has been started to lift them up from the mire of indebtedness and though it will be conducted on business principles, the work is more or less humanitarian at the present moment. It points to the need of social reform, friendly societies and labour organizations on the lines of the organizations in western countries. In our larger cities and towns, especially in trade centres, workmen, both skilled and unskilled, do obtain good wages now a days. And there are many among them who are frugal and sober and who have laid by something against a rainy day. But several of them are improvident and spend every pie they earn and oftentimes live beyond their means. Education and organization would seem to be the remedies to improve their deplorable economic condition. The co-operative credit movement too will thrive better if education is widely diffused among the mass of the people. In the meantime, their economic condition is bad enough and such ameliorative measures as are feasible must be tried for their uplift.

The report of the Price inquiry committee is out at last—or rather the **Prices Inquiry Report.** Government of India's Resolution thereon. It may be recollected that the inquiry was urged upon the Government in the press, the Imperial Legislative Council and on the congress platform more than six years ago when the pressure of prices on the bulk of the population had become intense. The Government of India then decided to undertake a full investigation of the problem and the task was assigned to Mr. Datta, an experienced officer of the Finance Department, assisted by Mr. Findlay Shirras, now Director of Statistics, then

Professor of Economics in the Dacca College and Mr. L. D. Gupta. Mr. Datta was instructed to tour throughout British India, collect and analyse statistics, ascertain the views of both the official and non-official community and report his conclusions to Government. The resolution makes it clear that Government are in substantial agreement with Mr. Datta with regard to the opinions he has formulated as to the causes and the effects of high prices in India. On the whole, Government seem to be satisfied that high prices have not been unbeneficial to the people at large and that their ultimate origin must be sought in causes which have been operative throughout the civilized world. Mr. Datta has sought to show—and Government endorse the view—that the enormous issues of token coins which preceded the rise in the price level has nothing to do with that phenomenon and that the quantity of annual food production and the exports of food grains, cannot be counted among the factors which have contributed to the rise of prices. The Government Resolution and Mr. Datta's report raise important issues which will have to be carefully discussed in the light of the statistics which have been collected and on the strength of which their conclusions have been based. Other theories have been in the field and we cannot believe that Mr. Datta has been able to demolish them. One does not likewise know how far the optimism reflected in the resolution is justified by the actual state of things and the effects of the regime of high prices on the mass of the people in India.

The Date Sugar Industry. Mr. Hari Das Chatterjee, Pleader, Khandwa, C.P., writes:—

In your issue of the last month, at page 599, you have given a quotation which runs thus:—Sugar,—“There is a large possibility of attaining success, if the date forests in Central India could be tapped.” On this subject, I beg to forward to you a copy of my latest publication

issued last year, and to add that the Malwa tract of Central India, belonging to the Durbars of Indore, Gwalior, and Bhopal, leaving out of sight numerous other States in Central India, and several districts near Nagpur under the administration of the Chief Commissioner, Central Provinces and Berar are replete with strong and healthy date forests almost as numerous as they are in East Bengal. Official enquiry directed under the orders of Government in 1911-12, in pursuance of Resolutions passed by the Board of Agriculture, Pusa, has found that between four and five lakhs of tons of raw date sugar are annually manufactured by the tenant-classes of the prosperous villages of the Districts of Jessore, Khulna, Nadia, etc., in Bengal. While I was widely and extensively touring in those districts in the winter season of 1912-13, I was struck by the sight of thick date forests raised by the tenant classes in their farms. But I notice a large proportion of the village peasants, having neglected their date gardens and left them untapped, were engaged in the easier pursuit of jute cultivation of which the demand, for some years past, has been very high in Calcutta. Considerable quantities of date lands were denuded of the date trees which had been planted by the generations before, and jute was being grown instead. After detailed enquiry I ascertained that an average crop of jute yielded from Rs. 80 to Rs. 100 per acre. and that the date plantations of about 350 to 400 trees over the same area yielded about 8 tons of raw sugar worth from Rs. 350 to Rs. 400, per year! I was told that the rotting jute in the tanks and water courses in the villages begot malaria, and that the people preferred the lighter work of the jute crop to the harder physical exertions upon the date trees and upon their extracted juice, day after day, throughout the winter season. But I wonder, what the tapper populations of East Bengal will now do? For this year, and perhaps for years to come, the large manufacturers outside

the Liberal Ministry than the giving to the fine Indian army an opportunity to show to the enemy the splendid stuff of which Indian loyalty and chivalry are made. The almost wild enthusiasm with which the advent of the magnificent array of Indian troops on the French soil was universally hailed testifies as much to the agreeable surprise as to the feeling of gratitude which this unprecedented event caused in the mind of the British public. The prevalent misconception about the status and character of the Indian races was shattered in a moment and the cobwebs of ignorance, prejudice and apathy were swept away. A chorus of warm-hearted praise went up from the British press which expressed its frank appreciation of the part India is playing at the present crisis. Papers like the *London Times* betrayed an uneasiness of mind that India had not been treated in the past with that justice and fairness which ought to have been shown to her. India is only doing her duty by the Crown and the Empire. Let the Empire do likewise.

The Kaiser hastened the outbreak of hostilities as much because he counted upon the unpreparedness of the Allies as because he expected to find the British Empire divided against itself. His calculations at least in the latter respect have been utterly falsified. To those who knew India intimately there was no doubt about her unflinching loyalty. But the bulk of the people in Great Britain and the colonies have long been in complete ignorance about our people who have been supposed to be on a very low level of intellectual development and civilization. This state of the British mind largely accounts for the apathy which has always been shown in England towards Indian affairs and interests. The prejudice has also been promoted by British Tory publicists and their brethren in India. The war is, however, proving an eye-opener and there is a welcome prospect of the British attitude towards India undergoing a

wholesome change. The educated Indian is a *bele noir* to certain writers, and a few publicists are found even at this juncture having a thrust at him. They will distinguish between the Indian aristocracy and the mass of people on the one side and the "microscopic minority" of the educated classes on the other. The monopoly of oracular wisdom claimed by these people is now doomed and the educated Indian may hope to receive his due. It is gratifying to find that a higher and more generous tone pervades the British press at the present moment and many of those who have seen India and her people are coming forward to testify to the physical, moral and intellectual qualities of the Indian races. The hopes and aspirations of India need no longer be mocked at but deserve a fair, just and sympathetic treatment.

The secret of much of the success of public work in England is the power of organization and capacity for sustained work possessed by the people. In every field, politics, social reform, commerce or industry, the work is done systematically and with a wonderful earnestness of purpose. These qualities are sadly lacking in India and hence the utter failure or slow progress of our movements. We have the highest respect for those of our stalwart leaders who have kept the flag of the National Congress flying through stress and storm and who have not suffered opposition and ridicule to damp their ardour and public spirited sacrifice. But there is a pronounced feeling even among the friends and partisans of the movement that it lacks life and energy. We have a constitution and we pass resolutions every year in streams. Yet there is little practical work done in the districts and taluks, and so soon as the session of the Congress is over, the delegates go to sleep only to be roused from their apathy twelve months later. This is a long-standing complaint and if anything, matters are worse to-day than they ever were. There is no lack of discussion about paper

schemes as to the works to be done by Congress committees throughout the year but the empty talk is rarely translated into act. Other public movements more or less follow the example of the premier body, though it must be said to the credit of a few of them that they have given a good account of themselves. This policy of drift and of living from hand to mouth must be abandoned if the country is to make any real progress. Let the leaders bestir themselves and put new life into the Congress movement.

We have already warned our readers against taking the Swadeshi revival seriously and for adequate reasons. No new industries can be built up in a short time unless the conditions which make for success are present. The new situation created by the war is that, for the time being, our supplies of certain foreign made goods are cut off. But where are the essentials of production which alone can make the rise of new industries possible? Inquiries are being made into the industrial possibilities of the various provinces and the public must await their results. Cannot our capitalists and men of enterprise, people who are already in business, co-operate and approach Government for guidance and assistance, in the meanwhile? For example, those of our people who have paper mills, match and sugar factories and other concerns might lay heads together and improve the present opportunity to push on their industries. But they are not accustomed to co-operation and organization and separate action and individual efforts will always be ineffective. In the absence of initiative on the part of the public, may we not look up to the State to do the needful? This is a subject which pre-eminently lies within the province of the Industrial Conference, but we do not know what is being done by it in this connection. We wish that the Conference would, this year, concentrate its attention upon this single topic and give the go-bye to every

thing else. We have now had enough of learned papers on weighty subjects,—very valuable in themselves—of eloquent speeches and empty resolutions which are not given effect to. Let us be businesslike and realize that an ounce of practical work is worth more than a ton of talk. If the above proposal is to be carried out, an amount of preliminary arrangement will have to be made, the leaders in the various provinces will have to be consulted and some definite line of action will have to be fixed. We hope to have an early pronouncement on this subject from the General Secretary of the Conference and to hear that this year there is going to be a departure from the time-honoured methods of work.

Conditions of labour are more or less similar all over the country though there must be local variations. It is not easy to suggest the ways in which the present state of things with regard to the supply, efficiency and general condition of the wage earning population, may be improved. It may be that the existing shortage of work people is temporary and that things will adjust themselves in time. Still something has to be done to increase the efficiency of what labour is available and in this matter, efforts on the part of employers are called for. For instance, Mr. Wacha points out that there is much avoidable waste going on in Bombay Mills which is due to a lack of discipline. The productive capacity of our factories suffers on account of this waste, and the remedy to cure the evil lies in the hands of the mill owners. There is so much loitering and loafing going on among the operatives and much valuable time is lost before the labourers fall to work. Mr. Wacha says:—"The remedy lies in enforcing wholesome discipline as to attendance and constant attention at machines instead of loitering and loafing outside for a few minutes. It is the mickle that makes the muckle." In other directions too, discipline is

The Industrial Revival.

Remedies for Shortage of Labour.

India will have their shutters closed against the Indian jute consumption. At this opportune moment, the Government of Bengal have issued very peremptory orders for the renewed plantations of date, and for not leaving a single stray date tree untapped for its sugar. The cheap imports of colonial cane sugars will no more be available for India; and the prices of cane *Gur* and sugar in the country are mounting up by leaps and bounds. It is therefore not a matter of prophesy, but of dead certainty, that the Indian *Karkhanas* or the date sugar factories in the Bengal districts will now look up with an air of prosperity.

I have made enough of demonstrations in several parts of the Malwa and the Deccan Provinces so as to leave no room for doubt that a superior and richer crop of date sugar, crude and pure, than what is produced in moist Bengal can be made in those Provinces. As a single worker in the field, at a remote and unknown corner of these wide Provinces, I am certainly not able to establish the industry on national lines in order to render it a necessary adjunct to village agriculture and a cottage industry for those farmers who now own thousands of well-grown and healthy date trees in their holdings without the knowledge—nay, even the idea, of the tapper's skill to derive sugar therefrom. Nothing less than direct State help and co-operation to import the requisite skill from Bengal, and to place it within the easy reach of the slow-going and conservative village populations in these parts will help to make fair and appreciable progress. The cultivating tapper populations in East Bengal have outgrown the actual requirements of the growing date gardens in their districts. Thousands of their number annually sojourn out of their village homes in search of date trees in the neighbouring districts. Most of these people do not own much, either as lands to cultivate or as good residential quarters to live. They would be happier and better

men to have lands on concession terms to cultivate, and date trees to grow and tap; and it is well known to those who might have seen these provinces that there are abundant waste lands lying idle, and millions of good date trees growing untapped. Reduced to the plough these waste lands are bound to yield revenue; and reduced to utility, the millions of idle and useless date trees will yield a return which is now filling the coffers of the Bengal landholders who, and whose forefathers, have planted and reared date gardens in the agricultural holdings comprised in their villages. I have spared no efforts on my part to convince the authorities, Indian and British, ruling over these provinces, that active measures must be concerted by them, for extensive importations and settlements of tapper populations from Bengal. And on the other hand, I have approached some of the leading Zemindars of Bengal for help in the scheme of importation of their spare population to make them happier than they are now. I have had favourable assurances from the latter. But I have heard from some of the Durbars of Central India, and from the Director of Industries in the Central Provinces, that, perhaps, the local date trees in these parts might not yield sugar as they do in Bengal. This is a strange verdict founded on surmise and in defiance of proofs and demonstrations made by me for the Durbars and before the eyes of the Agriculture experts in Nagpur. In the Report on Date Sugar Industry in Bengal published last year from Pusa, samples of my crude date sugar, examined and analysed side by side with the same Bengal produce, have been adjudged to be of superior merit. What a strange contrast is this,—between the vigorous movements on the part of the Bengal Government to augment the output of the indigenous date sugar of the Province, and the apathy on the part of the authorities in these Provinces in the same direction, and in respect of the same available natural resources!

Articles.

THE INDUSTRIAL DEVELOPMENT OF GERMANY.

By N. M. MUZUMDAR, *Bar.-at-Law*.

The close of the nineteenth century witnessed Germany not only in the position of a first class political power, but in the rank also of a first class industrial power. Behind her political growth there had been a corresponding industrial and commercial development. She was an economic unit long before she was a political entity. For, the economic unification of the various German States was of as great an importance as the political creation of the Empire. Every step in her political growth followed a step in her economic development. And when once she had achieved her political unity, she set about raising herself further in the economic scale.

The main factors directing her national policies are the needs of her population. Germany increases at the rate of over 800,000 persons a year. In 1871 her population was 41 millions. It is about 68 millions to day. This rapidly increasing population can be supported within Germany only by an expansion of industry and commerce. Outside Germany, it could be supported by emigration to colonies or to foreign countries. There are, however, only 20,000 Germans in German colonies, and most of the outflow goes to foreign countries. The strength of the German Empire depends on the strength of its army; and an overflow from Germany to foreign countries tends to diminish the strength of an army recruited under compulsory service. The rate of increase of population, the overflow to foreign countries, and the expansion of industry and commerce, have, therefore, gradually evolved the growth of a German world policy.

The basis of the industrial development of Germany was laid by Prussia during all the

years that she was working for German unity between 1806 and 1870. She first of all abolished serfdom within her own territories by the emancipatory Edict of 1807, and created a proprietary peasantry. The other German States followed suit and abolished serfdom between 1808 and 1850. Land was redivided, and agriculture improved with the freedom of the serf, and the improved methods of cultivation. Prussia then took the lead in industrial freedom by abolishing the exclusiveness of the guilds. And in this again the other German States followed. The next step was the abolition of tariff barriers in which again Prussia led. She abolished first the 57 local tariffs within her own territories, thus securing her home market for her own industries, and preparing the necessary ground for large-scale production. In this reform again the other German States followed. Between 1819 and 1834 three large free trade areas were formed, which were eventually absorbed by Prussia into one large customs union, the *Zollverein*. Thus the economic unity of Germany was achieved to a considerable extent as early as 1834, and the results were the growth of Germany industry, and an increase in general prosperity. The *Zollverein* grew, made a tariff treaty with Austria, without including her in the Union; and by 1862 was strong enough to enter into a commercial treaty with France. On the formation of the Empire, the control of German industry and commerce went to the Imperial Government, which furthered it by a series of Imperial laws.

From 1871 to the present day, German industry and commerce have grown at an ever increasing rate. As Prussia led Germany

before the war, so Germany has been leading on the Continent after the war, leaving France behind in the second place. In 1872 the trade of Germany was for £280,000,000. In 1913 it was for over £1,000,000,000.

Many causes have combined to bring about this rapid advance of Germany to an industrial power. Foremost among them is of course her possession of valuable stores of mineral wealth. She has, first of all, the largest known reserves of coal in Europe, and coal means power in the modern world. It is estimated that, at the rate of her present output (160 million metric tons a year, she has coal for 1,300 years. Side by side with coal, she has iron. And coal and iron are the basis of all modern industrial development. The production of iron has been extraordinarily rapid. In the eighties, Germany produced from 3 to 4½ million tons a year. In 1911 she produced 15½ million tons, Great Britain producing 10½ and America 23½ million tons. The industrial growth of Germany has not come in the way of her agricultural development. Roughly speaking one half of her surface is arable, and by various enactments she has safeguarded the interests of the agrarians. And Germany is also very rich in forests.

These resources have been methodically developed by a definite economic policy of protection on the one hand, and of organization and encouragement of industries on the other. Agriculture and industries were protected by tariffs. Railways and canals were nationalised and developed as a part of the protectionist policy. Education, secondary, technical and commercial, was highly developed, and acted as a powerful influence in industrial growth and in the scientific organisation of industry and commerce. State protection was given to the worker by elaborate legislation and by the system of State insurance against sickness, invalidity, accidents and old age. Shipping was also encouraged, and colonies founded.

The protectionist policy of the German Empire began in 1878. In 1879 the tariff was revised and raised. In the eighties, there were successive increases of duties on agricultural products, because of the influx of American corn. In 1903 again, the duties were raised all-round, especially on agricultural goods.

Transport facilities were developed, and Germany was unified by railways. The railways were nationalised and systematically developed with the object of promoting the unity of the Empire, preventing the hindrance of traffic, promoting German industry by low railway rates, and preventing local discrimination. Prussia at first bought up the railways in her own territories. And to prevent her from buying up their railways, the other States bought up their lines in their own territories. A uniformity of system has been largely attained. The principle of "special rates" has been extended to assist agriculture and industry, by granting cheap rates to raw materials. Special rates have likewise been extended for assisting the home market in case of German goods, and for assisting the German ports and German exporters by low charges to the sea-board. The Imperial Government has the right to exercise supervision over the railways of all the States for purposes of defence and general traffic facilities. The State direction of railways has made it possible to apply differential rates to special localities and special industries the conditions of which made preference desirable. The net yield of German railways in spite of special rates amounted in 1911 to £36,000,000; and allowing a deduction of 3½ per cent. interest on capital outlay, there was a clean profit of £16,000,000 for public purposes.

The development of the waterways and canals have contributed to an equal extent to Germany's economic efficiency and growth. It went on side by side with the development of the railways. Germany has been increasing the number of canals and improving the old waterways at enormous expenditure. At the

same time the old canals have been entirely rebuilt for large steamer traffic. The result attained has been cheap water transport for heavy traffic, which is particularly important in a country with a small coast line. Goods can now be sent from the mouth of the Rhine direct by water to Switzerland or France in one direction, and to Bavaria and Austria in the other. The canal system has also been of immense importance in the development of inland towns, and river and sea-ports.

The growth of German shipping has been as remarkable as that of other German industries. It was only in 1881 that the Imperial Government decided to encourage it and in 1885 the first postal subsidy was granted. To-day, the German mercantile marine stands second in the world, and German ship-building yards are unable to carry out all the orders they receive. No other subsidies except postal have been granted. But the construction of ships has been assisted to some extent by the giving of low railway and canal freights for the transport of German goods for ship-building. In thus encouraging the building up of a mercantile marine, the Imperial Government did not perhaps lose sight of the creation by this means of a naval reserve, of armed merchantmen in time of war, and of a means of favouring home industries.

One great characteristic that has helped Germany in industrial and commercial growth is the faculty for organisation and co-operation instilled in the German mind by the system of compulsory military service. One of the most striking features of German industries is the enormous growth of large highly organised undertakings. These are particularly strong in the coal, iron, steel, and electrical and chemical industries, as also in huge retail stores, and serve to eliminate competition and afford greater economy in working. The same growth is seen in financial and commercial enterprises. The "cartels" and "syndicates," which are features of German commercial life, are under-

takings of the same sort which have joined together, to eliminate and limit competition and waste, and by co-operation, to secure advantages that none of them could individually reach. Some of these cartels and syndicates have powerfully stimulated foreign trade. Side by side with the growth of industries, there has also been an extraordinary development of the production and distribution of cheap electric power. One company alone supplies a considerable part of Germany with power that could be practically switched off and on from its office in Berlin.

With the development of the organisation of capital and industries, went the development of organised labour. Gigantic trade unions sprang up, unions which discouraged independent local organisations, as is the mode in England, but united the workers in a small number of large and powerful federations. In spite of Governmental and local action in education, the German unions have taken upon themselves the task of creating, both by money and voluntary service, an educated and public-spirited working class, under the firm belief that knowledge alone would give it permanent strength. The labour organisations of large towns in fact maintain working men's colleges which hold evening classes, and organise courses of instruction on various scientific, economic and even historical and philosophical subjects. They also establish free libraries and reading-rooms and reading circles, all with the object of making labour more efficient and more self-reliant, and adding to its intelligence and dignity. Some of these big trade unions have even stimulated investigations in wages, hours and the conditions of labour in various industries. The Metal Workers' Federation, for instance, recently published a most elaborate history and description of the iron industry, bearing particularly on the labour employed in it. The Unions control more than a hundred newspapers, and have trade journals of their own. They also have their own public information

and advice agencies. There are nearly a thousand such free agencies for instructing the ordinary labourer on the duties of citizenship, thus removing his ignorance and getting him to understand his rights and obligations.

The Government too has been no less anxious about the *welfare of the worker*. It inaugurated a system of State insurance as early as in 1883, which has gradually been developed and extended. Insurance is compulsory for practically all persons who earn less than £100 a year. There is sickness insurance, for which the workman pays $\frac{2}{3}$ of the subscription and his employer $\frac{1}{3}$. The benefits are free medical attendance, and a maximum of 26 weeks allowance of half the wages. The workers themselves have a share in the management of the insurance organisation. Then there is compulsory insurance against accidents, for which the employer pays the insurance subscription, and invalidity and old age insurance for which workman and employer pay in equal shares, the state adding £2½ every year to each pension.

The material progress of Germany has to a large extent been influenced by its system of *education*, which has aimed at drawing out the character and qualities of the German man and woman essential for the development of national wealth. One of the features of the German system of education is the increasing prominence given to "modern" subjects in preference to the "classic." Primary education is free and compulsory. Primary schools are local. The secondary schools are under Provincial Boards. And the Universities are national and directly under the Minister of Education. In the secondary schools, considerable attention is paid to the teaching of national and modern history down to the latest date, including the general, social and economic development of the country, the object aimed at being to stimulate greater practical ability and impart less abstract knowledge. All the branches of education are moreover

co-ordinated. Primary education is not completed till the scholar has a course at one of the "continuation" schools teaching the practical work of life in various departments, industrial, agricultural, and commercial. Employers are bound to allow their workmen under 18 to attend continuation schools, and their women and girl workers to attend hand-work and domestic economy schools. German industrial development has also been greatly stimulated by the methods of technical education which have been scientifically organised. Industries have been fostered by applying to them highly developed technical skill and scientific knowledge. The State has provided a great many large laboratories at enormous cost for investigation and research. Commercial education has also been largely stimulated. In fact, the systematic organisation and co-ordination of secondary, technical and commercial schools has powerfully influenced the whole growth of German industry and commerce. All such education is moreover remarkably cheap.

The causes of the industrial development of Germany are, therefore, various and many. Foremost among them might be placed the German character of thoroughness, organisation and adaptability. These are perhaps instilled in the German mind by the military service that every German undergoes. Such training has at any rate tended to develop to an enormous degree his faculty for organisation and co-operation. The industrial and commercial classes of every kind of undertaking have adopted and extended the principle of association to foster industry and foreign trade. Small people who could not incur great expense have joined together for common ends. The "export unions" are, for instance, a feature of German trade. The organisation of cartels and syndicates, of the financial and banking system, of big labour unions that strive to raise themselves, the efficiency of labour, of the educational system that trains and equips an industrial population, and unites

science with practice; the protection accorded to industry and agriculture by tariffs; the assistance accorded to industry and commerce by the State, chiefly by the nationalised and developed means of transport, the railways and the canals;—all these have joined together in the making of German industry and commerce. And more than that. The German manufacturer has spared no efforts to meet in all respects the means, the tastes, and the convenience of his customers in all parts of the world. In a word, the industrial and commercial growth of Germany is very largely due to the highly developed methods of education, production and distribution.

If the organisation and development of

German industry and commerce merits any credit, credit is to be given where credit is due, even to an enemy. If we can learn some lessons from it, let us welcome them. And if we at all want to have a share in "capturing German trade," or at any rate want to build up our own, it is just as well, and more profitable too, to examine first the *foundations* on which German growth is based, the one and many lines on which it has grown, analyse the ways in which it has been fostered, the means by which it has been developed; prepare our ground, lay down our lines, organise our means of production, and thus develop the resources which Nature has bestowed in such plenty upon us.

SHAWL WEAVING IN INDIA.

By N. SUBRAMANIAM, B.A., Superintendent, Peripatetic Weaving Party, Madras.

Before proceeding to discuss the possibilities of establishing in India, an industry in shawl weaving, we must consider two important points. The first is whether there is a sufficient demand for shawls in India to make the industry profitable and the second is whether, assuming that there is sufficient demand, facilities exist for getting in the country the raw materials necessary for the manufacture; in other words, whether wool yarn suitable for shawls is available and if not, whether satisfactory arrangements can be made to make it in the future.

As regards the first point, it must be remembered that India is a hot country and that the necessity for warm clothing exists only in the hill stations and in the plains during cold weather. Cashmere which has long enjoyed a reputation for its shawls is a mountainous tract and as necessity creates industries, this place has been the seat of the shawl industry from time immemorial. Cashmere shawls it is well known, are very costly and can be thought of only by the aristocracy. What then do others

do to protect themselves from cold is the question. The lower classes of people have been satisfied with coarse *kumbli*s, the middle classes were using till very recently quilted cotton and *dupalies*, the former in Upper India and the latter in the south and it was considered that, in addition to these articles being cheaper they were better protectors from cold than woollen apparel. We find, however, that of late the quantity of imported woollen goods has considerably increased, shawls forming no small proportion of the imports. Evidently the increasing imports are due to a change in the fashion of the people, for which, I think, the large influx of imported German shawls is mainly responsible. Anyhow, there exists at present, a large demand for shawls.

Coming to the second question, the wool used for the Cashmere shawls and called *pashmina*, is a fine downy undercovering of the Cashmere goat which flourishes only in select areas. That it is difficult to get *pashmina* in large quantities for the manufacture of shawls

on a commercial scale there is no doubt, and the sheep's wool that can be had all over the country is fit for nothing but *kumbli*s. So then, the raw material necessary for shawl weaving is at present not available in the country. And the prospects of getting it in the future are not hopeful. Some years ago, an attempt was made in the south of India to improve the local breed by importing merino rams from Australia and some bales of wool were actually exported to England which were pronounced to be very good for textile purposes, but the experimental sheep farm which had been placed under the charge of a European Commissariat Officer had to be closed as it was found that it did not pay its own expenses. The conditions that exist at present are in no way better and the prospects of getting good results with a repetition of the experiment are at best problematic.

It is clear therefore that, to carry on the industry of shawl manufacture, we should look to other countries for the raw material, but this fact need not discourage any one. We have before us the example of Britain and other great manufacturing countries of the world depending on countries other than their own for the supply of raw materials.

The question of raw material being thus disposed of, we shall proceed to consider if India possesses any special advantages to enable her to compete successfully with other countries in the matter of the manufacture of shawls. Labour is the only determining factor of importance and there is no doubt that labour is generally cheap in India, though unfortunately inefficient. The experiments that were conducted at the Government weaving factory at Salem (now extinct) in the years 1908 to 1910 with the manufacture of shawls with imported yarn showed beyond cavil that, in this particular industry, however, sufficiently cheap and efficient labour could be had in the country which would produce an article that can successfully

compete with the imported German shawl. The material used for the experiment was obtained through one of the important European firms in Madras in the form of cops and spools. The quality of the woven shawl was pronounced excellent by several firms engaged in the trade and the working expenses connected with the manufacture were in fact so small that the business promised to yield a very good profit on the capital invested. Such were the results of the experiments carried on in Salem, but similar experiments made in Madras in the years 1911 and 1912 were not followed with the same satisfactory results. Even so, it would appear that the finished product was well able to compete with the imported German shawl. The difference in the results was mainly due to the fact that labour in Madras was dearer than in Salem. Indian labourers though constitutionally very negligent and immobile, can be trusted to turn out good work under proper supervision, and experience has amply proved that it would pay in the long run to have efficient though costly supervision. One important item that should always be borne in mind in determining the place of manufacture is the cheapness of labour available in the place. With proper supervision, labour can be made more efficient than it would otherwise be.

Year by year, the cost of living becomes greater and labour consequently gets dearer. There can be no doubt that if an attempt were made now to produce shawls in Salem similar to those made in 1908-10, the working expenses would be greater than before, but it must be remembered that this circumstance is common all over the world and affects no one industry in particular.

The manufacture of woollen goods has some special advantages over the manufacture of cotton goods which make the Indian weaver's work considerably easy. These advantages relate to the process of "sizing" which the wool yarn does not require but which is indispensable to the cotton yarn and gives no small

trouble to the Indian weaver. If the yarn is got out in cops and spools, the farmer for warp and the latter for weft, all that requires to be done is to prepare warps to be put on the loom. It has often been pointed out that the preliminary processes that the yarn should undergo before it is fit for weaving are even more important than weaving itself, as the facility for weaving and the quality of the woven fabric largely depend on the satisfactory treatment the yarn receives, and when these preliminary processes, which, in India, would take considerable time, have been previously finished elsewhere, one can very well understand how easily the Indian weaver with his inherited skill and few wants can produce a cheap and good article. In speaking of the experiments referred to above, mention must be made of the fact that the fly shuttle was used to weave the shawls. An ordinary weaver earning between 4 to 6 annas was easily able to produce in a day of 8 hours between $3\frac{1}{2}$ to 5 yards, while a clever weaver could make nearly three shawls.

Labour conditions being favourable to the manufacture of shawls in the country, the next question to be considered is the source of supply of the raw material. One would naturally think of the United Kingdom in this connection where woollen manufacture is the oldest branch of the Textile Industry and where the industry is spoken of, as having "long been the glory of England and the envy of other nations." Native English wools are long stapled

and are best adapted for the worsted industry for which England has long been noted. The home clip of wool is estimated at 130,000,000 lbs., annually; of which 30,000,000 lbs. are exported. Even to-day wool forms the principal agricultural export of the United Kingdom. English wool will be quite good for shawls and it may, therefore, be got out for the purpose.

Australia is another place from where wool of excellent quality can be had. In fact, it is the greatest wool-producing region in the world and furnishes half the world's consumption. South Africa is another place. Australia and South Africa are the two principal countries that supply wool to the United Kingdom and it is estimated that the two together supply annually, not less than 500,000,000 lbs. We have already pointed out that the mere supply of wool, as distinguished from woollen yarn, is no use for shawl manufacture in India and it would, therefore, be necessary to import woollen yarn, and if this can be done, the shawl industry may be started on a firm basis and carried on successfully.

In speaking of wool and woollen yarn, I think it would be desirable to explain what worsted means. The word "worsted" is derived from a village of that name in Norwich which is the leading centre of woollen manufactures. All long stapled wools are combed and then spun into what is called *worsted* yarn. Short stapled wools on the other hand are carded and are called woollen yarn, in a restricted sense.

CHRISTIANITY AND ECONOMIC SCIENCE, A REVIEW.*

In a volume bearing this name, Dr. Cunningham has given the substance of a course of five lectures he delivered last year at the London School of Economics on the "Influence of religious conceptions upon the Historical Development of Economic Doctrines and Theories." The author is well known to

students for his important work on the Growth of English Industry and Commerce and he has been giving to the public, from time to time his thoughts on economic and cognate subjects. Thus, his "Case against Free Trade" published three years ago is a strong and interesting plea for the adoption of a national and protective

*By Dr. W. Cunningham : John Murray. Price 2s. 6d.

policy in the matter of British trade. One might have expected from the title of the book under review that it would show the relations between Christianity and economics by explaining how the science has been affected by religious ideas. But the author tells us in the preface that for the present he has "endeavoured to concentrate attention on the History of Thought," and he hopes 'to supplement the discussion at another time by dealing with the part played by christianity in helping to form the modern conception of Social Duty."

To those who have read Dr. Cunningham's or any other author's work on the development of English industries and commerce, there will be little that is new in the book under review. The author traces from the early times the different stages through which England has passed with regard to economic institutions and conceptions but the special point of the book is that he traces the effect upon these of Christian ideals and notions. We have thus the monastery as a unit of industrial organization dominating the Middle Ages as also the idea of Christian communion. For some time the English towns are the economic units giving place later on to more extended markets and wider organization of industry and commerce. The Reformation acted very strongly on men's economic ideas and gradually we trace the development of industrial organization into the modern factory system. Though the field chosen by Dr. Cunningham is very restricted, his treatment of the subject is peculiarly interesting and suggestive. Thus he points out the sharp contrast between the outlook of man on this world in the past and at the present, and he says that "the contrast between the mediæval and the modern, on the intellectual side, may be summed up by saying that mediæval thought was religious while modern thought is scientific". The sixth chapter of the book entitled "the Limitation of Economic Science" is particularly stimulating as he therein indicates the trend of the latest

economic thought and strongly criticises certain economic writers who set themselves up as the prophets and guides of the future. He observes in this connection :— "Economic science is at its best in analysing the phenomena of the past, but it cannot give a sufficiently authoritative forecast of the future to supply definite guidance in the perplexities of practical life," and illustrates this dogmatism by showing how Prof. A. C. Pigou, for instance, in his "Wealth and welfare" travels into realms "where accurate observation is difficult, and verification impossible." Dr. Cunningham feels that science can never supply the inspiration that is needed to create the vision of our ideal, though it can suggest the best means for trying to realise it at any place or time. According to him, 'the habit of mind which is characteristic of religion is needed as a corrective to the limitations of the scientific standpoint, and in order to enable us to keep the thought of humanity as a whole in the forefront.' A paper read by Dr. Cunningham on "the Economic Basis of Universal Peace—Cosmopolitan or International" at the meeting of the economic section of the British Association, Dundee in 1912, is printed as an appendix and makes very interesting reading at the present moment, when Germany's brutal violation of the world's peace and Prussian ideas of militarism and selfish aggrandisement have given a rude shock to the latter day dreams of economic cosmopolitanism. Having stated the problem of nationalism *versus* universalism, Dr. Cunningham goes on to observe :—"I agree with those who think that nationalism and internationalism are winning all along the line and that the one country, which has consciously accepted the *role* of being a part of a cosmopolitan economic organism and professes to discard a national system altogether, is not holding her own—at least is not holding her own so obviously as to induce others to follow her example. Economic cosmopolitanism is not such a proved success that it is wise for those who are interested in advocating universal Peace to take it as the basis of their claim. On its material side the argument which assumes the progress of cosmopolitanism is doubtful."

Notable Speeches and Writings.

War and Indian Industries.

There is a very strong feeling prevalent throughout the length and breadth of India that this is the most favourable opportunity to capture the German and Austro-Hungarian trade and to improve the Industrial resources of India. "The economic aspect of the war has the greatest interest for the Indian peoples" says the *Hablul Matin*. In modern times, every country is dependent upon others for some of the necessities of life. A war with its natural effect upon trade, will lead to misery all over the world. It is, therefore, a matter of political importance to a State to be self-contained and able to supply its own necessities. 'The present opportunities may be availed of to vigorously push them on,' cries out the *Hilavada*.

"India is a country of limitless natural resources and with her abundant raw materials and industrious population, there can be no justification for her remaining at a stand still in the matter of her industries," writes a distinguished citizen of the Madras Presidency in the columns of the *Hindu*.

The *Statist* goes on to say: "At the present moment there is one particular work which, we hope, will be undertaken by British capitalists and by the Administration of India. It is the endeavour to secure for India a considerable part of the trade which Germany is about to lose."

"Now or Never" is the apt heading of a leaderette in the *Bengalee* where it is observed that "India may now be mainly an agricultural country. But it has to be made a manufacturing country as well if her economic condition is to be improved. And if a fair beginning is not made now, it will never be made. An opportunity like the present rarely occurs in the life-time of a nation."

There are however some like Mr. Tressler, the Director of Industries, Madras, who think that the war will end soon and the revival and resuscitation of the Indian industries at the present moment will not be of much material benefit.

To this criticism the *Hindu* answers: "There is much less reason for Mr. Tressler assuming that the end of the war will come in six months than for others expecting that even if the war does so end, the revival of industries, with sufficient resources of production, would take five years more in the countries where millions of men and money are fast disappearing; and as Mr. Tressler hopes that given five years' time, India might stand a chance, there is no reason why the larger industrial issues now raised should be brushed aside and not gone into more fully."

DIFFICULTIES AND SUGGESTED REMEDIES.

"That there are difficulties in the way we fully admit; but they have to be faced and overcome," avers a contemporary. We hear that there do not exist the same facilities for immediate industrial activity in India as in the European countries. But if facilities are not provided at a time like this when we are compelled to fall back on ourselves to satisfy our wants, then we can very well doubt whether these facilities will ever be there, declares the *Bengalee*.

"Indians lack enterprise. They fight shy of investing their capital in new ventures. The Government should therefore come to the rescue. The want of good technical experts in India is another impediment in the way. Practical knowledge and experience in conducting and managing large firms and businesses is also absolutely essential. A correspondent to the *New India* suggests that 'an understanding should be arrived at with the

manufacturers of the machines required for a particular industry that along with the plant they are to send an experienced man to manage the concern and to train local men."

Germany won her trade "fairly by science, intelligence, hard work, and adaptability. Only by these qualities can we recover and keep it," is the timely advice which the *Times* gives when reviewing the way in which the economic evolution of Germany has been quickened.

If lack of training and technique be true of England, how much more true is it of India. To set up industries without preliminary training of the persons to be employed in them will be to court failure. This is what the Editor of *New India* has to say on the question. "India may capture trade that is going a-begging; she cannot keep it, unless she has educated work people and good organisers of labour." "There is no royal road to success—in trade, least of all."

WANT OF CAPITAL.

Want of capital is the potent factor to be reckoned with. The unanimous cry is that Government should help.

"In the present crisis, there is a dearth of capital and a private individual will find it next to impossible to raise a sufficiently large amount in order to carry out his project of rehabilitating some of our industries. In the case of a Government like ours the money difficulty is not an insuperable one. With the splendid credit and resource they possess, it is not difficult for them to find 40 or 50 lakhs of rupees for aiding suitable industries by a liberal policy of subventions."

Thus writes the *Hablul Matin* again:—"India can furnish all kinds of raw material. The only things wanting are capital and proper supervision. These requisites can be furnished by England. It will be of immense advantage to the British merchants, if they would furnish the capital necessary to start

industries in India to drive out German goods from the markets of the Empire. An investment in a country under British rule is as safe as made in England. Moreover, it will strengthen the hold of England upon the country. The British power over so many millions of people depends upon their willing allegiance. If England starts industries in India, she is certain of the loyalty of the millions of Indians serving as labourers in such enterprises."

"Care must be taken" says another contemporary "to bring in men of first rate ability who will be able to impart thorough and up-to-date knowledge of a practical kind to young men of India. There is, of course, the cost and the cost must be borne by joint-stock companies, if they were to be a success."

The need for joint-stock companies, skill and integrity is emphasized by the *South Indian Mail* in the following words:—

Joint Stock Companies seem therefore to be essential if production is to be on a large scale. The failure of companies on a joint-stock basis in India would clearly point out certain difficulties to be overcome. A few inspired individuals would be able to gather a huge capital, but we require business ability at the bottom of all our enthusiasm, in order to run the concern for a period of time.

The *Bengalee* pleads for Government help voiced throughout. "Government should start a number of industries at a cost of say 5 to 6 lakhs of rupees each, and start them with their own men and under their superintendence, employing a considerable number of our people who would thus be trained. Let the industries be selected according to expert advice and with a view to a reasonable profit. After these industries have been worked in a satisfactory manner and with a moderate dividend, the shares may be sold and the Government may retire from the field altogether. A sum of twenty to thirty lakhs of rupees would suffice for the purpose. The sum is not by any means considerable for a great Government, and the

scheme if successful, of which there seems to be little doubt, would mean the industrial salvation of this great Province."

Says a contemporary: "The present war and the demonstration of genuine loyalty by the Indians have brought England and India closer together and Englishmen might be expected to do everything in their power to promote Indian Industries by sending to us experts of approved ability to act as pioneers of Indian industry."

The future seems to be full of promise. The rulers and the ruled are actuated by the same motive and work in harmonious co-operation for the attainment of the same industrial ideal in view. In this connexion, it is appropriate to quote the following communiques issued by the several local governments.

WHAT THE GOVERNMENT IS DOING.

COMMERCIAL INTELLIGENCE DEPARTMENT.

The Commercial Intelligence Department has proposed to afford assistance to Indian manufacturers towards production of articles which had hitherto been imported from Germany and Austria. The department is making arrangements to issue leaflets on different industries explaining the statistics of import, export and local production if any and giving a sketch of what has been done in India hitherto. These will be supplemented by exhibitions to be held in Bombay, Madras and Calcutta showing samples of goods imported and those manufactured in India. Samples are already being selected of glassware, enamelled iron and hardware, cutlery, textiles, pencils, matches, toys. There will be brief memoranda dealing with these and possibly with other subjects such as oils, soap, chemicals, etc.

Mr. A. H. Ley, I. C. S., the Director-General of Commercial Intelligence, who was in Simla to confer with the Department of Commerce and Industry, left on the 7th October for Bombay in order to investigate

locally any openings for the expansion of Indian trade afforded by the cessation of imports from Germany and Austria-Hungary and by the interruption of the export trade of those countries with other markets. He met the members of the Indian Merchants Chamber. The Hon'ble Sir Currimbhoy Ibrahim, the Chairman, and several members brought to the notice of Mr. Ley the following industries, among others, which could will be started in this country, consequent on the cessation of trade with Germany:—(1) Aniline and Alizarine Dyes, (2) Glass, (3) Matches, (4) Chemical Industries like Sulphuric Acid and Alcohol manufacture, (5) Oil, (6) Wheatflour, (7) Sugar, (8) Paper, (9) Starch, etc. It was suggested that the Government should actively encourage the movement of new industries by help in the nature of protection in such a manner as would not clash with the free trade policy, which, it was pointed out, did not prevent a fostering of infant industries. It was also pointed out that in the case of some industries like the Ahmedabad match manufacturing industry, for instance, Railway freights were unfavourable to them as compared with foreign imported matches. Sir Currimbhoy also pressed for the appointment by Government of experts to conduct scientific investigations into the possibilities of different industries, as such necessary spade work could not be done by the public themselves and that it would not pay small industries to engage experts. He also rightly asked that the Government should explain clearly their attitude with regard to new industries which would suffer heavily if they were left to face as before the competition of German and Austrian industries. He said that unless some tangible proposal of help or guarantee against loss were coming forward, people would shrink from investing their capital in new industries. Mr. Ley after an informal discussion of the various questions raised promised to place the suggestions of the Committee before the Government for consideration.

GOVERNMENT OF THE UNITED PROVINCES.

The United Provinces Government have decided that what must be aimed at is the development of the existing industries rather than the starting of new ones. A Committee has been appointed to consult with the Chambers of Commerce and the local committees which have taken up the matter in some of the cities and districts suffering most severely from suspensions of trade.

MADRAS GOVERNMENT.

A G.O. recently issued says:—The attention of Government has been drawn to leading articles in the *Hindu* newspaper of the 25th August and 11th September advocating the prosecution of enquiries into the possibility of creating in this Presidency industries to produce those articles of which the importation has been interrupted by the war in Europe. The Government have long recognized the importance of promoting, as far as possible, the industrial development of the country and there is reason to hope that the stoppage of the importation of goods made in Germany and Austria will enable competing industries already established in India to develop their operations and to secure a firmer hold on the market. Whether it will be possible to establish entirely new industries not at present in existence in this country is more doubtful. The creation of a new industry, such as the manufacture of coal-tar dyes or glassware, involves the employment of experts, the building of factories, the erection of machinery and the provision of capital, and in the general dislocation of the financial and industrial world caused by the war, and in the scarcity of mercantile shipping, it is to be feared that there will be considerable difficulty in procuring either the capital, the machinery or the men necessary. The attention of the Director of Industries has, however, already been drawn to the subject, and he should supply all available information and any advice in his power to any private

capitalists or manufacturers who desire to take advantage of the present interruption of imports in order to start fresh industries in India. The matter will also be brought to the notice of the Chamber of Commerce, Madras, and of the South Indian Chamber of Commerce, so that those bodies may draw the attention of their members to the subject. The Government are precluded by the orders of the Secretary of State from themselves embarking on commercial undertakings, and the actual prosecution of projects of industrial development must therefore be left to private enterprise, but the Government will be willing to give, through their officers, all possible assistance by way of advice and information.

THE BENGAL GOVERNMENT.

Mr. J. A. L. Swan has been placed by the Government temporarily on special duty, to enquire into, and report on the possibilities of the development of indigenous industries in Bengal, in the circumstances caused by the outbreak of hostilities in Europe. His duties will include the examination of such industries as previous industrial surveys in 1890 and in 1898 have shown to be capable of expansion; and the ascertainment from those who favour advance at the present time of the precise lines on which advance is possible. It is also intended that he should put himself in communication, on the one hand, with those who are likely to invest capital in industrial enterprise, and, on the other hand, with those who have the initiative and experience for utilizing such capital. Attention is also specially directed towards relieving the situation which has risen by the non-export of the large quantities of raw jute produced in Bengal. The Bengal Government have already decided to investigate the possibilities of the manufacture of date palm sugar in the province.

THE PUNJAB GOVERNMENT.

In reply to a question in the Legislative Council as to Government encouraging in-

dustrial and manufacturing enterprises, Mr. Mant said that the Government is always ready to give careful consideration to proposals for fostering industrial and manufacturing enterprise in the Punjab, and has already done much in this direction. The Sugar Engineer Expert to the Government of India has been consulted as to the possibility of erecting central sugar manufactories in the Punjab, and, as a result of his report, experiments with Punjab cane are being undertaken at Nawabgang in the United Provinces. In order to encourage sericulture, a grant is made by Government towards the salary of the Salvation Army Sericultural Expert: and arrangements have been made for the supply of imported silk worm eggs through the Director of Agriculture and Industries. Negotiations are in progress for grants or leases of land on the Lower Bari Doab Canal and elsewhere (1) for tobacco cultivation; (2) for the cultivation and treatment of cotton of standard types, and (3) for the establishment of a dairy farm. A school of weaving has been opened in Lahore, under the supervision of a Technical Expert, and inducements have been offered to weavers to attend the Salvation Army's School at Ludhiana. In order to improve the standard of wool, the experiment is being tried of introducing merino rams and ewes into Kulu. Expert advisers on many of these subjects are already provided in the Department of Agriculture and Industries. These examples will, I hope, prove to the Hon. Member that Government is encouraging such nascent industries as have a fair prospect of establishing themselves in competition with imported manufactures but any pecuniary assistance that can be given from public revenues must be limited to the initial stages of a new industry. The Lieutenant-Governor holds that it would do more harm than good to subsidize any venture which has not a good prospect of establishing itself on a commercial basis and dispensing with Government assistance."

WHAT THE GOVERNMENT OUGHT TO DO.

Sir Valentine Chirol in his work on "Indian Unrest" says:—

"We are bound as trustees of the people of India to promote Indian trade and industry by all means in our power, and we are equally bound to help to open up new fields of activity for the young Indians whom our educational system has diverted from the old paths, and who no longer find for their rapidly increasing numbers any sufficient outlet in the public services and liberal professions which originally absorbed them."

A deal of criticism has been made in this strain by several writers that the Government have not taken the proper measures, nor rendered all possible help to promote the industries of this undeveloped country.

"The examples of Germany and Japan together with the present critical situation should now convince the Government of India that they, too, must come to the rescue of the industries and save the country from being ruined by foreign competition. They must now realise that where private enterprise is unable by itself to develop an industry it is the duty of the State to create such a condition of things as will set private enterprise in motion and ensure its success."

Criticizing the Government order on the Madras Industries, Mr. G. A. Chambers of Madras really voices the opinion of many others when he says:—

"I would like to ask, what solid advance in the establishment of new Indian industries can in reason be expected if the assistance of Government is to be limited to the giving of 'information and advice?' Is it by such means only that industries have been established in other countries? State protection is too much to hope for or expect, but State aid could be given in many ways—by Government Orders for State requirements; by bounties on

production; by guaranteeing interest on capital for a limited number of years; by loans at low interest; by exemption from taxation for a period; by gifts of sites: by purchase of shares. In these and other ways Government could by so associating themselves with private enterprise do a great deal to promote and encourage industrial development, and if help of some such practical nature could be relied on, then some solid industrial advances might in reason be expected to result. But so long as Government assistance is restricted to 'information and advice' German and Austrian manufacturers, even after the war, will have, I am sure, small need to concern themselves

about Indian Industrial Competition." "We miss a note of earnestness" is the remark of the *Bengalee* "in the statements and replies of the officials." The disappointing pronouncement of the Madras official head on this subject as well as that of the Honourable Mr. Mant of the Punjab Legislative Council hardly comes up to the popular expectation in the matter.

"Such a leisurely statement could have been well received in ordinary times." The rules laid down for the guidance of the Government officers in this matter have, so far led to no tangible material benefit. "It has been more in theory than in practice." So cries another paper.

POINTS FROM THE PAPERS.

The Coming Congress at Madras.

The future duty of the Congress may be said to be two-fold: (1) to make the voice of India as complete, definite, and united as possible, and (2) to design and create an executive that would untiringly and incessantly move and act for the realisation of the aims and objects of the Congress year after year, until India becomes a self-governing member of the Empire, —an ideal on which there is no difference of opinion between the different political parties, as is evidenced by the expressions of loyalty recently published. If the coming Congress at Madras devotes itself to the consideration of this two-fold duty of the Congress, it will have done yeoman service to the cause of political progress in India. The Congress must no longer remain a purely deliberative body, nor should it be so constituted as to give it the appearance, if not of a clique, at least of a sectional representation, howsoever representative of the whole of India that section may consider itself to be. A Congress must be a body open to all, provided the goal of self-government within the Empire to be attained by constitutional agitation is accepted. All other questions must remain open and not

autocratically disposed of. A certain modification in the present constitution of the Congress is absolutely necessary for this purpose, and it should be the first business of the Madras Congress to see what modification ought to be made in the Congress constitution to meet this view. Not only the Indian Nationalists, but we believe the Mahomedans must also be encouraged to join the Congress in larger numbers and suitable concessions made therefor. A considerable section of the educated Mahomedans have begun to perceive and feel the necessity of political agitation on the Congress lines and it would be a fault of the Congress if it does not meet them half way. These reforms relate to the first of the two duties mentioned above, namely, making the voice of India as fully representative as possible. The work required for carrying out the second of the two duties is much more difficult and important. The present Congress executive is, to say the least, inadequate and inefficient. The District and Taluk Committees, if any, exist only in name. The Congress has no home, no library, no series of publications of its own, nor workers solely devoted and pledged to carry on its work.—*Mahratta*.

"Not 'Native.'"

What sayeth the *Pioneer* now, last year about this time it coolly sermonised on "native" methods of banking. It conveniently ignored the occasional failures in western countries, England not excepted; it would not remember the case of the Bank of Burma or of the unlamented Arbuthnot. The People's Bank of India was "Swadeshi" Bank and so were others that came to grief last year. At once the conclusion followed that there was something ineradicably wrong with "Swadeshi" and 'native.' We are sincerely deeply sorry for the collapse of the Bank of Upper India, Limited. Indian institutions educational and other, and individual Indians are heavy losers by the disaster. But Col. Rennie and Mr. E. Weston, two of the three directors, the latter being also the general manager, are not "natives". And it was not an "Anglo-Vernacular" paper that gave the Bank a glowing certificate about a couple of months ago. The file of the *Pioneer* may be searched for that testimony.—*The Leader*.

Railway from Burma to India.

It is nothing short of a scandal that the Province which has been contributing so much out of its own revenues to those of the Government of India should, within a week, be cut off so completely from the rest of the Indian Empire. The greatest blunder committed by the Government of India is the abandonment of the project to connect India by rail with Burma. If Burma wishes to prosper and take her proper place in the Indian Empire, she must, after the war, remember her isolation of the present moment, and insist upon the Government of India carrying out the scheme which, through short-sightedness, perversity or misconceived economy, has already been too long delayed, and which, if abandoned for ever, must retard her progress and even cripple her resources.—*Rangoon Times*.

State Aid to Industry.

One result of our industrial subjection has been a pampered Germany which exported

goods worth nine crores of rupees to this country annually. Feeding fat at the expense of India, now she turns her army and navy against the sons of India and their comrades in the field. Will not this be an eye-opener to the votaries of free-trade and lead them to revise their policy at least so far as this country is concerned? Is it too much to expect that the Government of Lord Hardinge will formulate a new policy of granting State aids to industrial enterprises?—*Indian Messenger*.

War and Indian Loyalty.

India with her ancient civilisation, her divergent creeds and countless hostile castes, is standing united in the ranks of the Empire, giving her resources of men and money to the aid of western civilisation, with a generous prodigality that springs spontaneously from its heart. This mighty wave of loyalty has carried India further along the path of progress in a month than all other efforts, constitutional or otherwise, have done in a generation. She has leaped into her allotted place in the Empire with her sword drawn in defence of honour and right, her heart steeled as the heart of England herself, to see this struggle through to the end and to see that the end is a complete victory for Great Britain and her Allies.—*Englishman*.

Concessions to India.

We can say that the views he (Sir William Wedderburn) expresses on the political question and the suggestions he makes for a modification of the Arms Act, the enlistment of Indians as volunteers, and as Army officers will be unanimously endorsed in India. Especially the last reform has the support of Sir O'Moore Creagh and Lord Kitchener and as coming from such high Military authorities it ought to be adopted without delay. We trust the attention of Mr. Asquith has been drawn to the suggestions made by Sir William and that the Government are already thinking of how best to give practical expression to their trust in the Indian people.—*Wednesday Review*.

POINTS FROM THE LEADERS.

Indian Loyalty.

The destinies of our dear country are linked closely with the destinies of Great Britain. Any serious reverse to Great Britain means serious menace to India. Gentlemen, I do not hesitate to say that I am loyal to the British Throne because I love my country.—*Hon. Pandit Madan Mohan Malaviya.*

I have, like other political workers, my own differences with the Government as regards certain measures, and to a certain extent even the system of internal administration. But it is absurd on that account to speak of my actions or my attitude as in any way hostile to His Majesty's Government. That has never been my wish or my object. I may state once for all that we are trying in India, as the Irish Home-Rulers have been doing in Ireland, for a reform of the system of administration and not for the overthrow of Government; and I have no hesitation in saying that the acts of violence which have been committed in the different parts of India are not only repugnant to me, but have, in my opinion, only unfortunately retarded, to a great extent, the pace of our political progress. Whether looked at from an individual or from a public point of view they deserve, as I have said before on several occasions, to be equally condemned.

It has been well said that British Rule is conferring inestimable benefit on India not only by its civilized methods of administration but also thereby bringing together the different nationalities and races of India, so that a united nation may grow out of it in course of time. I do not believe that if we had any other rulers except the liberty-loving British, they would have conceived and assisted us in developing such a national ideal. Every one who has the interests of India at heart is fully alive to this and similar advantages of the British rule and the present crisis is, in my opinion, a blessing in disguise inasmuch as it has universally evok-

ed our united feelings and sentiments of loyalty to the British Throne.—*B. G. Tilak.*

The maintenance of British Rule was an essential condition of the material and moral progress of India and it was for this reason that the whole country stood arrayed on the side of England and they all rejoiced to find that the war forces of India—Sikhs, Rajputs, Ghurkhas and Pathans, would fight shoulder to shoulder in the scene of to-day's tremendous struggle.—*Hon. Sir G. M. Chitnavis.*

Our life, liberty, freedom of conscience and all that we possess is the gift of our benign Government and our destinies are indissolubly bound up with the maintenance of the British rule. We must, therefore, all pray for the victory and glory of the British arms. I call upon every subject of mine, whether Hindu Mahomedan, Christian, or professing any other religion to offer, according to his own religion, prayers to Almighty that He may, in His inexhaustible goodness and power, grant His blessings upon the British and Indian soldiers, guide them in war and lead them to speedy victory.—*H. H. the Maharaja of Kashmir.*

If Britain is beaten in this war, it would mean the passing of India into the hands of some other Power and it would mean the utter ruin of all hopes and aspirations of India ever becoming a nation with any degree of self-government. This is now a matter of profound conviction of every Indian who has given any thought to the subject and it behoves every well-wisher of the country, therefore, that we should present a united front to the world and show them that Britain has at her back the support of every one of the various races and creeds and religions that go to form the great Indian nation. This is the sentiment which animates every one of the various classes and communities over the length and breadth of this great continent.—*Dewan V. P. Madhava Rao.*

Official Pronouncements.

Indian Excise Administration.

A Resolution of the Government of India from the Department of Commerce and Industry has been published embodying the correspondence between the Government of India and the Secretary of State on the subject of Excise Administration in India. It is the result of the questions raised by Sir Herbert Roberts, Bart M. P. and other members of the Temperance deputation that waited upon the Secretary of State on July 18th, 1912.

We publish below the full text of the Secretary of State, Lord Crewe's Despatch:—

TO HIS EXCELLENCY THE RIGHT HONOURABLE THE GOVERNOR-GENERAL OF INDIA IN COUNCIL.
India Office, London, 29th May 1914,
Revenue, No. 77.

MY LORD,—I have given my close attention in Council to Your Excellency's Despatch No. 12 of 1914, dated the 26th February 1914, relating to the Excise policy of your Government. I have to express my satisfaction at the careful consideration which has been given to the subject both in Your Excellency's general summary and in the detailed reports annexed to your despatch, which have been obtained from the Local Governments, upon the situation in the respective provinces of India. These surveys throw light on the marked progress that has followed from the Report of the Excise Committee of 1905-06, showing that the original impulse of improvement due to the work of that Committee is not yet exhausted. They constitute a valuable record, both of the policy and of the methods that have been applied to the problem, and should serve to remove misapprehensions that appear to have been entertained in this country, as in India, with regard to the work of Government in the sphere of excise administration.

2. I concur in what I conceive to be the main position taken up in Your Excellency's despatch. For the last 25 years the aim of the Government of India, in an often-quoted declaration, has been, first, to discourage any extension of the habit of drinking, and secondly, within the limits prescribed by the necessity of suppressing unauthorised manufacture and sale, to raise a maximum revenue from a minimum consumption of intoxicating liquors. The expansion of revenue from intoxicants in recent years has been represented by temperance deputations both here and in India as concurrent with, or as evidence of, a heavy increase of consumption; and the suggestion has been put forward that the Government or its officials were fostering the increase of drinking habits to secure the expansion of revenue. The statistical table giving the consumption of country spirit in distillery areas (Statement I in Enclosure No. 18) emphatically disposes of this contention so far as country spirit is concerned. It appears to establish that for India as a whole the increase of the consumption of country-spirit per 100 of the population is but slight,—not more than five per cent. during the period of seven years. It is true that this figure generalised for the whole of India doubtless loses sight of local variations and increases in particular areas; still, the broad fact that emerges is that during the period under review, a general increase of consumption, which in the present social and industrial conditions of India might have been apprehended, has in effect been held in check. Your despatch makes clear that the means by which this result has been attained are, first, the more stringent administrative control of the trade, whether through the extension of the distillery system or otherwise, secondly, a very appreciable reduction of drinking facilities, and thirdly, the

application of the economic check upon consumption effected by the increased taxation of intoxicants and the enhancement of prices that ensues.

3. I observe with sympathy the strong protests made alike in your despatch and in the reports from Local Governments against the suggestion that district officers and other officials should be thought willing to subordinate the good order and welfare of the people to considerations of revenue. As I have before now stated, I am convinced that that aspersion is entirely without foundation.

4. The general conclusion that the action of Government has checked any widespread expansion of consumption over India as a whole is, unfortunately, qualified by the fact that in certain areas alluded to in the Local Governments' Reports, an increase alike of consumption and of intemperance must be admitted and faced. Higher wages, and a rising standard of prosperity, the growth of industrial and urban conditions, the relaxation of social and religious restrictions, and an imitation of western manners in an unfortunate direction, tend to, and account for, this local increase of consumption apart from any action of Government. When it is remembered that a large mass of the people, in some cases from immemorial custom, is not averse to the use of intoxicants (I observe, for instance, that in Madras three-fourths and in Bihar two-thirds, of the population are classed in the reports as drinkers of alcoholic liquors), it is impossible not to view with some concern the influences and tendencies referred to above. The present attitude of vigilance and restriction on the part of Government is thus seen to be essential. In an address to the Calcutta Temperance Federation (Enclosure No. 18) Your Excellency declared that "the Government of India, the Local Governments and Administrations and their officials are unanimous in desiring to promote the cause of temperance in this country by all means within their powers." Those

powers are clearly limited by the habits of the drinking portions of the population and by the grave possibilities that might be involved in driving consumption to a more deleterious class of drug or to illicit and cheaper sources of supply. But with due recognition of these limits, I concur with your declaration. Doubtless the Local Governments will continue to give attention to the areas of heavy or increasing consumption, and the Government of India can count on my support for any well-devised expedients to safe-guard the prevalent sobriety of India and to counteract any tendencies that threaten to undermine it.

5. I pass to the consideration of the detailed points on which the opinions of the Local Governments have been obtained. Your despatch records the considerable progress already realised in several directions.

In these points of excise administration, too rigid a uniformity of system is clearly unsuitable, and my inclination would be to respect the discretion of Local Governments and their right to make well-considered experiments for the control of the trade. I note that since 1905-1906 no less than 22,658 shops, licensed for the sale of liquor or drugs have been closed and that while in some areas reduction has been carried as far as at present seems advisable, in others a further diminution may still be looked for. I agree with Your Excellency's Government not at present to press the Local Governments to make further limitation of the hours of sale than they now express their willingness to effect. I approve the changes for which some of the provinces are prepared. Such experiments as the later opening hour of 10 A.M., in Behar and Orissa, or even of noon in the exceptional circumstances of the North-West Frontier Province, and as the closing hour, of sunset suggested for rural areas in Bengal or even of 4 P.M., which the Government of Assam is ready to consider, will doubtless be carefully watched; and if successful, such examples may be followed in those other

parts of India which are not at present prepared for any change.

6. Similarly, I am ready to accept your view as to the extension and powers of the advisory Committees, subject to certain observations, which I should desire to make. In the first place, the widely spread establishment of these Committees in municipalities and rural areas implies the practical acceptance of the principle that licensing is a function which, without sacrificing the avowed aims and the responsibilities of Government, should be exercised in concert with local advice and as far as possible in deference to local opinion. That principle may be worked out with considerable flexibility of detail according to the circumstances of each locality. It appears suitable to utilise, for rural areas, Local Boards, as is proposed in Bengal and Assam, or District Boards, as in the Punjab, in place of creating new administrative machinery. Where the Local Government, however, does not consider it expedient to set up Advisory Committees in rural areas, there might be less formal means of consulting local opinion. For instance, I observe that in Madras the existing rule is that :—

"Local opinion and where necessary the opinions of persons who may be specially interested such as railway authorities, forest officers, and large employers of labour, should be obtained, and representations from District or Taluk Boards or from village panchayats should receive attention."

In Burma, it is stated that "the opinions of rural tracts, and more specially of the inhabitants of the village, in which it is proposed to establish a new shop, should continue to be consulted as at present, and no new shop should be opened in the face of any strong opposition from them, unless it is conclusively shown that such opposition springs from interested motives."

These rules of practice seem to me to be appropriate.

Secondly, I hope that it may be found possible not to limit the functions of the Advisory Committees merely to questions of the number or location of shops. They may well serve as a channel through which local opinion may be consulted as to matters of excise, for instance, methods of trading, hours of sale (on which they have been consulted in Bombay), or generally as to abuses and irregularities. It might also be within their recognised sphere to call attention to special cases and localities, in town or country, in which it might seem desirable and likely to be in consonance with the wishes of the inhabitants that the ward or special area should be kept altogether immune from the sale of intoxicants. In this connection I may refer to the instance of the Khondmals sub-division in Bihar and Orissa, where an aboriginal tribe, accustomed to heavy spirit drinking, petitioned for, and obtained in 1910, the entire removal of country liquor shops from their area. It would be a matter for regret if illicit selling were to threaten the breakdown of this experiment. Such cases are no doubt exceptional and may seldom come under the observation of an Advisory committee. But a Committee should have power to draw attention to any case of the kind coming to notice within their respective local areas. I entirely approve the principle stated by the Commissioner of Excise in the following passage :—

"Whenever it appears that the people of any particular locality have so far been convinced of the benefits of temperance as to abstain or even to make an honest attempt of abstaining from alcohol, Government will only be too willing to close the shops as they have done in the Khondmals."

Thirdly, Your Excellency's Government take the view that without prejudice to the eventual development of local control, it is not desirable at present to grant executive powers to the Advisory Committees. I accept the opinion

that their institution is as yet too recent to warrant a further extension of their functions. In some cases their inactivity is criticised, though on the whole they appear to have justified their existence. It may be unwise to force a premature development, but their future working should be closely watched. I can see no reason why, while their powers are of a consultative nature, these bodies need necessarily have an official majority—a point which is not objected to in Bengal and elsewhere, though it is not conceded in Madras. I am glad, however, to observe the experiment of instituting Licensing Boards with full and final powers of determining the number and location of licensed shops for Calcutta and each of its suburban municipalities, and for each of the towns of Howrah and Bally. This proposal, under which the Excise Department and the leading temperance associations are to have each one representative on a board of seven, will preclude the suggestion that financial considerations can have a predominant voice in licensing decisions. I await with interest the report upon the subject asked for in your circular letter of the 18th March 1914, and I share the hope expressed by Your Excellency in your address to the deputation that awaited upon you at Calcutta that if the experiment should prove successful, the way will be cleared for a similar experiment in other large towns.

7. I observe that Your Excellency's Government treat the auction system of licensing as the one question among excise problems on which diversity of opinion is expressed by the Local Governments. In place of the definite decision in favour of a modified auction system taken up by the Excise Resolution of 16th May 1907, the subject is held in your despatch to be admittedly controversial, an open question that is regarded as being *sub-judice*. At the same time the experiment of a fixed fee system for country liquor shops was sanctioned by the Government of India on the application of the Bombay Government for the

year 1909-10 in three selected districts, and from the commencement of the year 1912-13 the auction system for the disposal of country liquor shops was practically abolished every where in the Presidency, save for the discretionary power reserved to the Collector of resorting to auctions in rare and exceptional cases.

I shall not attempt to cover the ground of a well worn controversy. The arguments are to be found in documents alluded to in the despatch, and they were doubtless duly weighed before the Government of India gave permission to the Bombay Government to try its experiment. Any and every licensing system is open to some objections, and often there is but a choice of evils. Whatever may be the practical difficulties which Indian conditions present, there is much to be said in favour of a fixed fee system which would secure to the State the full profits but not more than those profits accruing from the monopoly which the State itself creates. Such a system would leave to the liquor seller the average trading profits which he might expect to obtain from the sale of ordinary commodities with which the State does not interfere. It is one of the defects of the auction system, that even when speculative bids are rejected, it is liable to encroach on the fair profit of the trader, who in turn is tempted to recoup himself by illegitimate practices. Under a properly constituted fee system, based on accurate information intelligently and honestly used, the selection of the licensee would be on grounds of respectability, good record, and fitness. While no colour would be left for the suggestion that revenue was the predominant consideration, the revenue that would be derived primarily from still-head duties, and in a secondary degree from fees representing the monopoly profits of the individual shop, would be in practice as high as under a properly worked auction system the State ought in theory to exact.

Such a system of adequate fixed fees differs

widely from a system in which the fee is intentionally fixed at a low rate as part of a plan for lowering the price of liquor. This appears to have been the case with the unsuccessful Punjab experiment. It is enough to say that the object so avowed is in clear opposition to the spirit of your Government's policy, and that as is now recognised, other means must be found of coping with illicit distillation. A proper fixed fee system should, as above stated, secure all the monopoly profits to which the State has a fair claim. On the other hand there are some indications that in Calcutta and in towns in the United Provinces, where there is no free choice of sites, the auction system does not in fact secure for the State all such profits.

I note that among the reasons which led the Government of India to reject the fixed fee system recommended by the Excise Committee of 1905-06 the experience of England seems to have been emphasised. In paragraphs 20 to 22 of the orders of the Government of India on Chapter 10 of the report of the Excise Committee, the fixed fee system, it is stated, "has proved the most serious obstacle to real temperance reform in England." And you dwell on the considerable difficulties that the growth of vested interests in England has given rise to. I agree that the old English system, under which low conventional fixed fees were levied aiming merely at the recovery of an arbitrary and limited amount of revenue, inasmuch as it left most of the monopoly profits in private hands, tended to the creation of vested interests. But the later experience of England should not be overlooked. The new system introduced under the Licensing Act of 1904 for new licenses—of which it is true that only a comparatively small number are granted—does succeed in preventing the creation of vested interests in this class of license, and no compensation is paid when these licenses terminate or are not regranted. It is not suggested that in its details this reformed English

system should be copied, or that its precise machinery could be reproduced in India. Under the contract distillery system there is far better provision possible in India for determining precisely the proper annual fees of licenses. But the principle is in essence the same as that now working in Bombay.

The Bombay system which began as a limited experiment six years ago and is now in its third year of universal operation throughout the Presidency, may not have been working long enough to make it possible to gauge accurately the full effects of the abolition of the auction system. But so far it appears to give satisfaction, though in the last Excise Report of the Bombay Government for 1912-13, the Commissioner of Customs remarks that "the scale which has been tentatively prescribed for working out the fees, and which is a very important feature of it, is, I am inclined to think, susceptible of modifications which will improve it." In a matter of this kind I should hesitate to override the objections which are felt by some of the Local Governments to the fixed fee system. You state that "the Bombay experiment is being closely watched and that we are considering the advisability of suggesting to other Local Governments the desirability of initiating similar experiments in suitable areas." I trust that before long it may be found practicable to try these experiments in different localities, and that taking full advantage of the details of the Bombay experience those excise officials who have expressed their willingness to undertake this experiment should have the opportunity of doing so.

8. I have only further to observe that stress is laid throughout the reports on the importance of education and of the independent efforts of temperance workers as the real means of securing reform. On the first point Your Lordship, in replying to the Calcutta deputation, referred to the question of temperance teaching in schools. I would venture to suggest that the syllabus of lessons on temper-

desist immediately but made two or three further rushes, while a party of them occupied some shops from which they maintained a steady fire and here the majority of their casualties took place.

Sixteen of the rioters were killed as well as two innocent onlookers. In addition to the casualties mentioned above the Punjab police had one killed and six injured.

The Punjabis scattered through the surrounding villages, a certain number surrendering to the police and to picquets. An extensive combined sweeping movement is being made by the military and police to collect the rest and up to an early hour this morning 32 prisoners had been made.

The Government of Bengal deeply deplore the loss of life which has occurred. They were acting in pursuance of the openly declared intention of sending to their homes the passengers who had suffered so much in pocket by the voyages of this ship. They were aware of the existence of a certain amount of strong political discontent amongst some of the passengers; and, in full concurrence with the Punjab Government, considered that their return to their native country should be prompt and direct. Needless to say, no one had the smallest suspicion that any of the party were armed for a desperate and unprovoked attack on British officers.

Simla Oct. 15.—H. E. the Viceroy has learnt with extreme regret of the occurrence at Budge-Budge, near Calcutta, on the 29th September, 1914, of a serious affray in which lives were lost and injuries caused among officers of Government on the one hand, and certain passengers returning from British Columbia by the steamship *Komagata Maru* on the other. One European and two Indians unconnected with the disturbance were also unfortunately killed in the course of the firing which ensued.

In view of the regrettable loss of life which has occurred and of the fact that matters are

involved which concern the two Local Governments of Bengal and of the Punjab, His Excellency has decided with the concurrence of H. E. the Governor in Council, Bengal and H. H. the Lieutenant-Governor of Punjab to appoint a committee to enquire into the circumstances connected with the voyage of the *Komagata Maru* to British Columbia, its return to British India, the riot at Budge Budge and subsequent arrest of those concerned, and to report to the Government of India thereon.

The Committee will be presided over by the Hon. Sir W. Vincent and will be composed of the Hon. Maharajahdiraja Bijoy Chand Mahtab of Burdwan, the Hon. Mr. Fegan, Punjab, Sardar Daljit Singh and Mr. Walmsley, Bengal. The Committee will assemble in Calcutta at once.

The King's Message.

The following is the text of a message from the King so far as it concerns India:—

LOYALTY OF INDIANS.

"Among many incidents that have marked the unanimous uprising of the populations of the Empire in the defence of its integrity, nothing has moved me more than the passionate devotion to my throne expressed both by the Indian subjects and the Feudatory Princes and Ruling Chiefs of India and their prodigal offers of their lives and their resources in the cause of the realm.

DESTINIES LINKED.

"Their one-voiced demand to be the foremost in the conflict has touched my heart and inspired to the highest issues the love and devotion which, as I well know, have ever linked my Indian subjects and myself. I recall to mind India's gracious message to the British Nation of good-will and fellowship which greeted my return in February 1912 after the solemn ceremony of my Coronation Durbar at Delhi, and I find in this hour of trial the full harvest and noble fulfilment of the assurances given by you that the destinies of Great Britain were indissolubly linked with those of India."

The Literary World.

WAR POETRY.

England's Cause is Ours.

A. MADHAVIAH.

- (1) Indian Brothers! If ye care
For our mother-land,
If your hearts be brave and leal,
If e'er grateful ye can feel,
If you know our truest weal.
Now's time to do and dare,
England's cause is ours.
- (2) Wise my Brothers! If ye've faith
In a noble cause,
Think not this is England's war,
It is Freedom's, near and far.
'Hitch your waggon to her star,'
Die, or win the glorious wreath,
England's cause is ours.
- (3) Indian Sisters! If ye love
Freedom, honour, truth,
Think that death can come but once,
And the life-stream ceaseless runs,
Send your husbands, brothers, sons,
Trusting wholly God above;
England's cause is ours.
- (4) Sisters! Brothers! Now's the hour
That we prove our worth,—
Let who can, go fight and slay,
Let the rich give what they may,
Let the poor and weakly pray,
Prove by all that's in our power,
England's cause is ours:
- (5) One without a second! Hear
Thou Thy people's prayer,
Strike the proud aggressor down,
With the terror of Thy frown,
And the Right with vict'ry crown;
So Thy Justice will appear;
Freedom's cause is Thine.

The Wednesday Review.

For All We Have and Are.

RUDYARD KIPLING.

For all we have and are,
For all our children's fate,
Stand up and meet the war.
The Hun is at the gate!
Our world has passed away
In wantonness o'erthrown.
There is nothing left to-day
But steel and fire and stone.
Though all we knew depart,
The old commandments stand;
"In courage keep your heart,
In strength lift up your hand."
Once more we hear the word
That sickened earth of old:—
"No law except the sword
Unsheathed and uncontrolled."
Once more it knits mankind,
Once more the nations go
To meet and break and bind
A crazed and driven foe.
Comfort, content, delight—
The ages' slow-bought gain,
They shrivelled in a night,
Only ourselves remain
To face the naked days
In silent fortitude
Through perils and dismays
Renewed and re-renewed.
Though all we made depart
The old commandments stand:—
"In patience keep your heart,
In strength lift up your hand."
No easy hopes or lies
Shall bring us to our goal,
But iron sacrifice
Of body, will, and soul.
There is but one task for all—
For each one life to give.
Who stands if freedom fall?
Who dies if England live?

The Times.

Germany's Policy and War.

To any who may credit the statement that for Germany this is "a defensive and not an offensive war," we recommend a perusal of the book entitled, "Germany and the Next War," written for the German people in 1911 by Colonel von Bernhardt, which is said to have been inspired by the Kaiser, and was eulogised by the ruling powers in Germany. This is the book which the German Crown Prince said that every German should read.

To the General, war is not a deplorable necessity but a sacred duty. He has translated the faith of the last century that mankind is to be saved by competition in commerce into a faith that mankind will be saved by competition in bloodshed. He looks upon war as a refreshing tonic, as a necessary medicine ordained by God. He speaks with horror of "the aspirations for peace which seem to dominate our age, and threaten to poison the soul of the German people." Thus he says :

"The efforts directed towards the abolition of war must be termed not only foolish but absolutely immoral, and must be stigmatised as unworthy of the human race. We can fortunately assert the impossibility of these efforts after peace ever attaining their ultimate object in a world bristling with arms, where a healthy egoism still directs the policy of most countries."

We print some extracts from the book below :—

"It was war which laid the foundation of Prussia's power. War forged that Prussia, hard as steel, on which the new Germany could grow up as a mighty European State and World-Power of the future. Here once more war showed its creative power, and if we learn that lesson of history we shall see the same result again and again.

"The Great Elector—an ancestor of the Kaiser—laid the foundations of Prussia's power

by successful and deliberately incurred wars. Frederick the Great followed in the steps of his glorious ancestor. None of the wars which he fought had been forced upon him. He had always determined to be the aggressor, to anticipate his opponents, and to secure for himself favourable prospects."

"Bismarck, by bringing about our war of unification, . . . raised Germany to the undisputed rank of a first-class European Power." "It is difficult to imagine how pitiable the progress of the German people would have been had not these wars been brought about by deliberate policy."

"The lessons of history thus confirmed the view that wars which have been deliberately provoked by far-seeing statesmen have had the happiest results."

"Under certain circumstances it is the moral and political duty of the State to employ war as a political means." "When hostile States are weakened or hampered by affairs at home or abroad, it is imperative to use the favourable circumstances to promote its own political aims."

"We have fought in the last great wars for our national union and position among the Powers of Europe. We must now decide whether we wish to develop into and maintain a World Empire. In one way or another we must square our account with France if we wish for a free hand in our international policy. France must be so completely crushed that she can never again come across our path."

"As regards our own position in Europe, we can only effect an extension of our own political influence by awakening in our weaker neighbours the conviction that their independence and their interests are bound up with Germany, and are best secured under the protection of the Germans' arms."

"In the first place the principle of the balance of power in Europe must be entirely disregarded. An attempt has been made to produce a real equilibrium by special alliances. One result only has been obtained—the hindrance of the free development of the nations in general, and of Germany in particular. We must endeavour to obtain in this system our merited position at the head of a federation of central European States, and thus reduce the imaginary European equilibrium, in one way or the other, to its true value, and correspondingly to increase our power."

"In the next European land war we shall probably face our foes with Austria at our side, and thus will be in a position to win the day against any opposing forces. If the French fleet—as we may expect—joins England and takes part in the war, it will be much more difficult for us to wage than with England alone. But we need not even then despair. On the contrary, we must fight the French fleet, so to speak, on land—i.e., we must defeat France so decisively that she would be compelled to renounce her alliance with England, and withdraw her fleet to save herself from total destruction. Just as in 1870-71 we marched to the shores of the Atlantic, so this time again we must resolve on an absolute conquest, in order to capture the French naval ports and destroy the French naval depots."

War and Literature.

In the course of a lecture on the above subject at the Y. M. C. A., Madras, Mr. J. C. Rollo, Principal, Pachappa's College, described the 'impotence of peace' too long continued. Inevitably a nation degenerated that was left too long secure. Its energy declined, its virtue weakened, its culture, no longer stimulated by resisting force, became superficial and loose. Its art became self-conscious and at length refined itself away. There were of course large numbers of people who

contradicted that view. There were two matters of prime importance in life. One was vital energy and other was the direction and concentration of that energy. What was the effect of prolonged peace upon those two matters? Peace could neither create energy nor prevent its decline. Men who for lack of conflict had become feeble and purposeless began to live again when conflict was renewed. War could produce energy, while in peace one might despair of finding it. Peace had courage, but courage became a new thing when the alternatives were achievement on the one hand and death on the other. Indeed peace fostered pretence, and pretence corroded both men and things. Friendship in peace might be true and lasting and full of sweet sympathy, but it was not tried and lasting as was the friendship in war. Endurance, determination, perseverance, obedience, were virtues which depended on what was resisted. Literature was the finest product of stimulated and disciplined energy of a nation. The war as both the producer and discipliner of energy was a great preparation for literature.

The peroration of the lecturer sees a silver lining in the clouds of the present war.

"It is not now the time to prophecy what this war will mean to English literature. But certainly that literature desperately needs it. Men have begun to speak openly of poetry as permanently exhausted. Mr. Gosse has expressed his doubt whether it will ever be possible to create anything really fresh in poetry. In dearth of matter and impulse, men have spent their powers upon an irritating perfection of uninspired artistry. Even artistry has begun to fall, however; and it has become a fashion to make forlorn attempts to shock the reader into interest—whether by a realism that constantly impinges upon vulgarity or by rhythms so novel and so striking as to be utterly unlovely, or by desperately and resolutely illegitimate phrases. All this has come to pass because we have lacked the force, the faith, the

sense of reality, which war alone can recall. Of the English drama, the less said the better. Its most characteristic type is that (so common in Mr. Bernard Shaw and John Galsworthy, for instance) in which a vexatious problem of present-day life is set before us.

"There can be little doubt that deliverance is at hand. There are few of us who do not feel already, as we think of England's present task and determination, a certain access of life and strength. And as we look back upon the past and the laws that it reveals to us, a certain confidence in the future of our literatures returns. Nor shall we ever be inclined to say, if the years approve that confidence, that such gain is not well worthy even of such cost."

Books on the Crisis.

New India gives the following list of books as useful to those who may wish to understand

the present situation in Europe, the grouping of the powers, and the issues involved in the controversies between them:—

GENERAL HISTORY.

Cambridge Modern History, Vols. IX to XII
Modern Europe by Professor Alison Phillips
(Rivington 6s. net.)

Development of the European Nations
1870-1900 by Dr. Holland Rose.

Historical Development of Europe by Professor C. McL Andrews.

Problems of Power by Mr. M. Fullerton
(1913, Constable 7s. 6d. net.)

Map of Europe by Treaty (Four Vols.) by Sir E. Hertslet.

THE EASTERN QUESTION.

The European Concert and the Eastern Question by Professor Holland.

REVIEWS AND NOTICES.

Encyclopædia of Arts and Industries.

Regular subscribers Rs. 6 per annum. Single 12 As.

Babu Mukhtar Singh, Vakil of Meerut (U.P.) has bravely attempted to satisfy a much felt want by editing an Encyclopædia of Arts and Industries in Hindi with special reference to Indian Economic conditions. We cannot but very warmly recommend the study of this Encyclopædia to all lovers of Hindi and to all those who have a mind to better their situation in life.—B.K.

Books Received.

Year Book of the United States Department of Agriculture 1913, Government Printing Office, Washington, U.S.A.

Essays in Taxation, by Edwin R. A. Seligman, 17/ Net, the Macmillan Co., Ltd., London.

Malthus on the Principles of Population with an Introduction by W. T. Layton, M.A.,

in two Volumes; J. M. Dent & Sons, Ltd., Bedford Street, W. E., London, Cloth 1/ net each vol.

Good and Bad Trade. By R. G. Hawtrey
Constable & Co., Ltd., London.

A Manual of Practical Farming, by John McLennan, Macmillan & Co., Ltd., London 2/

The Sacred Chank of India, by James Hornell, F.L.S., The Superintendent, Government Press, Madras, Rs. 2.

Date Sugar Industry and Agriculture, by Haridas Chatterji, M.A., B.L., B. H. Das, Krishna Press, No. 2-12, Wellington St., Calcutta.

Co-operative Society, by P. V. Govindaswamy Aiyer, G. A. Natesan & Co., Madras, As. 12.

Trusts, Good and Bad, by Louis F. Post, The Public Ellsworth Building, Chicago.

Some South Indian Insects and other Animals of Importance considered especially from an Economic Point of View by T. Bainbrigge Fletcher, Imperial Entomologist to the Government of India. The Superintendent, Government Press, Madras, price Rs. 6.

The Educational World.

Labour and Education.

Dr. Gore, Bishop of Oxford, speaking at a meeting arranged by the Joint Committee for the Abolition of Half-Time Labour, held in London, said: "I cannot believe that education which stops at the age of fourteen will ever do anything approximately near to realising the intellectual possibilities of the children. The present educational system is a disastrous waste of time and money. I may be speaking to people whose feelings with regard to the Labour movement are mixed; to people who view it with much more distrust than I do, but speaking as one who believes that the hope of this country is mainly with the Labour movement, I am quite certain that that movement will fail of accomplishing anything like what it might accomplish unless it gets more education into its own ranks. We must demand zealously that the time in a child's life up to fourteen years of age shall be preserved intact for its education."

Self-supporting Educational Colonies.

The scheme for the establishment of a Self-supporting Educational Colony initiated by Captain Petaval (retired), who has been in Bombay recently, is attracting the attention of a number of prominent men of Bombay. An Indian Self-supporting Educational Colonies' Association is being formed. With a view to obtain capital for starting such colonies in suitable localities and making appeal to those who might help financially, Mr. Ratansey Morarjee, of Messrs. Morarjee, Goculdas & Co., will act as Secretary to the Association. Addressing a meeting at Bombay under the auspices of the Teachers' Association, Captain Petaval said that in an educational colony instruction is to be given in such a practical way that the pupils can earn their living whilst

learning, thus offering a solution of the whole problem of popular education in India. At first it will aim at producing things for the use of the workers instead of sale, and incidentally it will give the worker an insight into the modern methods of agriculture and industry. The institution will not only teach pupils reading, writing, and arithmetic, but bring them up to be strong, healthy and industrious.

Mass Education.

A recent issue of the *Journal of Education* has some very sensible comments on the kind of education that ought to be imparted to the masses. It says that "the three R's" doubtless form a necessary part of education but we ought to beware of thinking that they constitute the whole of even an elementary education. There is a side of the child's life and mind which they do not touch, namely, the active working side. Education is preparation for life, and the humblest education should include the acquirement of some capacity for gaining a livelihood. That is a doctrine which we are only just beginning to learn, but which is coming more and more to the front. We began education for the masses at the wrong end when we began with the mind, instead of the body. Slowly we are recognizing that, side by side with a literary and scientific education, and as far as possible interwoven with it, must go a workshop education.

"This principle is applied at present chiefly where the waifs and strays of our civilization are concerned. All boys and girls in industrial schools are taught a trade, and when they leave the school they are put in the way of earning their living. A large number of children have no doubt owed their salvation to having committed some petty offence. We train our vagabonds to be skilled workmen,

while we let our respectable children drift into blind-alley occupations. The young thief is brought up to be a bootmaker or a tailor; the honest lad becomes a van-boy."

Education for Workmen.

A writer in a recent issue of the *Indian Textile Journal* speaks thus of workmen and their education:—

Many in this country still believe that a boy should be compelled to learn to read and write before being taught the elements of a trade whether he likes it or not. The educationists have forgotten that the Cathedrals in Europe, and the temples in India were built by illiterate workmen who, judged by their workmanship would be worth more to-day if alive than many of the modern literate workmen. Not content with complicating the subject of primary education they have perverted the meaning for technical instruction by mixing it with science and thus adding seriously to the difficulty of educating the artisan class, whose limited school period can be best occupied with purely technical matters. Workmen are wanted in unlimited numbers, and at good rates of pay provided they know the work they are paid to perform; but the dabbler with a smattering of several things and no clear knowledge of anything simply discredits the educational system.

A Scheme of Peripatetic Teachers.

In a leading article in the *Educational Review* for July 1914, Mr. C. R. Narayana Rao, M.A., pleads for a system of teaching the sons of peasants in scattered villages and hamlets. A strong case is made out for the education of the agricultural population and the writer says that it is almost culpable not to be acquainted with the needs and aspirations of a community whose helplessness is their best defence, and from whose labours we all derive our material sustenance.

Various evils such as chronic indebtedness, occasional extravagance, intemperance, ignor-

ance of other handicrafts, inability to appreciate the benefits of the co-operative credit movement, conservatism, poor ideas of sanitation, etc., that afflict the rural population have an economic origin. Illiteracy is at the root of all this and in the spread of education lies the only hope of emancipation. The exclusiveness of certain classes of the community and lack of organised movement are among the chief causes that have contributed to the slow progress of elementary education among the tillers of the soil.

Our village tracts could be roughly divided, says the writer, into those where elementary schools exist already and others in which they have to be opened yet. Of the latter type, two classes are distinguished firstly areas large enough to provide sufficient attendance for the establishment of new schools, and others too small for such a purpose. To bring the latter under the influence of education, the writer suggests the employment of peripatetic teachers. The following qualifications are regarded as ample for such a teacher. He should be able to impart instruction in the three R's (vernaculars) and possess sufficient knowledge of the history and geography of the province. His special qualifications should relate to his ability to impart instruction in the rural sciences, in addition to civics and general administration of the taluk and the district. The rural sciences include Nature study, Agriculture, Domestic Handicraft and the Industries of the village. It will be greatly advantageous if the teacher is made to attend the Normal Schools for a sufficient period at an interval of every two years.

The system of peripatetic teachers owes its origin to the Sunday School movement in England, the underlying principle of which is to impart instruction at least for one day out of seven to children who would otherwise remain in absolute illiteracy. Dissemination of knowledge through such agencies would seem to have

an advantage over the compulsory system and circumstances in India are, in the opinion of the writer, altogether propitious for the inauguration of a universal scheme of peripatetic teachers. The Indian teacher can visit the scattered hamlets once a week, gather the village children in any house, teach the three R's, the elements of agriculture and other handicrafts after he has checked the home exercises set in the previous week. The peasant will have no objection to spare his boy for one day in a week. With the gaining of the sympathy of the village headman to the cause of education, the work of the itinerant teacher will be facilitated considerably. The village temple would offer the teacher his lodging while the carpenter of the village may find him the required furniture.

The writer goes on to say that the establishment of travelling teachers on a large scale in any province need not be a formidable financial problem with the support of Government and the diversion of a portion of temple funds. The formation of "School Boards" consisting of the leaders of public opinion in every village and taluk is suggested as a means to spread education in the land. The functions of these Boards will include the supervision of the work of the teacher, collection of subscription for attendance scholarships, distribution of clothing, books, slates, pencils, etc., to the school children. In a similar manner the formation of Taluk Boards and District Boards with similar functions but of a more comprehensive nature is indicated.

The education must be free in all the schools and the course of instruction adopted in these schools should have reference to the economic requirements of the villages. They should comprise principles of agriculture such as the nature of different soils, irrigation and drainage, ploughing, sowing, manure, agricultural implements and the breeding of cattle. The Educational and Agricultural

departments can by some mutual understanding issue manuals treating of such useful subjects.

Education of Hindu Girls.

An interesting development in the education of Hindu girls is taking place in Calcutta. The Bengal Government has taken up the question.

A Resolution on the subject notes that there is practically no institution which provides for the needs of those girls of Hindu families whose parents desire that they should be educated, but feel that the system of education should be designed with a view to the lives which they will subsequently be called upon to lead, and should be in accordance with the domestic and social ideals of the society to which they belong.

The Resolution continues:—"It has been suggested to Lord Carmichael that the object of school education for Hindu girls should be to give them instruction which will be of use to them in their future domestic life as wives in Hindu households, and which would stand them in good stead, should early widowhood or some other unforeseen calamity throw them on their own resources; that the course of instruction for the majority should be self-contained and capable of being completed by the age of 14; that English should be taught as a second language, and that the domestic arts, such as sewing and cooking, should figure prominently in the curriculum. It has also been suggested that, without violating the principle of religious neutrality, Government might do more than it does at present in the direction of providing facilities for the education of Hindu girls on lines consistent with the best traditions of Hinduism."

His Excellency is aware that this is a question which can only be answered by the Hindu community itself, and he feels that the time has come when his Government would do well to ask that community to formulate its feelings and aspirations in the matter of the education of its girls. In these circumstances,

the Governor in Council has decided to appoint a Committee consisting of certain well known ladies and gentlemen.

The terms of reference to the Committee are as follows :—

(i) to consider and report on the existing facilities for the education of Hindu girls and the extent to which the various sections of Hindu society avail themselves of the several agencies which are now employed ;

(ii) to consider and report in detail on the extent to which the existing facilities are adequate and satisfactory ;

(iii) to make detailed suggestions with approximate estimates of cost for remedying any defects which the Committee finds to exist.

It has been suggested to His Excellency that a school for Hindu girls to be conducted on *purda* lines should be established in Calcutta. Lord Carmichael directs attention of the Committee to this suggestion. One of the most important points with which the Committee will have to deal is the question whether the provision of such additional educational facilities, if any, as it may decide to recommend, should be made through the agency of schools under the direct management of Government or privately-managed schools in receipt, if necessary, of grants-in-aid.

Technical Education in Madras.

With the object of providing facilities for technical education in this Presidency, the Government of Madras have already sanctioned the reorganisation of the Government Technical Institute at Madura, decided to establish a Mechanical Engineering School at Cocanada, and are contemplating the opening of a technical school in North Madras. Pending the establishment and development of these

institutions, the Government have, as an *interim* measure, decided to provide facilities for students of the Presidency to undergo technical training in some of the existing and well-established institutes in other parts of India. With that object, the Government propose to award annually six scholarships of the value of Rs. 30 each per mensem, tenable by the natives of this Presidency at the Victoria Jubilee Technical Institute, Bombay, for a period of four years for the study either of Mechanical Engineering, Electrical Engineering, Textile manufacture or Technical Chemistry. Applications should be made to the Director of Public Instruction, Madras.

Economics and Sociology.

The Bombay University Senate has approved a proposal to maintaining a University School of Research in Economics and Sociology from the annual grant of Rs. 12,000 offered by the Government of India.

Training Chimney Sweeps.

We learn that the Germans have a course even for training chimney sweeps. The course runs three years, and includes the mechanical knowledge of chimney sweeping, and drawing and arithmetic. Moreover, the German chimney sweeps are taught the art of polite letterwriting, and by means of lectures and readings they are led to admire the great dramatists and authors of their country.

Technical Education in Mysore.

The Government of His Highness the Maharaja of Mysore, have sanctioned the opening of an Industrial Teachers' class, a Railway class and a Telegraphic Signallers' class in the Mechanical Engineering School, Bangalore.

The Scientific World.

Vivisection Research.

In a recent issue of the *Scientific American*, Mr. W. W. Keen, M.D., contrasts the achievements of both the friends and foes of vivisection confining his remarks to what has occurred in his professional life :—

THE ACHIEVEMENTS OF THE FRIENDS.

1. They have discovered and developed the antiseptic method and so have made possible all the wonderful results of modern surgery.

2. They have made possible practically all modern abdominal surgery, including operations on the stomach, intestines, appendix, liver, gall-stones, pancreas, spleen, kidneys, etc.

3. They have made possible all the modern surgery of the brain.

4. They have recently made possible a new surgery of the chest, including the surgery of the heart, lungs, aorta, esophagus, etc.

5. They have almost entirely abolished lock-jaw after operations and even after accidents.

6. They have reduced the death-rate after compound fractures from 2 out of 3, *i.e.*, 66 in 100, to less than 1 in 100.

7. They have reduced the death-rate of ovariectomy from 2 out of 3, or 66 in 100, to 2 or 3 out of 100.

8. They have made the death-rate after operations like hernia, amputation of the breast and of most tumors a negligible factor.

9. They have abolished yellow fever—a wonderful triumph.

10. They have enormously diminished the ravages of the deadly malaria, and its abolition is only a matter of time.

11. They have reduced the death-rate of hydrophobia from 12 to 14 per cent. of persons bitten to 0.77 per cent.

12. They have devised a method of direct transfusion of blood which has already saved very many lives.

13. They have cut down the death-rate in diphtheria all over the civilized world. In 19 European and American cities it has fallen from 79.9 deaths per 100,000 of population in 1894, when the antitoxin treatment was begun, to 19 deaths per 100,000 in 1905—less than one quarter of its death-rate before the introduction of the antitoxin.

14. They have reduced the mortality of cerebrospinal meningitis from 75 or even 90 odd per cent. to 20 per cent. and less.

15. They have made operating for goiter almost perfectly safe.

16. They have assisted in cutting down the death-rate of tuberculosis by from 30 to 50 per cent., for Koch's discovery of the tubercle bacillus is the cornerstone of all our modern sanitary achievements.

17. In the British army and navy they have abolished Malta fever, which in 1905, before their researches, attacked nearly 1,300 soldiers and sailors. In 1907, there were in the army only 11 cases; in 1908, 5 cases; in 1909, 1 case.

18. They have almost abolished child bed fever, the chief former peril of maternity, and have reduced its mortality from 5 or 10 up to even 57 in every 100 mothers to 1 in 1,250 mothers.

19. They have very recently discovered a remedy which bids fair to protect innocent wives and unborn children, besides many others in the community at large, from the horrible curse of syphilis.

20. They have discovered a vaccine against typhoid fever, which among soldiers in camps has totally abolished typhoid fever, as ex-president Taft has so convincingly stated. The improved sanitation which has helped to do this is itself largely the result of bacteriologic experimentation.

21. They are gradually nearing the discovery

of the cause, and then we hope of the cure, of those dreadful scourges of humanity, cancer, infantile paralysis and other children's diseases.

22. As Sir Frederick Treves has stated, it has been by experiments on animals that our knowledge of the pathology, methods of transmission and the means of treatment of the fatal "sleeping-sickness" of Africa has been obtained and is being increased.

23. They have enormously benefited animals by discovering the causes and in many cases the means of preventing tuberculosis, rinderpest, anthrax, glanders, hog cholera, chicken cholera, lumpy jaw and other diseases of animals, some of which also attack man. If the suffering dumb creatures could but speak, they too would pray that this good work should still continue unhindered.

THE ACHIEVEMENTS OF THE FOES.

Not a single human life has been saved by their efforts.

Not a single beneficent discovery has been made by them.

Not a single disease has been abated or abolished by them.

All that they have done is to resist progress—to spend \$500,000 in 30 years in Great Britain alone, and very large amounts of money in the United States—and to conduct a campaign of abuse and gross misrepresentation.

They apparently care little or nothing for the continued suffering and death of human beings, the grief and not seldom the ensuing poverty of their families, provided that 26 out of every 1,000 dogs and cats, monkeys and guinea-pigs, mice and frogs experimented on shall escape some physical suffering.

They insist, therefore, that all experimental research on animals shall stop and—astounding cruelty—that thousands of human beings shall continue year after year to suffer and to die.

One should clearly bear in mind that the age of experiment is the age of progress. This is

true in mechanics, in engineering, in electricity, in every department of human knowledge in which experimental investigation is possible. Medicine is no exception. Stop experiment and you stop progress. But while stopping progress in other departments only means that we shall have no further development in the external comforts and conveniences of life, the arrest of the experimental method in medicine means that progress in the knowledge of the cause and cure of disease shall stop and that our present sufferings and sorrowful bereavements from the onslaught of cancer, scarlet fever, measles, whooping-cough and all the other foes of health and life—especially of our dear children—must continue. In the last 50 years, we have made more progress than in the preceding 50 centuries. The writer believes that if experimental research is continued and aided, the next 50 years will be still more prolific of benefit to mankind than even the past 50 years.

Dr. S. Weir Mitchell, when visiting the Antivivisection Exhibition in Philadelphia, put the matter in a nutshell when he said to one of the guides, "Your exhibition is not quite complete. You should place here a dead baby and there a dead guinea-pig with the motto, 'Choose between them.'"

Profit from Research.

As Sir James Dewar has pointed out, no investment has ever yielded such a financial return as the capital expended by Count Rumford when he founded the Royal Institution in 1799. It is probable that the industries, based on researches conducted therein, are, every month, producing profits greater than the whole expenditure on that Institute since its foundation. It would be difficult to estimate the indebtedness of the chemical, the coal mining, the electrical, the transport industries to the researches of Humphry Davy, of Faraday, of Tyndall, and other workers in the Royal Institution.

Consider the results of the work of men like Pasteur and Lister and those who have built on the foundations which they laid. The mortality in the hospitals of Europe after operations has fallen from over 60 per cent. to under five per cent.

The discoverer of the Rontgen rays could scarcely have anticipated their application in the battlefield and the hospital. And as little could the Curies, in their work on the isolation of radium and its compounds, have imagined that in a few years our most hopeful prospect of fighting the painful disease to which one in every twelve of us seems fated to succumb, was to be found in the application of the properties of radium.

MECHANICAL REFRIGERATION.

Who would have supposed that when Thompson and Joule in 1849 were engaged in determining the fall in temperature of a gas under high pressure, when issuing from a fine orifice, they were not only enabling mankind to secure a greater efficiency in all heat engines, but were also laying the foundations of those industries by which we are now able to apply almost unlimited stores of oxygen to many and varied manufactures, and rendering it possible, by mechanical refrigeration, to deliver the meat of Australia and South Africa and the fruits of the Tropics at the doors of the working men of distant countries?

The biologists, who devoted their energies—and sometimes their lives—to the study of the mosquito, could have had little conception that they would be the chief contributors to the successful construction of the Panama Canal.

Date of the Mahabharata War.

The latest issue of the *Vedic Magazine* contains an article on the above subject by the late Mr. T. G. Kale, Poona City.

1. The earliest attempts to fix the date of the war from the position of the planets were

made by scholars and astronomers in the Maharastra. Messrs. Lele, Ketkar and Dixit have discussed the question thoroughly; and the last author especially has treated of it at great length in his standard work (in Marathi), "*The History of Indian Astronomy*."

2. Many European writers have fixed the date of the war variously between the thirteenth and fourteenth centuries B.C.

The late Mr. H. Wilson thus sums up the opinions of his time on the subject: "According to Col. Wilford's computations (*Asiatic Researches*, Vol. IX, Chronological Table, page 116) the conclusion of the great war took place in B.C. 1870. Buchanan conjectures it to have occurred in the 18th century B.C. Vyasa was the putative father of Pandu and Dhritarashtra and consequently was contemporary with the heroes of the great war. Mr. Colebrook infers from the astronomical data that the arrangement of the Vedas, attributed to Vyasa, took place in the fourteenth century B.C. "Mr. Bentley brings the date of Yudhis-thira, the chief of the Pandavas to 875 B.C.; but the weight of authority is in favour of the thirteenth or fourteenth century B.C. for the war of the Mahabharata and the reputed commencement of the Kali age." Prof. MacDonnell traces "the historical germ of the great epic to a very early period which cannot well be later than the tenth century B.C."

3. Mr. R. C. Dutt and Mr. Fergusson place the war in the middle and in the beginning of the thirteenth century B.C., respectively.

4. The popular view of the Indians is that the Mahabharata war took place at the end of the Dwapara Yuga and at the beginning of the Kali age. The Kali age began according to Indian Astronomers in 8102 B.C. So, the Bharata War is taken by many to have occurred in the same year.

But it is irrational thus to mix up the date of the Kali Yuga with that of the Mahabharata war; for the date of the Kali Yuga was computed and fixed by Indian astronomers

nearly 2,600 or 3,600 years after the imaginary beginning of it.

5. After a study of the traditions which are decidedly of a historical character, one can fix 1210 B.C. as the approximate date of the war.

6. In the opinion of Mr. Kale, the date of the Bhagwadgita is somewhere before 1000 B.C. and it seems to have been written and incorporated in the Mahabharata by Vaisampayana or Vyasa himself just a few years after the war. The Mahabharata war took place in the 13th century B.C. or a few centuries earlier, i.e., from 1200-1500 B.C.

Indian Science Congress.

The second Annual Meeting of the Indian Science Congress under the auspices of the Asiatic Society of Bengal is to be held in Madras on January 14th, 15th, and 16th, 1915. The Congress held its inaugural meeting in Calcutta last January.

The President of the Madras Congress is the Hon. Surgeon-General Bannerman, C.S.I., I.M.S., whilst His Excellency Lord Pentland, Governor of Madras, has consented to be Patron.

A strong local committee has been formed with Dr. J. R. Henderson as chairman and Dr. J. L. Simonsen of the Presidency College as Secretary; it is requested that all communications relating to the Congress may be addressed to the latter.

Squaring the Circle.

MR. T. M. Hughes has hit upon an extraordinarily simple device for approximating to within one part in four million in the quadrature of the circle. Draw a right-angled triangle with the shorter sides in the ratio 23 to 44. Apart from errors in drawing, the area of the circle circumscribing the triangle will be equal to the square on the 23 side to the astonishing degree of accuracy already mentioned. It may interest a class to make a 23 : 24 set-square and apply it.

Electricity in Horticulture.

Some time ago it was claimed to have been demonstrated that an increase of some 45 per cent. in a crop is produced by the agency of high-tension electricity applied to the land by means of overhead wires. The *Gardener's Chronicle* reports that Sir Oliver Lodge, Mr. Newman, and Professor Priestley working with overhead discharges have obtained encouraging results. The cost of installation of the Lodge-Newman apparatus works out at £200 for 25 to 30 acres, and for the treatment of double that area only a small increase in cost is entailed. The Departments of Agriculture of the United States and Egypt have provided themselves with the Lodge-Newman apparatus.

Water Meter for Irrigation.

It is very necessary in countries where the moral principles as regards meum and tuum are weak, that an efficient instrument out of the control of the farmer should be supplied between the main channel of irrigation supplies and the farmer's plot, and should be measurable by the officials of those that control the water supply. Such is the Module invented by Mr. A. S. Gibb, Executive Engineer of the Punjab, where the machine is used considerably as well as in Egypt while the reclamation engineers of the United States are considering its application to the irrigation works of the Middle West.—*Pioneer*.

How to Test flour.

When flour is genuine or of the best kind it holds together in a mass when squeezed by the hand and shows the impression of the finger marks and even the marks of the skin much longer than when it is bad or adulterated; the dough made with it is very gluey and elastic, easy to be kneaded, and may be elongated, flattened, and drawn in every direction without breaking.

The Sanitary World.

Investigation into Cholera.

In the course of his instructive papers on cholera, published in the *Indian Journal of Medical Research*, Major Greig has made some observations which are neatly summarised in a recent issue of the *Pioneer*.

A little while ago cholera was regarded as a disease brought about by the growth of the cholera vibrio in the small intestine. Major Greig has, however, shown conclusively that the range of Koch's vibrio in the body is far wider and that cholera is a general infection and not merely a local one. The first of two papers deals with his investigations upon eight patients, who died of cholera.

He found the cholera germ in the bile, the gallbladder, the urine, lungs, liver, spleen, bladder and brain. He directed his attention chiefly to the bile and gallbladder; experiments were made upon rabbits, after a close study of the similarity of structure of the gallbladder and ducts in man and the rabbit. Having shown that these structures are homologous, he proceeds to show the direct bearing which his experiments on rabbits have upon cholera as it occurs in man. He injected the veins of a rabbit with the living cholera vibrios, and the animal died with symptoms of cholera. After death he procured a pure culture of the vibrio from the bile of the animal. Further it has been shown that the vibrios can live in a rabbit's gallbladder for two months. The significance of this capacity of the cholera germs to live in the gallbladder, pass into the bile, through it reach the intestine and eventually be discharged in the faeces, is very great. In all the human cases investigated, cholera germs were found in the bile.

The presumption is that had these patients lived, in some, the cholera germs would have continued to live in the gallbladder for two

months or more and would have passed into the bile. Such patients would have thereby become "carriers," people, who though recovered themselves, would be able to spread the disease through the agency of their infected faeces. On a previous occasion Major Greig isolated the cholera vibrio from the stools of a man six weeks after his recovery from the disease. It is a justifiable opinion that the source of these germs was the patient's gallbladder. Not only the gallbladder, but the liver itself which supplies the bladder with bile, has been shown to be inflamed owing to the presence of the cholera vibrio. This observation, writes Major Greig, is not merely of scientific interest but of considerable practical importance in regard to the carrier state and its treatment in cholera.

Now typhoid germs have been found in the gallbladder as many as ten and twenty years after the attack of fever. The possibility of cholera carriers spreading their evil influence over a space of years similar to typhoid carriers cannot in the light of present knowledge be denied. The investigation into cholera carriers has only just begun, but it has shown that cholera germs, like those of typhoid are stored in the liver and gallbladder and also in the urinary bladder. The significance of Major Greig's work cannot therefore be overestimated. It may point to the actual *fons et origo mali*. Sterilise the cholera carriers and cholera itself may be blotted out.

Town Planning.

A recent Resolution of the Punjab Government discusses the problems connected with the improvement of towns. Some of the principles enunciated in that Resolution might well apply to all towns in India. To take for example the relief of congested areas, the difficulties that confront Municipalities in this

regard are considerable and even the existing powers are in advance of the views of those with whom their exercise rests. But apart from the state of public opinion, there is one great deterrent in the cost of acquisition and demolition. It is, however, possible in some cases to devise a scheme which will pay for itself. If, for instance, a new road is cut through a congested area or an existing road widened and straightened, and the ground and property on either side of the road acquired for building sites, these sites may rise considerably in value, and when sold may bring in enough to cover the cost of the whole scheme. Municipalities should therefore consider the possibilities of dealing with congested areas on these lines. Where, on the other hand, for any reason, action of this nature is impracticable, the committee should keep in view the gradual improvement of such areas. Congested parts of towns should be carefully mapped out and a fresh "lay-out" prepared showing the town as it is desired that it shall be. As houses are re-erected, owners should be compelled, under the Municipal Act, to set them back to the new alignment already determined upon. Care should be taken, as far as is possible, in planning such re-alignment to take equal areas of land from each side of the old street, so that all owners contribute equally. In compelling houses to be set back in this way it is necessary to compensate the owners for any loss they may sustain.

At the same time, Municipalities should take steps to frame suitable building bye-laws under the Act, so that minimum standards of sanitation may be enforced.

Again it may often occur that a building, not in itself insanitary, is the cause of insanitation in other buildings. A great improvement in the sanitary condition of a whole block of houses may be effected by the acquisition and demolition of one of them as, for instance, where the end of a lane or a street is blocked up by a house which obstructs the drainage,

impedes scavenging and conservancy operations and prevents a free current of air. Local bodies should be alive to the possibilities of improvement by the removal of such obstructive buildings, and take action where it is obviously desirable.

Painless Childbirth.

The June number of *McClure's Magazine* contains an interesting report issued by two American ladies on the new and painless method of childbirth which has been developed in the medical clinic of the University of Baden at Freiburg.

It is said that this method has now been used in 5,000 cases with practically unvarying success. It is claimed that not a single fatality to the mother can be charged against it, and that under it the rate of infant mortality has decreased. To those especially who have undergone the experience in the Freiburg hospital and elsewhere the experience under the 'twilight sleep' seems almost incredible—"like a fairy tale," as they most often express it. This twilight sleep is a light sleep induced by an injection or two of a combination of two drugs—scopolamin and morphia—and contained under scopolamin. It is a sleep so light and so susceptible to outside impressions that semi-darkness and quiet are required to make it entirely successful. The ordinary tests of unconsciousness cannot be applied to it. It is attained at a point when the patient loses the power of recollecting immediate events and sensations, while still remaining susceptible to suggestions, and in full possession of muscular powers.

A state of clouded consciousness is induced, in which there is a complete forgetfulness of the course of birth. To determine whether the injection is working properly, the patient's memory, and nothing else is tested. An object is shown to her. Half an hour later she is shown it again, and asked if she has seen it before. If she remembers it, it is taken as an

indication that another dose of the same strength should be administered. Thirty minutes after the second injection the patient may be asked if she has had one. If she has no recollection of it, the amnesia is considered sufficient. Under the influence of the twilight sleep the consciousness of pain is eliminated, the necessity for using instruments is practically done away with, and the nervous strength is conserved to an extent that makes recovery "astonishingly rapid."

A case is mentioned of a patient whose baby was born at 5 A.M., who was sitting up in the best of spirits and breakfasting at 8 o'clock and who took a hearty dinner at noon, got up on the following day, went out driving on the fifth day and by the end of the week was returning calls of congratulation. Full records of over 3,600 cases are preserved at Freiburg. In no instance do they disclose any ill-effects to the mother or the child, either at birth or afterwards from use of scopolamin.

It is added, however, that the skill and experience required in determining the exact dosage and the importance of quiet, isolation, a subdued light and uninterrupted observation of the patient make the Freiburg method impracticable for large hospitals and crowded wards.

Mortality in Relation to Water-Supply.

John A. Vogelsson, chief of the bureau of health, Philadelphia, publishes the following interesting report in the *Engineering Record*, New York, about mortality rates of Philadelphia in relation to water-supply which the city fathers in the municipalities of India may read with advantage.

Philadelphia was engaged in improving its water-supply by construction of filtration plants and re-arranging its water distribution system from 1900 to 1911. The typhoid fever rates of such districts as received filtered water in

the early development of the improvements began to decline immediately after the introduction of filtered water, and following the completion of the last of the five filtration plants in 1911, the typhoid death-rate for the entire city shows a consistent decrease from 72.4 per 100,000 in 1906 to 12.5 per 100,000 in 1912. Isolated sections of the city, notably West Philadelphia, with a population of 267,840 had a typhoid rate of 5.9 per 100,000 in 1912. A large percentage of the typhoid which formerly scourged Philadelphia was undoubtedly water borne, and the marked reduction of typhoid in this city is a notable sanitary achievement, due in by far the largest part to the filtration of the water-supply.

Infant Mortality.

Reference is made in the annual sanitary report for the Central Provinces to the theory of infant mortality and its acceleration by high temperature.

This matter has been examined by Major Kenrick, I. M. S., who has written a most interesting paper on the subject for the Sanitary Conference at Lucknow. We are told that his curves and figures show very clearly the most extraordinary increases which certainly synchronise with high atmospheric temperatures and appear to be closely related to them. These curves are most marked in the hot years in the hot districts and in the towns during May, and practically disappear in the plateau areas where the heat is never so excessive. He excludes the possibility of epidemic sickness and produces similar figures from other provinces in support of his contention. "Some of the district reports for the year under review favour the theory of heat exhaustion as a potent factor in the causation of infant death and on the whole there is much evidence to support it." Admitting this cause, what is the remedy?

USEFUL MEDICAL AND SANITARY NOTES.

Price of Drugs and Chemicals.

According to the *Chemist and Druggist* of 15th August, the following articles have advanced in price since the outbreak of war. Some stocks are rapidly becoming unobtainable: acetone; acid, acetic, and acetates; acid, acetylsalicyl and salicylates; acid, carbolic, and preparations; acid, citric, and salts; acid, lactic, and lactates; acid, salicylic, and salicylates; acid, tartaric, and salts; lard, lanoline, paraffins and ointments; synthetic benzoic acid and salts; all bromides very much advanced, famine prices not improbable; all starches, arrowroot and foodstuffs; acetanilid, aspirin, and all German synthetic preparations; antimonial salts; belladonna and atropine; glycerophosphates; glucose; cantharides; chloral hydrate; cocaine and salts; opium, opium preparations and opium alkaloids; ergot and preparations; formaldehyde; iodine and iodine preparations; gentian; ipecacuanha; mercurials; linseed; magnes. sulphas; all honeys and oxymels; milk sugar, ol. amygd. ang.; ol. bergamot; ol. camphor. essent; ol. lavand. gallic; ol. limonis; ol. morrhue; ol. olive; ol. ricini; paraffin. liq; potass. bicarb; potass. carb.; potass. nitras; potass. permang; quinine and salts; saccharin; seeds coriander; sugar and preparations containing it—e.g., confections, pulv. glyc. co., syrups, etc.; sodii hyposulph.; strychnine and salts; sulphur; thymol; zinc and salts; all effervescent preparations containing sugar, citric acid and tartaric acid, vanillin.

State Medical Faculty.

The abolition of the L. M. & S. Examination in Calcutta resulted in the shutting out of a large number of students capable of profiting by a wider course of training than that prescribed for the schools. In order to meet the situation without resuscitating the L.M. & S. Examination inasmuch as the reasons that demanded its abolition are as potent as ever, the Governor-in-Council has decided to bring

into being a separate medical body called "The State Medical Faculty." This course has the additional advantage of "standardising the examination of candidates from the Government Medical Schools and from those private Medical Schools whose equipment and training may justify them in aspiring to a registrable qualification for their students."

How to Kill the Typhoid Organism.

The addition of about a cupful of commercial unslaked lime and water to a typhoid stool will generate enough heat to kill the typhoid organism. While cold water may often suffice, it cannot be depended upon owing to the variable quality of the lime. Hot water from 50° to 60° C. will always give the desired results. The lime used should be in lumps, broken up in small pieces and distributed over the stool. This simple, efficacious method should take the place of the various methods now in use.

Is Your Weight Right?

The measurements of "the average man" as compared with the "physically perfect man," are as follows:—

	Average man.	Physically Perfect man.
Height	... 5 ft. 7.6 ins.	... 5 ft. 8.88 ins.
Weight	... 141.39 lbs.	... 186.29 lbs.
Chest	... 34.81 ins.	... 40.86 ins.
Neck	... 14 "	... 15.50 "
Waist	... 30 "	... 31.69 "
Biceps	... 13.50 "	... 15.55 "
Forearms	... 10.50 "	... 13.46 "
Thigh	... 20.50 "	... 24.05 "
Calf	... 13.79 "	... 16.08 "
Lung Capacity.	256 cubic ins.	450 cubic ins.

Liquid Paraffin and Wounds.

Treatment of wounds and bed sores with liquid paraffin, applied upon gauze, has been recommended by a Balkan war surgeon, after experience in 92 cases. Even gaping wounds laying bare the bone, healed with remarkable quickness, and the addition to the paraffin of a little iodoform—not more than 2.5 per cent.—gave even better results.

The Economic World.

Commercialism in the Punjab.

The *Punjabee* points out that with the Punjab Hindus, commercialism was not a matter of accident or of preference but of stern necessity. Commercialism was imposed upon that province, not in imitation of the methods of the hustling west, but by the instinct of self-preservation inherent in man. This imposition, however, was too sudden; it dated from the passing of the Punjab Land Alienation Act which was a signal to the Punjab Hindus that henceforth they must turn their energies to channels other than agriculture which would be a close preserve for certain scheduled tribes.

Exclusive land laws have had an intimate bearing upon the commercial development of the Province. The higher the barrier was raised against Hindus in the matter of acquisition of land, the stronger was the impulse toward commercialism. The wretched bread problem stared the Punjab Hindus in the face. The avenues to employment under Government were restricted. They could only turn to commercial and industrial career for a livelihood. As no such career nor facilities for training in it existed, they were compelled to create them for themselves. But they lacked experience, foresight, training, while they had their full share of human frailties and *amour propre*. No wonder that the inevitable disaster came, and when it did come, it gave a rude set-back to commercialism in the Punjab.

The beginning of the craze for commercialism synchronised with the passing of stringent land laws to the prejudice of non-agricultural tribes. The truth of this statement is borne out by the fact that the birth of by far the largest number of limited companies dates from the passing of the Punjab Pre-emption Act, 1905, and the Amending Act of 1907, abolishing the so-called

statutory agriculturist of the original Act. The effect of these measures was that the middle class Hindu, even though he had been hereditary occupier of land from times prior to the advent of British rule in the Province, was disqualified from acquiring agricultural land in his ancestral villages from his neighbours, who happened to belong to the notified tribes. The saving grace of the original Act was thus taken away and all arguments of ancestral holding and hereditary agricultural avocation were of no avail. A *Bania* (this was the generic term for all Hindus) did not cease to be a *Bania*, merely because he happened to own ancestral land—this was the accepted official argument. The cogent and well-reasoned plea for Hindu hereditary agriculturists put forward by Sir Mackworth Young was thrown to the winds. The policy has been going apace and it behoves, says our contemporary, both the Government and the leaders of public opinion to consider the effect of the operation of the Punjab Land Alienation Act with a view to finding a *modus vivendi*, which, while amply securing the object of the Government, might relax some of the unnecessarily stringent provisions against the Hindus. Such an enquiry is all the more necessary at the present time in view of the partial closing of commercial and industrial avenues in the Province.

Rural Exodus in Belgium.

A recent issue of the *Monthly Bulletin of Economic and Social Intelligence* contains an interesting article on rural exodus in Belgium, that little country which has since been sacked by the Germans. We refer to the article here as the causes discussed apply to the position in India also. The writer distinguishes four forms which rural exodus assumes:—

1. Real concentration in towns, which is a form of permanent emigration,

2. Seasonal emigration, especially of peasants, who leave their villages to pass one or more seasons in other districts and return home during winter.

3. Weekly emigration of workmen who return home on Sundays.

4. Daily emigration consisting in daily journey from the village of residence to the city.

The first form of emigration is really beneficial, in the writer's opinion, so long as it keeps within due bounds; for new blood should be regularly brought to the town from the country. Seasonal emigration is common among agricultural laborers in seasons of scarce work and in densely populated areas. This too is beneficial as it gives work to the unemployed laborer. The other agricultural laborers too who stay in their villages get higher wages. The daily and weekly emigrations are of the greatest importance in Belgium. They are generally of unskilled laborers. These migratory laborers form about one-fifth of the working population.

Causes and Effects of the Exodus.

The writer puts forth several reasons for this exodus, of which the first is that the land has no work to offer to the emigrating laborers. There are seasons in the year, especially winter, when there is no work on the farms. The small industries, carried on as auxiliaries to agriculture, have disappeared. Another reason is that the manufacturers give higher wages. Some laborers go away because work in the factories makes them more independent of their relations. It may be noted that the mere attractions of city-life alone do not count much in bringing about this migration.

The advantages of this migration consist in the wages it brings to those who would otherwise be unemployed and destitute. The disadvantages, however, the writer says, are very many. The laborers suffer from unaccustomed, debilitating work and from long uncomfortable journeys. They are separated from their

families for long intervals. Their health and morality suffer seriously. Sometimes they contract most serious diseases. The effect of this migration upon rural economy is seen in the dearth of laborers, especially in the neighbourhood of cities and industrial centres. Farming and agriculture therefore suffer seriously in such parts.

Remedies.

The remedy, in the writer's opinion, consists in improving the position of the agricultural laborer and rendering it as enviable as that of the industrial laborers. Every improvement in agriculture will improve the position of the laborer. As to other remedies, the writer takes them from the Marquis Imperiali who advocated (a) practical instruction to the laborers in the advantages of country life, (b) kind treatment of the laborers by the agricultural masters, and (c) the encouragement of small farms. Experience has shown that almost everywhere where the remedies advocated by the Marquis have been applied, there has been an appreciable arrest of emigration.

The Science of Borrowing.

The U. S. A. Government has recently published, through the Department of Agriculture, a small brochure on the scientific principles of borrowing. Intended primarily, "to help farmers with the business side of their enterprises, and suitable for all sections of the country," it may be read by farmers profitably in all countries.

The five cardinal rules laid down are:—

(1) Make sure that the purpose for which the borrowed money is to be used will produce a return greater than that needed to pay the debt.

(2) The contract should provide for the repayment of the loan at the time when the farmer is most likely to have the means wherewith to repay it.

(3) The length of time the debt is to run

should have a close relation to the productive life of the improvement for which the money is borrowed.

(4) Provision should be made for the gradual reduction of the principal.

(5) The lowest interest rates possible should be secured.

Economic Archives.

An entirely new departure in Switzerland is the foundation of Economic Archives on the German model. "The first institution of this kind," says a correspondent of the *Economist*, "was that of Cologne (in 1906); Mannheim, Hamburg, and Munich soon followed; while three years ago the movement was introduced into Switzerland by the cities of Zurich and Basel. The object of these institutions is to collect statistical materials of every kind relating to commerce. The Archives are used extensively by many classes of people; students who are investigating financial matters, journalists, especially commercial reporters, business men, politicians, statisticians, and public bodies. A brief description of the Economic Archives of Basel, which are among the finest yet founded, will serve to illustrate the nature of the movement. We have at Basel a well-equipped staff, which is constantly engaged in cataloguing and arranging the materials sent from all parts of the country. All printed matter relating to commerce is collected; the reports of limited companies, the text of all laws and bye-laws affecting trade, the statistics of the Customs Office, everything concerning forestry, fishing, agriculture, mining and manufacture. The balance sheets and reports of banks, the publications of trade unions, insurance statistics, postal and railway information, the reports of foreign Consuls, accounts of international exhibitions, and money market statistics are regularly received. To a limited extent also, the account books of important local firms and similar materials are sent to the Archives.

In many cases such information is naturally sealed, and no use is made of it without special consent. The Archives thus gather materials which hitherto were scattered about in different places—bankers' offices, the libraries of Chambers of Commerce, or statistical bureaux. Apart from this centralisation of materials, they preserve a vast body of valuable information which would otherwise have been destroyed in the course of time. In the early stages of the movement, the Archives had a very limited range, and embodied little more than information relating to private enterprise. They were founded, firstly, to meet the need of the study of private enterprise, and, secondly, at the wish of a few old-established firms, which deposited in them their account books and papers. Several monographs on firms of long standing were the results. This nucleus, however, soon proved to be too limited and the Archives extended their work in many different directions, and improved their organisation considerably. The movement is rapidly spreading to other countries. At Budapest an institution is now in process of being founded, and Pressburg will follow. In official circles in Berlin, Vienna, Stockholm, Copenhagen and Amsterdam the question is now receiving attention, and there is every reason to believe that in another ten years almost every large commercial centre in Central Europe will have its Economic Archives.

The Labourer's Wife.

In the course of an article on Agriculture, by L. W. Wilsden, in the *Economic Review*, we have a picture of the life of the agricultural labourer's wife in England. The writer says:—

While the children are small, the mother is undoubtedly tied; but so soon as they come to school age, she frequently has the day from 8-30 a.m. to 4 or 4-30 p.m. entirely to herself. There is the family cooking to be attended to, the family washing and mending to be done,

but the house itself is small and the labour of housework is small also. The consequence of this is that she has, as a matter of fact, a good deal of spare time. The following is a list of the ways in which she employs her leisure, her object being to gain either money or things useful at home, or both of these combined, with interest and variety :—

(1) She may give occasional help at the farmhouse.

(2) She may give occasional help in other houses.

(3) She may give help in sickness.

(4) She may give an occasional day to stone-picking in the fields.

(5) In hay-time she may give help in the hayfield.

(6) In some districts she is always at liberty to gather fuel.

(7) In their proper seasons, there are flowers, cress, blackberries, and mushrooms to be picked, and either sold or used at home.

(8) There is generally a garden, in which something can be done at most seasons of the year.

(9) Where the pig-styes have not been condemned by the Sanitary Authority as too near the house, a labourer of the more careful sort usually keeps a pig. The care of both pig and fowls falls to the woman's share.

(10) She may take in washing. There is a keen demand in most country places for someone to do washing.

(11) She may undertake the cleaning of the church, chapel, or school.

Ten Commandments for Germans.

We read that the following Ten Commandments have been distributed broadcast in Germany :—

1 In all expenses, keep in mind the interests of your own compatriots.

2 Never forget that when you buy a foreign article, your own country is the poorer.

3 Your money should profit no one but Germans.

4 Never profane German factories by using foreign machinery.

5 Never allow foreign eatables to be served at your table.

6 Write on German paper with a German pen and use German blotting paper.

7 German flour, German fruit, can alone give your body the true German energy.

8 If you do not like German malt coffee, drink coffee from German colonies.

(9) Use only German clothes for your dress and German hats for your head.

(10) Let not foreign flattery distract you from these precepts ; and be firmly convinced, whatever others say, that German products are the only ones worthy of citizens of the German Father land.

On this the *Leader* comments : "Distinctly good. The best text for Swadashi apostles to preach from. Let us by all the means in our power, reinforced by active Government support, which indeed is indispensable and ought to be given, follow these admirable German precepts as far as the circumstances of our country render possible at present, and let us, above all, earnestly try to plant in India industries for the products of which we have been helplessly dependent upon Germany—and Austria ; so that we may be able, even after the war, to do quite well without 'made in Germany's.'"

Profit Sharing on the Farm.

A paper on this subject was recently read before the Farmers' Club in London by Sir Richard Paget, Bart., who is the author of a useful book, "Partnership in Agriculture between Landlord and Tenant." It was pointed out, that under partnership, agriculture enters the ranks of the recognised industries. The profits being ascertained each year, it is easy to introduce a system of profit-sharing with labourers. In the case of Sir Richard Paget's farm, a bonus is offered to the farm hands of a percentage on their wages for the year equal to the percentage earned by the farm on the capital of the partnership. This system appears to work very satisfactorily.

The Financial World.

Bank of England.

The present financial situation lends great importance to the position of the Bank of England as custodian of gold for international banking. London is the only European centre which is always prepared to honor its drafts in gold immediately and to any extent. The Bank of France has the right to make payments in silver, and uses it by often charging a premium on gold, sufficient to check any demand for it ; and in other centres, measures are taken which make apparently free convertibility of credit instruments optional at the choice of the central bank. Consequently, the Bank of England has to be prepared to meet demands on it at any time from abroad, based on credits given to foreigners by the English banking community, and it has thus to observe the signs of financial weather in all parts of the world and to regulate the price of money in London so that the exchanges may not be allowed to become or remain adverse to a dangerous point. The difficulties of this task are increased by the extent to which the English banking community works independently of it, by accepting and discounting finance paper, and giving foreigners credits at rates which encourage their further creation. For the low and wholly unregulated proportion of cash to liabilities on which English banking works, enables the other banks to multiply credits ultimately based on the Bank of England's reserve, leaving the responsibility for maintaining the reserve to the bank. This it does by raising its rate when necessary, and so, if it has control of the market and its rate is "effective"—a phrase which will be explained later—raising the general level of money rates in London.

WHEN THE RATE IS INEFFECTIVE.

When its rate is not effective, the Bank of

England finds itself obliged to intervene in the outer money market—consisting of the other banks and their customers—and control the rates current in it. This it does by borrowing some of the floating funds in this market, so lessening their supply and forcing up the price of money. By means of this borrowing, it diminishes the advances kept with it by the other banks, either directly or indirectly—directly if it borrows from them, indirectly if it borrows from their customers who hand the advance to it in the shape of a cheque on them. The result is that so much of the "cash at the Bank of England," which the English banking community uses as part of its basis of credit is wiped out. Money becomes dearer. The Market rate of discount consequently tends to advance, the foreign exchanges move in favour of London, and the tide of gold sets in the direction of the Bank of England's vaults, and it is enabled to replenish its reserves or check the drain on it. That the Bank of England should have to go through this clumsy ceremony of borrowing money that it does not want, in order to deprive the outer market of a surplus which depresses discount rates in a manner that is dangerous owing to its effect on the foreign exchanges, arises from the want of connection between bank rate and market rate. In former days, the London money market never had enough money to work with without help from the Bank of England. Bagehot, in his great work on *Lombard Street*, published in 1873 says that "at all ordinary moments there is not money enough in Lombard Street to discount all the bills in Lombard Street without taking some money from the Bank of England."

INFLUENCE ON MARKET RATE.

As long as this was so, the bank rate—the

price at which the bank would discount bills—was at all times an important influence on the market rate. Since then, however, the business of credit making has been so quickly and skilfully extended that Lombard Street is frequently able to ignore the bank rate, knowing that it will easily be able to supply its needs from the other banks, at rates which are normally below it. Currency in England consists of cheques drawn against deposits which are largely created by the loans and discounts of the other banks. There is no legal limit whatever on the extent to which these loans and discounts can be multiplied, and the only limits imposed are those of publicity, which is applied rarely in all cases and in some not at all, and of the prudence with which the banks conduct their business. Hence it follows that competition between the banks often impels them to continue to make advances or discount bills at low rates, when the Bank of England, as custodian of the English gold reserve, thinks it advisable in the interests of the foreign exchanges to impose a higher level. This it does by borrowing some of the credit manufactured by the other banks, in order to create artificial scarcity of money, and make its own official rate effective.

CREDIT MAKING FACILITIES.

It thus appears that the Bank of England's official rate is often through long periods a mere empty symbol, bearing no actual relation to the real price of money in London: and only becomes effective, and a factor in the monetary position (1) when the trade demand for credit is keen enough to tax the credit-making facilities of the other banks to their full extent, (2) when the payment of taxes transfers large sums from the other banks to the Government's account at the Bank of England, so reducing the "cash at the bank" on which they build credit operations, and (3) when, owing to foreign demands for gold, the Bank of England takes measures, by borrowing, to restrict credits in

the open market and to make its rate effective. In other respects its official rate differs materially from the rates quoted by ordinary dealers in credit.—*Commerce.*

The Moratorium.

The following are the essential portions of the two Proclamations issued in Great Britain in connection with the introduction of the Moratorium on Sunday, the 2nd August.—

Whereas in view of the critical situation in Europe and the financial difficulty caused thereby, it is expedient that the payment of certain Bills of Exchange should be postponed as appears in this Proclamation.

Now, therefore, we have thought fit by and with the advice of Our Privy Council to issue this Our Royal Proclamation, and we do hereby proclaim direct and ordain as follows:—

If on the presentation for payment of a Bill of Exchange, other than a Cheque or Bill on demand, which has been accepted before the beginning of the fourth day of August, 1914, the acceptor reaccepts the Bill by a declaration on the face of the Bill in the form set out hereunder that the Bill shall for all purposes, including the liability of any drawer, or endorser, or any other party thereto, be deemed to be due and be payable on a date, one calendar month after the date of its original maturity, instead of on the date of its original maturity, and to be a Bill for the original amount thereof, increased by the amount of interest thereon calculated from the date of re-acceptance to the new date of payment at the Bank of England rate current on the date of the re-acceptance of the Bill.

Whereas under the postponement of the Payments Act, 1914, His Majesty has power by proclamation to authorise the postponement of the payment of any Bills of Exchange, or of any negotiable instrument, or of any other payment in pursuance of any contract to such extent, for such time and subject to such condi-

tions or other provision as may be specified in the proclamation.

And whereas it is expedient that provision should be made for the purpose of such postponement of payment in addition to the provision already made by Our Proclamation, dated the 2nd August, 1914, relating to the postponement of payment of certain Bills of Exchanges:

Now, therefore, we have thought fit by and with the advice of Our Privy Council to issue this Our Royal Proclamation, and we do hereby proclaim direct and ordain as follows:—

Save as hereinafter provided, all payments which have become due and payable before the date of this Proclamation, or which will become due and payable before the date of this Proclamation or which will become due and payable on any day before the beginning of the 4th September 1914, in respect of any Bills of Exchange, being a cheque or Bill on demand, which was drawn before the beginning of the 4th August 1914, or in respect of any negotiable instrument not being a Bill of exchange dated before that time, or in respect of any contract made before that time shall be deemed to be due and payable on a day, one calendar month after the day on which the payment originally became due and payable, or on the 4th September, 1914, whichever is the later date, instead of on the day on which the payment originally became due. But payments so postponed shall if not otherwise carrying interest and if special demand is made for payment is refused, carry interest until payment as from the 4th August, 1914, if they become due and payable before that day and as from the date on which they become due and payable, if they become due and payable on or after that day at the Bank of England rate current on the 7th August, 1914. But nothing in this Proclamation shall prevent payments being made before the expiration of the months on which they are so postponed.

This Proclamation shall not apply to (1) any payment in respect of wages or salary, (2) any payment in respect of a liability which when incurred did not exceed five pounds in amount, (3) any payment in respect of rates or taxes, (4) any payment in respect of maritime freight, (5) any payment in respect of any debt from any person resident outside the British Islands or from any firm, company or institution whose principal place of business is outside the British Islands not being a debt incurred in the British Islands by a person, firm, company or institution having a business establishment or branch business establishment in the British Islands, (6) any payment in respect of any dividend or interest payable in respect of any stocks, funds or securities other than real or veritable securities in which trustees are under Section 1 of the Trustee Act, 1893, or any other Act for the time being in force authorised to invest, (7) any liability of a Bank note issued by that Bank, (8) any payment to be made by or on behalf of His Majesty or any Government Department including the payment of old age pensions, (9) any payment to be made by any person or society in pursuance of the National Insurance Act, 1911, or any Act amending that Act whether in the nature of contribution from benefits or otherwise, (10) any payment under the Workmen's Compensation Act, 1906, or any Act amending the same, (11) any payment in respect of the withdrawal of a deposit by a depositor in a Trustee Saving's Bank.

Nothing in this Proclamation shall affect any Bills of exchange to which our Proclamation, dated the 2nd August 1914, relating to postponement of payment of certain Bills of exchange applies.

Additional stamp duty is payable in respect of any instrument as a consequence of any postponement of payment in consequence of these Proclamations.

Indebtedness of the Nations.

An interesting article in a recent issue of the

Japan Times compares the public debt of Japan with the indebtedness of various other countries. "It is frequently asserted, and commonly taken for granted," remarks our Tokyo contemporary, "that Japan in comparison with other countries is overburdened with public debt. As a matter of fact, the public indebtedness of Japan is comparatively small. In this respect she is far down in the list of commercial nations. It is not a question of amount, but, of course, of *per capita* indebtedness, that actually counts—with due consideration of the means of ultimate payment. In total amount, France is first, with fifty-two million pounds. She is second in individual indebtedness of her people. In total amount the order of the greatest debtors is: France, Russia, Germany, Austria-Hungary, Great Britain, Italy, Spain, Japan, Australia, and United States."

"Considering the individual obligation of the subjects or citizens," continues the *Japan Times*, "the order is quite different. In this, the true rank, Australia leads with an indebtedness of £61-10-0 resting upon every individual of the Commonwealth. France which is second, is far below, with £34-18 0. Next comes Portugal with 26 6; Argentina, 21-11; Belgium, 21-10; Spain, 19-5; Great Britain, 16-18; the Netherlands, 15-17; Germany, 15-12; Austria-Hungary, 14-12; Italy, 14-10; and Canada, 13-13. Japan is only £5-9-0 per capital. Before her, in addition to the big debtors mentioned above are Russia, United States, Brazil, Greece and a number of small States. The figures, of course, whether in the case of Japan or any other country, do not reveal the actual situation, which is the capacity of the debtor to pay at the least sacrifice to himself. But it shows at least that, in the usual ways of considering public debts, Japan cannot be called a nation overburdened with debt. There is apparently margin enough, from the financial point of view, for the Empire to carry out any reasonable programme, without overtaxing the

potential productive capacity of its people." Incidentally, it may be remarked that the comparative figures cited are certain, in the case of the great European Powers at least, to show a vast difference within the next twelve months.

Indian Coinage in 1913-14.

The following statement taken from the Review of the Reports on the Administration of the Mints at Calcutta and Bombay for the year 1913-14 shows the details of the silver coinage executed for the Government of India in the two mints during 1913-14:—

	Calcutta.	Bombay.	Total.
	Value in rupees.	Value in rupees.	Value in rupees.
Rupees ...	6,01,00,000	6,12,00,506	12,13,60,506
Half-rupees ...	13,61,706	9,12,394	22,74,100
Quarter-rupees ...	31,71,616	19,87,193	51,58,809
One-eighth-rupees	17,02,736	10,72,386	27,75,122
Total ...	6,63,36,058	6,52,32,479	13,15,68,537

New rupee coinage was again necessary, and the outturn from Rs. 6.75 lakhs worth of silver was 10.19 lakhs of rupees. The figures in the above statement also include the usual recoinage of withdrawn and uncurrent coins. Nickel one-anna coins numbering 46,320,000 pieces of the nominal value of Rs. 28,95,000 were coined at the Bombay Mint against 39,776,000 pieces of the nominal value of Rs. 24,86,000 coined in the preceding year. The bronze coinage, which was as usual carried out entirely at the Calcutta Mint, consisted of pice, half pice and pie-pieces of the aggregate value of Rs. 20,85,439 as compared with Rs. 19,18,461 in the previous year. The copper coinage consisted of cents to the value of Rs. 30,000 for the Ceylon Government.

The Industrial World.

Immediately Possible Industries.

As much is being talked about catching German trade during the war, the following extract from a note on the present economic situation drawn up by Mr. K. T. B. Tressler, Director of Industries, Madras, is sure to be read with interest.

In the following table the principal imports into Madras are shown in convenient form:—

Commodity.	Home Production (approximate).	Imports from friendly countries.	Imports from hostile countries.	Total imports.
	Value in Lakhs	Value in Lakhs	Value in Lakhs	Value in Lakhs
Textiles...	125.0	822.5	1.2	928.7
Yarn ...	36.0	107.0	2.4	109.4
Sugar ...	60.0 (jaggery).	58.4	6.9	60.3
Cement ...	3.0	12.0	1.8	13.8
Gunnies ...	6.0	10.4	...	10.4
Manures ...	Unknown.	.21	2.5	4.6
Glass ...	Nil.	2.5	14.8	17.3
Matches ...	Nil.	10.2	1.9	12.1
Locks and hinges ...	Nil.	2.7	1.0	3.7
Enamel ware ...	Nil.	.4	3.2	3.6
Pencils ...	Nil.	2.0	1.1	3.1
Paper ...	Nil.	18.2	4.2	22.4
Soap ...	Nil.	7.2	1.2	8.4
Silk ...	Nil.	6.4	...	6.4
Lamps ...	Nil.	2.1	1.8	3.9
Hardware and pottery.	1.0	2.8	.4	3.2
Candles ...	Nil.	2.8	...	2.8
Cigarettes ...	.5	2.0	...	2.0

The amount of home production shows the extent to which the industry is organised: the country from which the commodity is imported indicates to some extent the "prospects" of the industry and the total imports shows the extent to which home production can be increased by substitution for foreign goods without any increase in the total demand.

In the table the industries are roughly arranged according to their capacity for extension. The first six represent industries already more or less organised in this country. In this class, a considerable expansion of output may be expected to occur, but the manufacturers themselves may be relied on to look after their own interests, and Government action would therefore appear to be unnecessary. Cane juice is, in India for the most part, made into jaggery, but the conversion of jaggery into sugar is not a matter we are now concerned with.

The next five industries may be put into a class together representing industries not at present carried on in India, but specially favoured by the economic situation. These industries may be dealt with in detail.

The appended table shows the imports of glass in its various forms—

Commodity.	Total imports. LAKHS.
Bangles ...	6.7
Bottles and phials ...	1.9
Beads and false pearls ...	2.5
Lamp ware ...	2.4
Sheet and plate ...	2.2
Decanters ...	.6
Other glass ...	1.0
	17.3

A considerable proportion of the glass imports consists of high class goods which it would be impossible to produce in India, but it is evident from the figures that there is a considerable demand for goods which could be made.

I am now in treaty with the proprietor of the late glass factory with a view to starting experimental manufacture and on this industry a special report will be submitted.

About two lakhs worth of *matches* are purchased from Germany and Austria and about ten lakhs worth from Scandinavia and Japan. The main sources of supply have not been stopped and it is doubtful if this industry could be conveniently introduced at present as the wood difficulty is one that it will certainly take a great deal of experimenting to solve.

There is moreover the further difficulty that there is no match-making machinery available in India and that by the time enquiries have been made and the machines obtained, the special conditions now prevailing will almost certainly have passed away.

In *locks* and *hinges* something might perhaps be done, but here again the machinery difficulty will probably postpone any possible action until after the conclusion of the war.

The same remark applies to *enamel ware*, but in all the above cases, I have instituted enquiries so as to be prepared for eventualities.

The import of *pencils* amount to over three lakhs per annum—a figure sufficiently large to ensure a sufficient opening for indigenous goods provided they are of reasonable quality. I am now under correspondence with a pencil making expert and shall submit a separate report on this point shortly.

The last class of industry is that of which the prospects are least promising from the point of view of indigenous manufacture. For this class of industry the present economic situation offers the least opening in India. It is clear that Government cannot take up every possible line of development and in view of the greater opportunities offered in other directions this last class need not be considered for the moment.

There are, however, one or two new industries that the list suggests and the principal one of these is the manufacture of wood pulp. On this point I have instituted enquiries and will submit a further report later if necessary.

A New Process in Silk Dyeing.

There is perhaps no industry in America, says the *Scientific American*, that has gone through so many stages of experimentation as that of silk dyeing, and it is by reason of this fact that the silk industry has grown to such enormous proportions in the United States. A new process is now being used in the large silk-dyeing houses for the purpose of loosening the slender threads of raw silk that compose the skein, so that they will more readily "take" the dye. When the silk arrives at the dye-house after being packed in bales perhaps for months, the tiny threads are so closely pressed together that they must be separated as much as possible, and as this is not practicable by mechanical means, chemical processes must be resorted to.

Formerly, this object was accomplished by using large boxes, about thirty feet long, three feet wide and three feet high. These boxes were filled with a weak solution of phosphate of soda, and the silk skeins were suspended on small wooden rods placed across the top and extending a few inches beyond the sides of the boxes. The silk was then moved backwards and forwards in this bath by two operatives working together, one on each side of the box. At frequent intervals the silk was turned so that all parts of it became immersed in the liquor. This process continued for about an hour, when the silk was taken out, washed and dried. The operation was repeated several times while the silk was passing through the various stages of preparation for dyeing, and it was slow and laborious work.

By the new process, the phosphate of soda of five degrees specific gravity, and heated to fifty deg. R. is placed in a series of rubber tanks, these tanks being connected with large hydro-extractors, each having a capacity of four hundred pounds of silk. Each one of the rubber tanks is supplied with a coil of lead pipe placed in the bottom through which a constant

pressure of steam is forced for the purpose of heating the liquor to the required degree. The strength of the phosphate of soda solution also varies somewhat, according to the kind and quality of silk to be treated.

The silk is packed loosely in the hydro-extractors, so that the phosphate of soda may thoroughly permeate every part of it and the machine is then slowly revolved while the phosphate of soda is pumped into it from the rubber tanks. As soon as they are filled, the flow of soda is turned off and the hydro-extractors continue to revolve slowly for about an hour. In this way every part of the four hundred pounds of silk which they contain is thoroughly permeated, and the fine threads of silk loosened in the skein and separated from each other, so that they can easily become saturated with the other chemicals and dyes used in the process of dyeing.

At the expiration of an hour the hydro-extractor is stopped and the phosphate of soda solution allowed to run back into the rubber tanks until the machine is empty. The hydro-extractor is then rapidly revolved or "whizzed" for ten or fifteen minutes until the silk is thoroughly dry. It is then taken out and a fresh supply of silk is put into the machine. The silk is washed on a washing machine, dried in a smaller hydro-extractor, and is then ready for the subsequent processes. By means of the new method of treating the silk the output of the dye-houses is increased about one-fourth and the cost of treating the silk materially reduced.

The Effect of War on Industry.

In order to face with equanimity the grim outlook of the present war and its effect upon industry, Mr. C. W. Macara gives some valuable and practical suggestions which, if acted upon, both by the Government and by the people would surely avert the terrible calamities of labour and capital that would otherwise accrue as a result of the crisis. Being largely ac-

quainted with the international and the British cotton trade, he deals at length with that trade and says that the difficulties with regard to other manufactures also can be met in the same manner. The total exports and imports of the United Kingdom amount to about £1,300,000,000 per annum, and of this vast total £500,000,000 represents the trade done with the nations of Europe, most of which are now engaged in war. "It is prudent to assume," says he, "that a large proportion of this trade must be suspended for the present, but if we maintain our command of the seas and a financial crash is avoided, there is no reason why we should not be able to carry on our trade amounting to £800,000,000, with the nations not engaged in war, reducing the working hours, but still giving the working people sufficient employment to prevent acute distress." The following is a short summary of his suggestions:—

(1) It is quite as essential to success that the leaders of industry, commerce, finance, transport and labour should work together and in co-operation with the Government to give as much employment as possible, as it is for the military and naval forces to play their part.

(2) All existing organisations of industry, trade, finance, transport, labour and philanthropic effort at present established should be utilised to the full. The starting of new organisations by those who are inexperienced is greatly to be deprecated.

(3) Many employers of labour may prefer to contribute towards relief by giving employment at a financial sacrifice instead of contributing largely to relief funds.

(4) The general public, while practising economy, should as far as their circumstances will admit, continue to live as much as possible as in normal times, which will tend to help employment, and, as shown, possibly prevent waste of the more expensive and perishable

foodstuffs and consequent loss to the growers, fruit-pickers, etc.

(5) There is great urgency for the adoption of systematic relief, not to interfere with any existing fund or to super-impose new funds, but to systematise all funds and prevent overlapping in collecting and distributing.

(6) All sections of the community should assist, doing it in the way most suitable to their circumstances and in the manner that is calculated to be the most useful."

Industrial Schools.

The Madras Government a good many years ago started a commercial school at Calicut, and the school has been a great success. The subjects that attract most pupils are shorthand, type-writing and book-keeping. Other subjects are commercial correspondence, commercial geography, commercial practice and banking. All the commercial firms at Calicut and in the neighbourhood have interested themselves in the school from its beginning; they are donors of prizes at the annual distribution, and generally recruit their clerical establishment from its successful pupils. The two main causes for the success of this commercial school are (1) the instruction has been thorough and earnest and (2) there have been large commercial institutions ready to employ, at least, a certain number of the commercial pupils that the school turns out.

After referring, in such glowing terms to the commercial school at Calicut, the *Madras Times* deplores the existence of industrial schools in the Presidency for "a number of years", none of which has been a success and the majority of which have been "absolute failures."

According to our contemporary, the reason for the want of success is to be found in the fact that the instruction has not been earnest and thorough and that there is a lack of industrial firms that would give employment to qualified students.

The young man who has learned an industry in an industrial school in Madras can become no more than a bazaar workman. To be really successful, industrial schools should be help-mates to industrial firms, providing the firms with young men who have been well grounded in industrial work, and who are fitted to help in the development of industry. One case in which an industrial school was a success is the Madras School of Arts when it taught its pupils to work in aluminium. There was a very earnest man, Mr. A. Chatterton, at its head, and the instruction was thorough, and the Government initiated an aluminium industry, which a private company afterwards took over; so, there were openings for the pupils of the school.

After asking the Government to start a model industrial school, our contemporary opines that if industrialism is to be a success, the Government must not only provide good industrial training but must see to it that there are industries. The Government should at this juncture organise industries to which industries industrial schools would be admirable adjuncts.

Fruit bottling.

Choose wide-mouthed bottles and clean them thoroughly. Pick just ripe fruit clean and dry. Place in bottles. Apples and pears should be sliced in quarters, plums put in whole. Fill the bottles with clean water. Stand them up to their necks in water in a fish-kettle or open boiler. The bottle must be open. Slowly raise the water to the boil and let it boil for twenty minutes or half an hour. Take out the bottles singly, and without the smallest delay tie the mouths with clean bladder whilst the water in the bottles is at boiling heat. If corks are used instead of bladders, scald them first. Insert them and seal the tops with sealing or bottle wax. Remember to boil the water gradually. Store the bottles in any cool place. Blackberries can be preserved with a smaller quantity of sugar than other fruit.

The Commercial World.

The Indian Rice Trade.

India's share of the world's production was no less than 46 per cent. The exports of rice in 1913-14 represented 59 per cent. of the total value of food grains exported from India, and 11 per cent. of the value of the total exports. The exports were nearly 9 per cent. of the total estimated production. The rice trade is much less susceptible to the influence of the season than most food grains, rice being grown for export mainly in Lower Burma, where failure of rains is unknown. The export, however, to other countries is affected by conditions in other parts of India. A failure of the monsoon in India at once creates a demand for rice from Burma at prices to which the range of prices in foreign markets does not correspond, thus causing a diversion to India of rice that would otherwise be exported from Burma to foreign countries, and India, excluding Burma then becomes an importing country. Indian rice has to compete not only with rice from other countries, but also with the other substances which are commonly used for the distillation of spirits and the manufacture of starch,—maize and potatoes.

The figures of exports for the last three years are given below:—

	Tons (Thousands)	Value (Rs. lakhs)
1911-12	... 2,624	29,05
1912-13	... 2,763	32,56
1913-14	... 2,452	26,64

Until 1910-11, the average exports of rice from India amounted to 1,944,387 tons. But the trade has recently expanded and the highest export was recorded in 1912-13 at 2,763,321 tons. Rice not in the husk is exported to every quarter of the globe, India being the largest

exporter of rice in the world. The following table shows the principal countries with the value of each:—

	Rs. (lakhs)
Ceylon	4,74
Germany	3,14
Holland	3,04
Straits Settlements ...	2,87
Austria-Hungary ...	2,05
United Kingdom ...	1,69
Japan	1,62

The trade with Japan fluctuated greatly during the last decade.

As the figures now stand, a little over 1,133,700 tons out of 2,421,500 tons or 47 per cent. were taken to Europe, while about 1,000,000 tons, say 42 per cent. were taken for consumption in Asiatic countries. Asiatics in Eastern Africa, the islands in the East Coast of that Continent, in South America, and the West Indies consume the balance. About 52 per cent. of the exports from India are for consumption as food, while the remainder is consumed in Europe partly as material for the manufacture of spirits and starch and partly as food.

Prices during the year (Rs. 5-8-0 per cwt.) were lower than in either of the two preceding years (Rs. 5-14-5 in 1911-12 and Rs. 5-9-7 in 1912-13), but they maintained a higher level than in ordinary years. The average for the quinquennium 1909-10 to 1913-14 being Rs. 5-5-8 per. cwt. and for the decennium 1903-04 to 1913-14 Rs. 5-0-10 per cwt. In 1913-14, exports from Burma and Bengal were on a very low scale, measured by the exports from those provinces in the two preceding years. The share of Burma to the total is shown below:—

	Per cent.
1911-12	73.4
1912-13	74.5
1913-14	75.8

Conference on Commercial Crops.

In its efforts for the improvement and development of Agriculture, the Agricultural Department of this Presidency has been endeavouring indirectly to further the commercial interest which depend upon that industry. In order that the functions of the department may be adequately discharged, Government propose to understand first hand the scope and methods of the work of its various branches. They consider that the operations, so far as they relate to commercial crops, should be conducted in close touch with the growers and producers and with the manufacturing and trading interests who constitute the market for such produce. To further these purposes, it is stated that a conference of representatives of the chief commercial firms engaged in the manufacture, import or export of cotton, ground-nut, sugar, tobacco, jute or wool will be held in Madras on 14th 15th and 16th December 1914. Along with these subjects, others such as fertilisers and manures including the export of fish-manure and the development of well-irrigation will be considered.

Representatives of Railway and other auxiliary interests, honorary visitors of the Agricultural College and the Secretaries of the Central Agricultural Committee will also be invited. This Conference which will be summoned for the definite practical purpose of bringing the Department of Agriculture into closer touch with the producers and the markets which they serve, will meet in the Legislative Council Chamber, Fort St. George, on December 14th at 10-30 P.M. The draft agenda has questions to be answered on cotton, ground-nut, sugar, manures, cocoanuts, tobacco, jute, wool, implements for cultivation and for preparing produce for markets, and well-irrigation by power. A brief summary, account or note on the steps taken or methods adopted by the department hitherto for the improvement of the industries under the above heads except cocoanuts and

tobacco is promised to be prepared and circulated among delegates and visitors beforehand. Practically little or nothing has been done by the department in regard to tobacco and cocoanuts.

Openings for Indian Trade.

A Memorandum and Statistical Tables relating to the trade of India with Germany and Austria-Hungary has been drawn up by the Director of Statistics. The object of the tables is to give detailed statistics of the Indian import and export trade with the enemy countries, and the tables also indicate other countries with which the Indian trade in each article enumerated is carried on. It is possible that in some respects the present crisis may help to stimulate indigenous industries in India, while on all sides the importance must be realised of finding fresh markets for the export of Indian goods which have hitherto gone to the enemy countries. In the matter of getting into touch with British manufacturing firms, or in affording information with respect to any particular trade or industry, the Director of Commercial Intelligence may be able to give some assistance. Inquiries should be addressed to him at 1, Council House Street, Calcutta.

Preference Shares and Dividend.

Under the Articles of Association of a company, the Directors had power, with the sanction of a general meeting, to increase the capital by the issue of new shares. One of the articles provided that, subject to any priorities which might be given on the issue of new shares, the whole profits available for distribution should be distributed among the share-holders in accordance with the amount paid up on their shares. The capital of the company was increased by the issue of 50,000 preference shares, which were to bear a cumulative preference dividend of 10 per cent. and which were to rank, both as to capital and dividend, before the ordinary shares. The

company thereafter adopted another article in place of the one quoted, providing that the profits available for dividend should be applied in the first place for the payment of the 10 per cent. dividend on the preference shares, and, subject thereto, should be distributed as dividend among the holders of the ordinary shares. The preference share-holders maintained that this new article was illegal, and ineffectual to alter the rights given to them by the resolution, on the strength of which the preference shares had been issued. They claimed to be entitled to a 10 per cent. cumulative dividend, and to a rateable proportion of the balance of profits after 10 per cent. had been paid on the ordinary shares. The House of Lords, upholding the judgment of the Court of Appeal (*ante*, vol. xvi., p. 421), held that the preference share-holders were only entitled to their cumulative dividend of 10 per cent. and had no further rights in the profits distributed. —(*Will v. United Lankat Plantation Co., Ltd.*, House of Lords, 27th October 1913.)

The Principal's Business.

There are plenty of men who never accomplish a tithe of what their ability would warrant, simply because they allow themselves to be suffocated with everlasting details which others might have undertaken for them. They do not seem to know how to be big enough, how to delegate detail—the little things which eat up their time and sap their strength—to others. The big things they are capable of doing are scarcely attempted.

It is a wise thing to protect your creative ability, your creative powers, and to keep time-thieves from thwarting your life-purpose, from ruining your career.

Combination in Diamond Trade.

Reuter's Agency informed us some time ago that a conference of the principal diamond Union of South Africa, the Government of the producers, convened by with the concurrence of

the German Government, had held several meetings under the presidency of Sir Carl Meyer. An agreement has been reached in principle under which, in future, the producers represented at the conference will sell through a common selling agency. This, it is stated, will avoid undue competition and give increased confidence to the diamond industry. Details of the agreement are still incomplete and will form the subject of further meetings of the conference.

Indian Commerce and Industry.

We understand that the Director of Commercial Intelligence is at present enquiring into two important questions:—(1) To what extent Indian products hitherto exported to Germany and Austria-Hungary are likely to be taken to other countries, and (2) the possibility of establishing in India industries for the manufacture of articles hitherto exported from Germany and Austria.

A Corner in Sugar.

Referring to the corner of sugar by Government, a Cardiff paper says that Mr. Mackenna purchased 9,00,000 tons of raw sugar from Demerarra, Mauritius and Java for eighteen millions sterling. This was the largest sugar transaction in history. The sugar was sold practically at cost price to refiners who agreed to sell at fixed price.

Business Enterprise in India.

The subjoined statement is an abstract of the companies registered in the month of August, 1914.

	Aggregate nominal capital (in thousands of rupees).
	Rs.
1 Banking and Loan Company...	1,00
1 Insurance Company ...	20
3 Trading Companies ...	4,25
1 Rice Mills Company ...	12
2 Tea Planting Company ...	7,50
1 Land and Building ...	1,00
1 Company (other than those — specified above) ...	2,50
10	
—	Grand total ... 16,57

HINTS ON ADVERTISING.

Principles in Advertising.

"To my mind there are only three fundamental principles in advertising, namely, be honest, be sensible, be persistent. I say be honest because every advertiser should remember that advertising doesn't create value; it merely tells of it. The value has to be in the article itself. I say to be sensible, because the majority of people who read copy are endowed with good common sense. I say to be persistent, because you have to keep everlastingly at it. People soon forget, and unless we keep persistently at advertising we had better not begin at all."—*Hugh Chalmers.*

The Right View-Point.

"Every advertised article," says *Associated Advertising*, "is liable to have, in addition to the indifference of the trade and the public, certain well-defined natural obstacles. But it is surprising how many of these obstacles disappear when the advertiser 'puts himself in the other fellow's place'—the 'other fellow' being the consumer, the retailer and the jobber."

"This isn't easy at first; for it is difficult for any man, intent upon his business, to be sure that he is always looking at it from the broadest possible point of view. But it must be done in every business, and in your business, in order to get everybody working for and with you and to give you the largest possible measure of success."

The Poets and Advertising.

Many a copy can be improved by a little delving into the Muses' resorts. Mr. Ernest Morison's collections gathered in *Printer's Ink* come handy and we reproduce them below:—

FOR TOBACCO DEALERS.

"He who does not smoke has either known no great griefs or refuseth himself the softest

consolation next that which comes from heaven." *Lord Lytton.*

"With pipe and book at close of day,
Oh, what is sweeter, mortal, say?"

Richard Le Gallienne.

Could tobacco manufacturer or retailer wish for more whole-hearted praise of their "leading line" than the above?

FOR TAILORS AND DRESS MAKERS.

"Do you now put on your best attire."

Julius Caesar.

Tailor and costumier may use the above line as they wish. It's equally applicable for both, especially as it clearly defines the "best."

FOR ALL.

"Great business must be wrought to-day."

Macbeth.

This is a motto for all, so we won't be selfish and claim it for any particular agency.

FOR AUCTIONEERS.

"Will money buy them? Assuredly the thing is to be sold!

Buy them with your gold right suddenly."

Shakespeare.

Beyond a doubt that was some perspicacious auctioneer's preliminary parable.

FOR AGENTS.

"Be sure of this, what I can help thee to thou shalt not miss."

All's Well That Ends Well,

Sounds almost like an agent's benediction on a new client!

FOR FANCY BAZAAR.

"Fine linen, Turkey cushions, "bossed" with pearl,

Valance of Venice gold in needlework;

... And all things that belong

To house or housekeeping."

Taming of the Shrew.

If I was running a fancy ware show, I should be much inclined to give this due consideration.

The Agricultural World.

Sterilization of Seeds.

In the sterilization of seeds, several chemical reagents can be employed. The results obtained with regard to the use of hydrogen peroxide are published in the *Kew Bulletin of Miscellaneous Information* No. 5, 1913.

The spores of fungi, also some kinds of bacteria, are as a rule killed by an hour's immersion in hydrogen peroxide; no spores experimented with, germinated after similar treatment for two hours.

In nearly every instance, the germination of the seed immersed in hydrogen peroxide was retarded. Seeds immersed for four hours were, on an average, one to two days later in appearing above ground than untreated seeds of the same kind. Seeds treated for twenty-four hours were retarded two to eight days or in most instances were killed outright. The period of retardation is much less in seeds which germinate quickly than in the case of seeds whose germination is normally slow. After treated seeds have germinated, growth is rapid, and in a short time the plants are equal in size and vigour to the plants from untreated seeds sown at the same time. In some cases, the plants from treated seeds are distinctly larger than those from untreated seeds at the end of three weeks. For all practical purposes, soaking seed in hydrogen peroxide for three hours will kill all superficial fungus spores and the seed will not be injured. This method is to be recommended as a substitute for fumigation, which, as a rule, does not kill fungus spores unless continued for such a time as to damage the seed.

Fresh Manure versus Rotten Manure.

On this subject much can be said, and usually farmers and market gardeners in all countries put their faith, except under peculiar circumstances, on well-rotted manure.

Mr. Ralph L. Watts, Professor of Horticul-

ture in the Pennsylvania State College, writes as follows in his valuable work on "Vegetable Gardening"

"In general farming, the best practice is to apply manure to the land as soon as possible after it is produced. This may also be the best policy in certain lines of vegetable farming; as, for example, grass land to be planted in early cabbage and early sweet corn might well receive dressings of fresh manure after hay harvest of the previous season. In field trucking—i.e., market gardening on a large scale—a very general and commendable practice is to apply fresh manure at any time, provided all conditions are favourable to such applications. The probabilities are that yields will be better than if an attempt is made to store the manures and apply them when well decomposed. It is a well-known fact, however, among market gardeners that fresh stable manures are not suitable for intensive operations in market gardening, because they are not quick enough in their action, and their coarse textures prevent thorough incorporation with the soil particles. Again, fresh manures are likely to cause a rank growth of certain crops, such as tomato, egg-plant, peppers, melon and cucumber at the sacrifice of the fruit. With root crops such as radish, turnip, beet, carrot, parsnip and salsify, fresh manures not only cause excessive top growth, but also prevent the proper root development. It is, therefore, generally conceded that rotten manure is indispensable in all intensive lines of vegetable gardening."

Making Cut Flowers Last.

The following hints, which we are told are the result of a good deal of practical experience, appear in a recent number of the *Agricultural and Horticulturists' Review*:—

Supposing one is gathering the flowers from the garden, it is important to cut the blooms in

the morning, if possible, before the last sign of dew has departed. Flowers gathered under these conditions will last twice as long as those which have been exposed to the blazing sun for hours. Naturally it is a good time to cull the blooms as soon as they have emerged from the buds; flowers which have been out for a long while will not last for any length of time. Cut the stalks off cleanly with a sharp knife, and in the case of those with woody stems peel away a few inches of the rind. All cut flowers should be regularly supplied with fresh water; it is also a good plan to recut the lower portion of the stalk about every two days.

By using a few simple chemicals the length of time which flowers will keep fresh may be very much increased. Take a teaspoonful of carbonate of soda and dissolve this in a pint of warm water. When cold, use the solution for the flowers. Commonsalt will have a somewhat similar effect, though the solution should be very weak. Where flowers are in a faded condition, special steps may be taken in order to revive the blooms. First of all, cut the stems anew and then plunge them into a bowl of boiling water, putting the whole thing aside in a dark cupboard until the water is cold. In ordinary cases, the blossoms will have revived wonderfully. Where there is reason for thinking that the flowers are really old, another plan is to be recommended. A lump of camphor is thrown into the boiling water and the mixture is used for the flowers. Many blossoms which almost seem to be dead can be freshened up by this plan. It is always worth while trying hard to revive old or faded flowers, for, when once these are successfully treated, they will last for a longer time than many fresher blossoms.

Now and again it may be desired to keep cut flowers for a special event. There is no better plan in this case than packing them away in a close fitting tin. The petals and foliage should be free from superfluous moisture. Blossoms may be kept fresh for even a longer

time if the following method is adopted: get a shallow dish and put in a few inches of damp sand. Take the flowers to be preserved and put the stalks into the sand. Then cover them up with some kind of glass shade. For short blossoms ordinary tumblers will do well, while, in the case of long-stemmed kinds, empty glass jam jars would answer the purpose. The whole affair should be put in a shady position. Examine the flowers about every two days, and should there be the least tendency to the formation of mould, a piece of cotton wool with a little carbolic acid on it should be put under each shade. The mould will then disappear almost magically. Those who try this plan will find that flowers may be kept quite fresh for several weeks.

Flowers which are worn often fade very quickly, though if a few precautions are taken there is no reason why this should be the case. Prepare a strong solution of salt and in it soak a piece of cotton wool. The wool is wrapped round the open ends of the stalks and the outside is protected with tin foil. Where the stalk is of a woody nature a somewhat different plan should be followed. Here it is difficult to make the flower absorb fresh moisture, and the endeavour should be to keep in whatever dampness may be present. To this end a small lump of candle-wax should be melted and the cut end dipped into this two or three times. The effect of this is to seal up the opening.

Few people know how to pack flowers properly when sending them away. Many blossoms are ruined. The popular method seems to be to put the flowers into a box as loosely as possible, and then to sprinkle a little water over them. This is all wrong. As long as the specimens are not actually crushed, the more tightly they are packed the better. When put in closely, the flowers do not knock about in transit and they do not lose moisture rapidly. This is very important, and no amount of external dampness will save them from fading if they are freely exposed to the action of the

air. Moreover, drops of water are apt to turn the blossoms a rusty colour. Wooden boxes are better than those which are made of card, seeing that they help to keep the moisture in. Best of all are light tins, in which the blooms will travel comfortably, and be fresh at the journey's end, even though they may be a week or more on the road.

Mulberry Cultivation.

A Mysore sericulturist writing in the *Jayagi Pratap* gives a number of valuable hints on Mulberry cultivation:—

(1) The mulberry garden must be as close as possible to the rearing room.

(2) The plants must attain the height of at least 3 feet before the leaves are plucked from them.

(3) The garden must be free from weeds of every kind and fenced strongly against cattle trespass.

(4) The garden must have irrigation facilities, and the plants are to be planted at regular intervals of 2½ feet apart.

(5) Manuring must be done once in every six months.

(6) Digging must be given to the plants as soon as the leaves are plucked.

(7) All ripe, shrivelled and dry leaves must be stripped down as soon as the leaves from the garden are gathered. This facilitates the sprouting of new buds.

(8) A mulberry garden should not be started in clayed soil or marshy bog.

(9) In planting mulberry, the following precautions are to be strictly observed:—

(a) The variety that yields more of leaf and less of fruit should be chosen.

(b) The variety that yields the largest size of leaf should be preferred.

(c) The variety that yields hairy leaves should be avoided.

(10) Care must be taken while planting to allow 3 inches of the cutting above the surface of the ground and the cuttings must be 40 degrees slanting.

(11) The cuttings are to be always planted soon after the monsoons commence.

(12) Manure must not be applied soon after the planting is done, but the same must be given after the plants have grown up to the height of about 18 to 20 inches above the ground.

(13) *Naicha* leaves or leaves of the first crop should not be given to the worms of any stage.

(14) Mulberry plants should be pruned close to the ground twice a year and a digging should be given soon after.

(15) While planting, precaution should be taken so that the buds of the cuttings may shoot upwards and not turn upside down.

(16) In every pit 4 to 6 cuttings should be planted.

(17) On the borders of the garden, plants which are 20 feet apart should be allowed to grow into trees.

Agriculture in Queensland University.

An urgent appeal is being made for a Government grant towards the establishment of a Faculty of Agriculture in connection with the Queensland University. The memorandum, issued by H.E. Sir William Macgregor, makes out a very strong case in favour of the proposal to set up a department which should include in its scope systematic courses of lectures and demonstrations, and provide facilities for original research on all that is of vital concern to the pastoral, farming, and horticultural industries of that portion of the Commonwealth. The urgency of the question arises not only from the fact that nearly ninety per cent. of the overseas exports of Queensland are of agricultural and pastoral origin, and that her great diversities of soil and climate provide possibilities of almost endless variety of production from field, farm, and plantation, but also from the further consideration that "the University of Queensland will soon, if it does not now, have the undesirable distinction of being the only recognised University in the British Empire that does not teach agriculture." Sir

William Macgregor does well to draw attention to what specialised education and the application of the most advanced science are doing for the most progressive countries of Europe and America, and to the measures which are being taken in the mother country and other portions of the Empire (including the other States of the Commonwealth) by development boards, special grants in aid, and agricultural schools and colleges to furnish a sufficient training to people of the British race. But training in agricultural methods to be efficient must proceed on the lines of systematised local study; possibilities of variations of type, and the necessary conditions for production on the most lucrative scale must be examined and experimented on locally. Queensland has already learned "from experience what science has done and is doing for the prosperity of the State in such matters as, for example, cold storage, sprays, dips, inoculation, dairying, manures, etc. It is now known by experience that there are enemies to every plant and to every animal, and scientific advice and investigation are sought whenever any new disease or pest presents itself. It can hardly be contended, however, says Sir William, "that Queensland's present educational establishments can turn out the highly qualified experts required for such work, and it cannot be doubted that they will always be needed."

We commend this extract from the *United Empire* to the Fellows in the Senates of the several Universities in India in which agriculture is not yet recognised as a fit subject for recognition.

Disease of Pomegranates.

The pomegranate fruit is affected by a kind of the larvæ of a kind of moth which are called *Annar* borers, in the Ahmednagar district. If we examine a diseased fruit we shall find small holes on the fruit. The remedy which is practised is simple. Put about a pound of powdered asafoetida in the main water channel or in a small water reservoir through which the

water passes. Do this twice or thrice from the second or third watering. Thereby this attack will be much lessened. No other harmful disease will then be found on pomegranate.

A Revolution in Castrating.

A new castrating implement has been invented which simply crushes the cord. No wound is made into the scrotum—indeed, there is no cutting at all—and the glands are not removed. So far as the method has been put into practice with the cattle, sheep and pigs, it has been found efficient, and it is, the *Farm and Home* understands, to be tried on horses also. In view of the movement for the avoidance of suffering to animals, which has threatened to interfere considerably with the process of emasculation as at present carried out, the new instrument is of great importance.

Cotton-Seed Meal for Hens.

The *Mississippi Station Bulletin* recently reports on the value of cotton-seed meal for laying hens.

Results of six months' work tend to show 'that cotton-seed meal used as the chief source of protein is palatable to fowls, and that when fed judiciously on it they will produce eggs; that hens fed on cotton-seed will produce eggs when eggs are highest in price; that as far as can be determined, the general condition of the cotton-seed meal-fed fowls seem just as good as the condition of those fed on beef scrap; that the tendency was to lose flesh and not get over-fat, although the fowls were allowed access to the feed at all times; and that there is a good margin of profit from hens when given a properly balanced ration.'

A Tobacco Expert for Ceylon.

The Ceylon Department of Agriculture have, it is stated, secured a tobacco expert with a public reputation to put the whole matter of tobacco cultivation in Ceylon on a sure and satisfactory footing. Mr. B. F. Schefferus, from the experiment station at Lexington, Kentucky, U.S.A., has been appointed.

The Co-operative World.

Co-operation and Industry.

There is at present a good deal of vague talk in this country on what is comprehensively, and perhaps loosely termed, "Industrial Co-operation." This is inevitable in view of both the infancy of the co-operative movement and also the inadequate knowledge of our "experts." Where they are courageous, they believe that co-operation can solve any problem and where timid, they advise us to "hasten slowly" even in the matter of organizing Credit Societies. These defects are at no time so obvious as when one attempts to understand their views on the relationship between the large industries and the co-operative movement, and not many months ago we heard a former Registrar of Co-operative Societies in the United Provinces hold out eloquently on the scope which co-operation gave for building up self-governing industrial concerns. Advice like this, coming from persons whom we look upon as authorities on the subject, cannot but have most disastrous effects. As was pointed out in our supplement on co-operation, the self-governing workshops or Associations of Consumers—it is to those that our experts unconsciously refer—have been a complete failure both in Europe and everywhere else in the world and not even a fractional percentage of the many such institutions started in the course of the nineteenth century are now in existence. That our experts should have been ignorant of this feature of co-operative activities sounds not a little strange, especially in view of the vast literature that we have on that topic. Self-governing industrial concerns, working independently, have long been given up by thoughtful co-operators; but it must be admitted—to avoid any misunderstanding—that co-operation has all the same been found capable of controlling industries, but only in allied forms.

Co-partnership or profit sharing—an institution where the workers share to a large extent in the controlling of the industry along with the outside shareholders of the Joint-Stock Company—has been found to be of no little utility but still more marked has been the success of the Associations of Consumers in building up large industries. And to these we shall confine ourselves in the succeeding paragraphs.

In its simplest form, the Association of Consumers is a Store, with a small capital, buying the articles necessary for its members from wholesale dealers and distributing them in retail among the shareholders, at prices generally lower than in adjacent shops. The capital required to make a beginning is not large and, once begun, it rapidly gains in strength by the appropriation of the profits to build up the capital. As these Stores, a respectable number of which we now possess in this country, increase their activities, there is generally a tendency in them to produce the articles of their sale by buying the raw products rather than the finished ones, and this development is accelerated if the smaller societies combine together or order their requisites from a Wholesale Co-operative Society of which they become the members. These large societies find it very profitable to manufacture their articles of sale and it is they which have been famous for their power of controlling the industries. The Fabian Research Department, in a report recently issued on this subject, remarks:—

Few people realise how extensive are the inroads which co-operation has made upon the sphere of Competitive Industry. In England, after seventy years of co-operative development, there are fifteen hundred distributive stores, with some three million members, controlling sales to the value of eighty millions and them-

selves producing goods to the value of fourteen millions. . . . The Wholesale Societies themselves manufacture foods to the value of about ten millions per annum. They have their own textile, clothing, boot and shoe, blacking and other factories; they own and form nearly five thousand acres of land in England; while the English and Scottish Societies combine to conduct tea plantations in Ceylon. One of the most remarkable features of the evolution of this vast economic organisation is the way in which the societies, beginning by merely selling a few classes of goods in a humble shop, find themselves going back, step by step, from retail trade to small scale production, to co-operative wholesale buying and selling, to large scale manufacture and finally to the control of the extraction of raw materials from the earth itself.

Little or no attention has been paid to this branch of co-operation in India and this indifference is sought to be justified on the ground that the "Co-operative ideal"—the most mischievous phrase in official parlance—has not yet made its appearance, as is shown, in their opinion, by the comparative high-rate of failure of the few Stores that have been till now started. This explanation, though accepted as conclusive in some influential but equally ignorant quarters, is a poor attempt at diagnosing the causes of the past failures. If the people can understand the value of Co-operative Credit Societies and have enough of the "ideals" which guarantee their success—we confess we do not understand what the second hypothesis means—we fail to see why it should be inferred that the people are not yet fit to manage the Stores, which, by universal acceptance, form the most appealable and advantageous branch of co-operation. This, however, is not the only reason, or even the most important, why we believe the official diagnosis to be completely wrong. If we compare the constitution of the Stores failing in India and prospering in Europe, we find several notable differences, the most important of which

pertains to the payment of dividends. No attempt has been made to follow in this respect the valuable precedent of the first Store started in England by the Rochdale Pioneers. These co-operators laid down that the dividend should be paid on the value of the purchases, the economic and social advantages of which practice are far more important than we are likely to estimate at first sight. (1) It secures the maintenance of the most complete democracy of ownership control; (2) it ensures that this democracy will remain for ever open to newcomers; (3) it gives every member an equal motive to work for its success; and lastly (4) it erects a barrier against the dominion of capitalists. Every one of these is a most valuable asset without which the Co-operative Store stands a very good chance of disappearing in its very infancy; and to a very large extent, the failure of the Indian Stores must be traced to the absence of this method of paying dividends. It can be easily seen how the "Co-operative ideals" are effectively brought into existence by this practice. As in the case of any reforming agency, whether it be co-operation or any other, all that the Indian has to be taught is that he benefits in several ways by undertaking it, and the blessings of a Co-operative Store can be made very perceptible to him by paying the dividends, not on his share capital which he can rarely invest, but on the value of his purchases which are, in the case of articles generally sold by a Store, no less than that of his rich neighbour.

It is not here contended that Co-operative Stores can bring complete industrial salvation to India. That does not seem possible on account of the limited scope only within which Co-operative Associations of Consumers can hope to control the industries. In estimating this scope, we have to continue our analysis on two quite distinct lines. First, the possibility of starting Stores, by themselves, without any idea of converting them into an agency for manufacturing that which they sell, and

secondly, the scope for Associations of Consumers which can undertake that task. Considering the vast percentage of our population that is dependent on agriculture and lives in small hamlets, there is a very narrow limit, *at present*, to the number of associations of the latter type, but as to the former, the field is large, if not larger than in the case of Credit Societies. Perhaps they have a better chance of success in the cities and towns and even in the bigger villages; for the ultimate success of both kinds of associations depends upon the strength of membership. In England, the average strength of each Store is about 2,000, rather a big number in view of the average strength of our Credit Societies, but the difficulty in getting new members to the Stores is much less and the membership can be freely increased without any fear of making the society too unwieldy to ensure efficiency. As has already been pointed out, noteworthy beginnings have been made in every province in this direction, and in order to secure a rapid and unchecked advance, no need is so greatly felt as an increased knowledge in our co-operators, whether official or non-official, of those many features which are acknowledged to have contributed to the safety of these associations in England and on the Continent.—*Commonweal*.

Education in Co-operation.

At a Conference in the United Provinces, it was decided to start a limited Co-operative Press Society with a capital of Rs. 40,000. This society will afford facilities to the registered Co-operative Societies in the matter of printing; diffuse knowledge of co-operative principles and practice in the United Provinces by means of a Co-operative journal and store and supply stationery to registered Co-operative Societies.

It has been proposed to publish the journal every month in Urdu and Hindi.

As a Co-operative journal, will, by its very nature, be dry reading, the *Bengalee* suggests

that the vernacular weeklies and monthlies which have already got a large circulation can do much in this direction by devoting a portion of their space to co-operative literature.

Our contemporary also adds that the writers of short stories of whom there are a good number in our midst, can make good use of their talent by undertaking to instruct the people in co-operative principles.

We quite agree with our contemporary. Co-operation, if it is to effect any good in India must be taken up by the masses but the masses in all countries refuse to touch any literature, however wholesome and profitable it may be, unless it appeals to their taste. If the people are to be cured of their ignorance, the pills must be sugar-coated and sandwiched between news items in newspapers, which are swallowed with avidity all over the world.

Committee on Co-operative Movement.

The following Resolution has been issued by the Government of India:—In their Resolution No. 12-287 I, dated the 17th June 1914, the Government of India referred to the necessity of examining the administration of the whole co-operative movement in the stages above that of the individual society, not only in regard to the relations of central and provincial banks with the money market on the one hand and with their constituent societies on the other, but also in regard to the extent to which expert assistance was required for management, inspection and audit. The Government of India have decided to entrust this enquiry to a committee constituted as follows: Sir E. D. Maclagan, President; Messrs. A. E. English, I.C.S.; F. F. Lyall, I.C.S.; F. W. Johnston, I.C.S.; The Hon. Mr. Lallubhai Samaldas; Messrs. N. Azhar Ali, and W. Renwick, Members; and Mr. R. B. Ewbank, I.C.S., Secretary. The primary duty of the committee will be to examine whether the movement, especially in its higher stages and in its financial aspect, is progressing on sound lines, and to

suggest any measures of improvement which seem to be required for this purpose. The enquiry will be directed primarily to an examination of such matters as the constitution and working of central and provincial banks, the financial connection between the various parts of the co-operative organisation, the audit, inspection and management of all classes of societies, the utilisation of the reserve, and the manner in which reserve funds should be exhibited in the annual accounts. At the same time, the Government of India do not desire rigidly to limit the scope of the enquiry, and the committee may at its discretion consider and make recommendations regarding any important aspect of the co-operative movement. The committee will assemble at Delhi on the 5th November, 1914, and will tour in such parts of India as it may consider necessary. The Government of India trust that Local Governments and Administrations will afford to the committee all the assistance which it may require, and will comply with any requests for information and advice which may be addressed to them by it.

Anglo-Indian Co-operation.

In Madras, the domiciled community is going to start a Co-operative Society for the benefit of its members. The society is to be under the auspices of the South India Anglo-Indian Association.

It is proposed to start the undertaking with a capital of Rs. 1 lakh, made up of 20,000 shares of the value of Rs. 5 each.

Membership is restricted to *bona fide* Anglo-Indians and Europeans. The promoters are actuated by the laudable motive of (1) providing the members with the necessities of life at specially favourable terms; (2) affording the members an opportunity to deposit their savings with the society; (3) securing for them loans at favourable rates of interest for such purposes as the purchase or building of houses.

The society embraces within the compass of its operations the encouragement of local industries by the members of the community.

It is proposed to provide employment in the society for members of the domiciled community only, principally girls; thus fitting them to secure suitable employment in business houses. The Society has been registered under the Co-operative Societies Act of 1912.

The Mysore Co-operative Conference.

The Fourth Mysore Co-operative Conference was opened in Mysore on the 22nd September by His Highness the Yuvaraja. His Highness made a striking speech in which he referred to the progress made by Mysore in co-operation, the necessity for developing greater activity to relieve the ryot of his prior indebtedness, the advisability of forming Unions and the desirability of holding Co-operative Conferences not only in the Province but also in the taluks and districts.

Agricultural Co-operation.

The International Congress on Tropical Agriculture, which met at London on 27th June 1914, discussed for the most part agricultural co-operation and decided to appoint a Committee to obtain reports from every tropical country where the subject is the basis of Government or voluntary action.

Co-operative Societies in England.

In 1901 there were some 25 Agricultural Co-operative Societies in England. These increased in 1907 to 170. In 1913 the number of affiliated societies reached 580, or an increase of 885 societies in the six years.

Co-operative Societies in Ireland.

There are now in Ireland close on 1,000 Co-operative Societies, with an aggregate turnover of £3,800,000, and more than 100,000 farmers are united in this great network of organization.

News and Notes.

RELIGIOUS.

Creeds Cannot Stop War.

For the Church of Rome, as for every other branch of organised Christianity, the cannon-nade raging across Central Europe must sound as a roll of defiance from "the evil that is in the world." Whatever progress humanity in its individual items may make towards those ideals which form the text of religious teaching, the collective government of mankind has not yet discovered how to bridle those elemental passions which can rend the race in twain and convert its abode into an inferno of hate, carnage and destruction. It is possible even for crowned Sovereigns, with a Christian text upon their lips, to issue the decree which deliberately opens these flood-gates of horror and, for the sake of calmly reckoned ends, to plunge half-a-dozen nations into a sea of slaughter. If the permeating influence of religion cannot avert such tragedy, neither can the corporate voice and authority of Churches which claim in an especial degree to be its interpreters. As observed by the *Pioneer*, when it comes to the great issues of national destiny, community of creed proves the most impotent of restraining forces. Those to whom is entrusted the spiritual pastorate of the peoples of the world may now well question themselves upon the whole subject of the *nexus* between life and religion and the powerlessness of creed and faith to avert such visitations as the scenes of their jurisdiction are now undergoing in Europe.

The Hindu College of Divinity.

Sri Bharat Dharma Mahamandal, the socio-religious organisation of Hindu India, has decided to establish a college at Benares for

training *Sadhu* and *Grihastha* Hindu religious teachers and preachers. Towards the aid of the institution the following written promises of help have been secured by the society up to September:

H.H. the Maharaja of Kashmir, Rs. 250 per mensem.

H.H. the Maharawal of Dungarpur, Rs. 500 per annum.

H.H. the Maharaja of Kishangarh, Rs. 30 per mensem.

H.H. the Raja of Dewas, Rs. 10 per mensem.

H.H. the Raja of Rutlam, Rs. 25 per mensem.

H.H. the Raja of Sailana, Rs. 20 per mensem.

H.H. the Raja of Narsingarh, Rs. 50 per mensem.

Dewan Bahadur Daya Kishan, C.I.E., Dewan Alwar, Rs. 25 per mensem.

Rai Bahadur Nank Chand, C.S.I., C.I.E., Ex-Dewan, Indore, Rs. 10 per mensem.

Rai Bahadur Mukendoo Mukerji, Chinsura, Rs. 100 per annum.

Raja Lalita Pershad, Pilibhit, supply of sugar required for the free kitchen of the college.

For the Building Trust Fund of the Mahamandal, donations amounting to Rs. 32,000 have been promised. An appeal has been issued to the Princess and nobles soliciting their sympathy and support for this unique institution.

Bishopric in Assam.

The Government of India's proposal for the creation of a Bishopric in Assam will shortly be sent to England for the approval of the Secretary of State. The new Bishop will occupy the position of an assistant or suffragan Bishop to the Calcutta Metropolitan. He will exercise full episcopal powers in Assam and Chitagon divisions, which will, however, remain part of the Calcutta Diocese.

SOCIAL.

Married School Boys.

We understand that the Travancore State has under consideration a proposal to exclude married boys from the State secondary schools. It appears the orthodox people are opposed to the reform. Referring to this proposal, the *New India* observes "if Manu, the great Law-giver, laid down one social rule more clearly than another, it was the rule that the student-period of life should be passed in strict celibacy.

"The increasing physical deterioration shown by educated Indians is due to the combination of fatherhood with hard mental work; Indian greatness cannot be achieved if Indian bodies deteriorate generation after generation."

Our contemporary hopes that the reform of excluding married boys from schools would be introduced in Travancore first and copied by the British Government "later on."

But a writer in the same Journal argues against the proposal. He says that "learning is an heirloom of mankind" and "University, a seat of universal learning." It is unjust to draw a line between married and unmarried boys in as much as both of them have a thirst for education. Secondly, the force of custom and precedent is very great in India and the majority of the people are orthodox and conservative and quite unprepared for any reform. Lastly, if social reformers cannot create public opinion there is no use asking the Government to interfere. The Government is intended as much for the orthodox people as for the social reformers.

Good Manners.

Speaking to the students at the prize distribution in the Empsom College, England, Lord Rosebery spoke on the importance of character and good manners. He firmly believed that the years they spent in school were far more important in the formation of character than all

the many years they might spend afterwards. The school moments were the supreme moments, the moments which decided whether they were going to be men in the highest sense of the word, or whether they were going to pass through life as atoms. There was one way and one way only by which the character of a man at his best showed itself, and that was by his manners. Of course, that was not an infallible way. He had known many excellent people who from shyness had the most execrable manners, and who, judged by their manners alone would have been dragged to the block without benefit of clergy. On the other hand, he had known scoundrels with the most charming and fascinating manners given to them by nature for much the same purpose as the web was given to the spider.

Social Purity.

The recent efforts of the Social Purity Movement have resulted in a largely signed memorial from the citizens of Rangoon being forwarded to the Lieutenant-Governor, with a view to immediate action being taken to suppress brothels in the town. The memorialists draw the Lieutenant-Governor's attention to the large number of venereal disease cases (9,000) during 1912 and 1913 in the General Hospital. Referring to the system of segregation, that is, the permission of brothels in certain parts of the town, they say that in the opinion of the highest medical and sanitary officers, the policy of segregation is a failure. They further state that the closing of the segregated area in Colombo has been attended with the most satisfactory results and that Government has had every reason to be satisfied with the course pursued. They pray that brothel-keeping be made punishable, as in Great Britain, and also desire the closing of all brothels, the deportation of foreign unfortunate woman and the strengthening of police powers so as to prevent the landing of such women and professional procurers.

PERSONAL.

The Late Sir T. N. Palit.

It is with regret we record the death of Sir T. N. Palit. Sir Tarak was born in 1841. He made his pile as a barrister-at-law. In the year 1912, Sir T. N. Palit made over a sum of 15 lakhs of rupees to the Calcutta University for the establishment of a Higher College of Science to be managed by Indians. This is all the more remarkable inasmuch as it is not inherited wealth that he gave, but came out of his own earnings. He was not childless, nor was he a multi-millionaire and the donation probably represents a great portion of his property. Sir Tarak retired in the year 1898 owing to his health having given way. The deceased leaves behind him a widow, two sons and a daughter to mourn his loss. His elder son, Mr. L. Palit, who was formerly a District and Sessions Judge, is also a distinguished advocate of the Calcutta High Court.

Mr. Mahomed Yusuf Ismail.

Mr. Mahomed Yusuf Ismail of Bombay has intimated to the Government his intention of starting and maintaining at his own expense a small training ship in the Bombay Harbour, for the sons of Indian seamen, irrespective of caste and creed. The object is entirely charitable and the boys will be trained free of charge on a scientific basis. If the experiment proves successful, Mr. Mahomed intends to make a permanent endowment to ensure its continuance. The Government of Bombay heartily welcome this scheme which is charitable and practicable and calculated to raise the status and accomplishments of Indian seamen. They have therefore decided that every possible facility should be accorded to Mr. Mahomed. They have ordered that the training ship should be allowed free entry into all the ports of the Bombay Presidency, and should be exempted from certain Customs regulations and formalities. The Trustees of the Port of Bombay

have also agreed to waive all their dues in respect to the training ship.

Indian Chiefs and Army Appointments.

The following honorary appointments in the Army are gazetted :—The Maharaja of Patiala to be a Lieutenant-Colonel; the Maharaja of Idar to be a Major; Rajkumar Hira Singh of Panna and the Maharaja of Jodhpur to be Lieutenants.

The following are honorary appointments to the Army during service with the Expeditionary Force :—Shah Mirza Bey, of the Hyderabad Lancers, to be Captain, Maharaj Kumar Hithendra Narayan of Cooch Bihar, Maharaj Kumer Narain Singh of Tikari, and Sirdar Jogendra Singh to be Lieutenants.

Mr. Bhupendra Nath Basu.

The Reception Committee of the coming Congress accepted the vote of the majority of the Provincial Congress Committees in favour of Bhupendra Nath Basu. As President and the Chairman of the Committee, Sir S. Subramania Iyar, was requested to convey to the elected candidate the invitation to preside at the Indian National Congress of 1914.

Lieutenant Hardinge, D. S. O.

The Viceroy has received the following telegram from His Majesty the King-Emperor :—"I have had great pleasure in conferring the distinguished Service Order on your son, for the ability and gallantry in reconnaissance under great difficulty and machine gun fire on three successive days, when he was severely wounded. Glad to say he is progressing satisfactorily."—George, R. & I."

Sir Dorab Tata's Munificent Gift.

Sir Dorab Tata has given his property at Panchagni, consisting of 2 bungalows and 27 acres of land, for the Consumptives' Sanitarium to be established at Panchagni, Bombay Presidency.

ECONOMIC PRODUCTS.

International Rubber Exhibition.

At the Fourth International Rubber Exhibition, very interesting exhibits showing the progress of the industry during the past three years were shown. These included a writing-room with furniture made exclusively of rubber, a tennis court of plantation rubber on which exhibition matches are played and a section of a rubber door-way. Sir Henry Blake, President of the Exhibition, expressed the opinion that roads sooner or later would be paved with rubber.

Use for Waste Sawdust.

Sweeping compounds are largely composed of sawdust and silicious material, together with some such binding medium as rosin, tar, or some of the crude oils in the market, says the *Woodworker*.

Sawdust is being used to a considerable and growing extent in many machine shops as a substitute for cotton waste. It has been used with cement to make a concrete floor into which nails may be driven. A floor of this kind is said to be a success. Reports from Hamburg, Germany, state that sawdust mixed with magnesium chloride is used there extensively for floors in the larger commercial buildings, where it is said to be popular because of its cheapness and partly fireproof qualities, observes the *Engineering Digest*.

The Uses of Aluminium.

A recent report of the United States Geological Survey sheds some light on the use that is made of aluminium in America. The use of the metal is now being extended to the construction of welded tanks, cooking vats, and vessels that are employed by brewers, preserve manufacturers, fat recoverers, and similar industries where a metal that will conduct heat, will not corrode, and is not poisonous is essential. Other uses for aluminium vessels on a large

scale are in the manufacture of essences and syrups, varnishes, fatty acids, edible oils, and nitric acid. A number of aluminium tank cars have been made for the conveyance of the strong acid in bulk, with satisfactory results. The use of aluminium wire as a conductor in long-distance power transmission schemes is not new, but a recently developed branch of the industry is the manufacture of powdered metal which is used extensively as a paint pigment, in explosives, in lithographing and in printing. Aluminium foil is now being used on a larger scale than ever before owing to improved methods of manufacture having reduced the cost of production appreciably.

The Trade in Banana Products.

Writing on the World's Trade in Bananas in a recent issue of the *Tea and Coffee Trade Journal*, Mr. John J. MacFarlane states that after a decade or more of partially successful experiments in the manufacture and popularization of banana products, a definite market is now assured at least in Europe, and we may expect to hear of numerous factories being established throughout tropical America. The food products manufactured are fig bananas, cooking bananas, banana chips, flour and meal. All the factories dry or evaporate the bananas whole without the addition of sugar and yet they are sweet and palatable like pressed figs, which they resemble in color. Cooking bananas are so thoroughly dried as to be hard. Broken into pieces they form banana chips, which are ground into flour and meal in the country of consumption. Gruel, porridge and other preparations made from banana flour and meal, which are rich in easily soluble carbo-hydrates, are recommended for infants, invalids and dyspeptics. The various banana products are popular in Germany and Great Britain, which have been taking the bulk of the exports of such products from Jamaica.

HINTS AND RECIPES.

Some Uses for Vinegar.

A good cleanser for smoked woodwork is a flannel dampened in vinegar. Each time the flannel is used it should be rinsed in clear water to economise the vinegar. Fly specks and finger stains on woodwork, mirrors and windows are quickly and easily removed with vinegar. Often the underneath folds of the legs of trousers get badly soiled with boot polish, and can be cleaned thoroughly with vinegar. Mix Plaster of Paris with vinegar, it won't set so quickly as does water, thus allowing the plaster to be worked more easily.

To Remove Paint.

Paint may be removed by the following mixture:—One pound of commercial potassium hydroxide is dissolved in 40 ounce of acetone. Then add 20 ounces of methylated spirit, 20 ounces of oil of turpentine, 20 ounces of spirit of petroleum, and 10 ounces of castor oil. Wash off the paint with this mixture, using old rags to prevent musing. If the paint is thick, a dull knife will aid materially in removing it, while no harm will be done to the wood if care is exercised.

A Substitute for Matches.

It sometimes happens that the automobilist is caught on the road after dark without matches with which to light his lamps. An easy way out of the difficulty is to make use of the ignition system for supplying a light, says the *Scientific American*. First make a torch by twisting a small bunch of waste around a piece of wire and wet with a few drops of gasoline. Then remove one of the high tension wires from its spark plug, throw on the battery switch, and turn the engine over until the spark comes to this wire. The waste is then ignited with a spark drawn from between the cylinder-head and the end of the wire, taking care to hold the wire by its insulated portion. In getting a light by this method care should

be taken to use only a small quantity of gasoline, as otherwise there is danger of having too much of a flash of fire when the spark strikes the gasoline-soaked waste.

Flower Pots from Broken Bottles.

You want to break off the top of a glass jar or a bottle? For this purpose, soak a piece of string in turpentine and tie it round the glass, just where you wish it to break. Fill the glass with cold water up to the level of the string. Set fire to the string,—and usually the bottle will crack round on the line of string. In this way you may prepare many new flower pots from broken and useless bottles.

Strengthening Glass.

An ingenious method of strengthening glass has just been devised. A sheet of celluloid is cemented between two sheets of glass either plate or sheet glass. Complete adhesion is secured by considerable pressure. The result, says the *Journal* of the Royal Society of Arts, is a product which it is difficult to break and apparently impossible to shatter. The diminution of the transparency seems to be considerable, the glass being almost, if not quite clear.

How to Remove Ink Stains.

Bad ink stains on a carpet can be removed thus. Cut in halves a fresh lemon, rub it on the stain well. Follow the lemon application by rubbing with a soft cloth. If the stain is very persistent, dip the lemon in a little common salt and use.

Polish for Brass-work.

A quick polish up for brasswork is a piece of cut lemon and a pinch of whiting. Rub vigorously, and finish off with a piece of soft rag. Save the pieces of squeezed lemon for cleaning metal; they are always useful.

Avoid Blisters in Walking.

When going on long walks, slightly soften some soap and rub it on the inside of the foot and ankle of your stockings, and let it dry well. You will not get blisters in this way.

LEGAL.

Sir Arnold White.

The *Law Weekly* speaks thus of the high qualities of head and heart of Sir Arnold White, the retired Chief Justice of Madras : Though he did not do anything positive to advance the interest of the Vakils as a class, still it must be admitted that he was fully alive to their importance and influence and did nothing to retard their growth. Sir Arnold was the very pink of courtesy and never did a harsh word escape his lips even under trying circumstances. He was strongly imbued with a sense of the best traditions of the Bar and recognised that the Bar was a necessary and useful complement of the Bench. His presence was always encouraging to the junior members of the Bar, who sometimes, and not infrequently, have rather suffered cruelly at the hands alike of some of the European and Indian Judges of later days. His health was not of the best and there were indeed times when all concerned felt anxious about it. His genial presence and cheery face will be much missed in our High Court and outside it also, for Sir Arnold was a prominent member of Madras society and was closely connected with many a public institution, particularly the Society for the Prevention of Cruelty to Animals. We feel we shall be voicing the feelings of all branches of the profession when we express the hope that Sir Arnold will live long in improved health and strength and exercise his influence for the advancement of the best interests of this great land over one of whose High Courts he had the proud privilege of presiding for a long spell of 15 years.

Sir John Wallis.

Mr. F. H. M. Corbet, Advocate-General Madras, in offering the new Chief Justice, Sir John Wallis, the respectful congratulations and good wishes of the legal profession of the Madras Presidency, said :—

You have come to your high office with an experience which is unequalled in the case of any of your predecessors. As Advocate-General for six years, as a Puisne Justice for eight years you have had an experience which, as I say has never been equalled. You have come with a spotless reputation and with a great reputation for learning, a reputation, the foundations of which were laid in England, before you came here, when you edited the *State Trials* and contributed many learned articles to various publications and when also you lectured on Constitutional Law and Legal History to the Council of Legal Education. Since you have been here you have not neglected by any means the legal lore of this country. We feel confident that the dignity and the independence of the High Court are safe in your hands, that independence which history tells us, has often failed to commend itself to the Executive for the time being; but which, I may say, is in India the greatest boon conferred by the British administration and the best guarantee it can give. There is another aspect of your work, My Lord, which we all look upon with friendly and anxious eyes, and that is with regard to the administration of the High Court. The delay and the expense certainly mar our records. Your Lordship knows the country too well to be carried away by the parrot cry of the litigiousness of the people which should be penalised by heavy Court-fees. In England the population is smaller than in Madras and the number of suits is 1,400,000. In Madras it is 400,000 which is one million less, so that the cry of litigiousness, however these figures may be analysed, at any rate has no justification."

Temporary and Permanent Judges.

Some doubts having been expressed on the subject the Secretary of State has sanctioned the grant, to temporary Judges of High and Chief Courts, of the privileges in respect of the leave rules allowed to permanent Judges.

INSURANCE.

The Post Office Insurance Fund.

The following Resolution has been issued in the Commerce and Industry Department:— In the resolution of the Government of India in this Department Nos.4547-4554. dated the 29th May 1907, it was decided that in view of the satisfactory financial position of the Post Office Insurance Fund, the sums eventually payable in respect of existing policies in the life branch of the fund should be increased by 10 per cent. and that the premium payable in respect of sums assured under policies issued on and after the 1st April, 1907, should be correspondingly reduced. A recent investigation made into the past experience and present position of the fund has shown that there is still a substantial surplus on the total operations connected with it and that it is possible to make a distribution of a considerable portion of the surplus without affecting the financial stability of the fund. His Majesty's Secretary of State has accordingly sanctioned the grant to holders of policies on the valuation of 31st March, 1912, of a bonus at the rate of Rs. 2 per cent. in the case of whole life assurances and 1 per cent. in the case of endowment assurances in respect of each year's premium paid since 31st March 1907, up to that date.

Price of Insurance.

There are some commodities that can be bought in the open market almost any time and at substantially the same price, but Life Insurance is not one of them. Age determines the price, and, of course, men do not grow younger. Men who drop their assurance usually expect to take it on again at their convenience. Sometimes they can—sometimes they can't. But they can never replace it at the same rates, so as a purely business proposition they make a mistake. The man who, on second application, finds that his heart or kidneys have become affected, for ever barring him from life assurance, comes to a realisation of the fact that he has made something more than a business mistake. Once start a policy never lapse it.—*Sunshine.*

DIARY OF THE WAR.

October 1st.—Naval Guns at Peronne do good work.

Japanese sink a German destroyer.

Germans continue bombardment of Antwerp.

Russians continue their advance.

News received of the landing of the Indian Contingent in France.

October 2nd.—Allies extend their left wing to the north towards Arras.

Enemy's army at Cracow said to number nearly one million; a great battle expected.

The Dardanelles declared closed.

The Tsar goes to the front. Russian success at Augustova in Prussia, complete German defeat.

October 3rd.—Germans occupy Lanacken on the Belgo-Dutch frontier.

President Poincare visits Allies' armies.

October 4th.—Allies take German trenches at Soissons.

October 5th.—General von Voigts-Rhetz appointed chief of German general staff.

Servians and Montenegrins reach out-posts of Sarajevo.

German night attack at Tsingtan repulsed.

October 6th.—Left wing extended to Lille.

Kaiser returns to Cologne.

Duchess of Luxemburg made a prisoner.

Japanese seize Jaluit, chief town of Marshal Islands.

October 7th.—Belgian Government removes to Ostend.

Germans attack Antwerp.

German destroyer sunk by British submarine.

Japanese sink German cruiser and two gun-boats.

October 8th.—Canadian contingent arrives in London.

Japanese occupy Caroline Islands.

Russian bombardment of Prymsyl gradually destroying forts and town.

October 9th.—Antwerp in flames. King Albert leaves.

Paris suburb of St. Denis bombed by German aeroplane.

British aeroplane destroys Zeppelin at Duesseldorf.

October 10th.—Antwerp occupied by the Germans.

Montenegrins defeat Austrians near Sarajevo.

October 11th.—Another bomb dropped in Paris.

October 12th.—Germans occupy Ghent.

Russian cruiser "Pallada" sunk in the Baltic by German submarines.

Russians enter Transylvania.

October 13th.—Belgian Government moves to France to Havre.

Allies begin a gradual general advance in France.

Fighting progressing in Warsaw region.

Russians sink two German submarines in the Baltic.

October 14th.—German right flank pressed back and Lille relieved.

German march on Calais repulsed.

Commander of "Goeben" becomes Chief of the Turkish Navy.

"Markomannia" sunk by H.M.S. "Yar-month" and "Pontoporos" captured.

October 15th.—Germans enter Bruges.

Portugal partially mobilized.

Germans occupy Ostend.

H.M.S. "Hawke" sunk by German submarine in North Sea.

October 16th.—"Goeben" and "Breslau" said to be in the Black Sea.

Austrians defeated near Sarajevo.

Four German destroyers sunk by the British off Dutch Coast.

Italians expelled from Trieste by Austrians.

Germans defeated in Warsaw region.

October 17th.—Germans driven back 80 miles by the Allies in Northern France.

October 18th.—Germans bombard Nieuport.

Japanese cruiser "Takachicho" sunk by a mine in Kiaochau.

Two Austrian submarines attack French Fleet off Dalmatian Coast, one submarine sunk.

October 19th.—Germans repulsed everywhere

on the fighting line extending from the North Sea to the Franco-German frontier.

"Emden" sinks five British steamers off Minicoy.

October 20th.—British warships participate in the fighting on the Belgian Coast.

Turkey refuses to discharge the German crews of the "Goeben" and "Breslau."

In Russia the Government sale of alcohol ceases.

A German destroyer escapes from Kiaochau and runs aground 60 miles down the coast.

October 21st.—Indian troops engaged in the firing line.

October 22nd.—Belgians defend the Yser Canal.

October 23rd.—H.M.S. "Badger" rams and sinks a German submarine off the Dutch Coast.

German appeal for an armistice refused.

October 24th.—Germans cross the Yser. The dykes are opened.

Bombs dropped in Warsaw.

H.M.S. "Foresight" in shelling the German position kills a General and his Staff.

October 25th.—Belgians repulse the Germans at Yser.

October 26th.—Germans driven eighty miles west of Warsaw by the Russians who occupy Lodz.

German pressure on Turkey increasing.

Boer rebel Maritz defeated.

Germans driven across the Lorraine Frontier.

Sikhs and Gurkhas join the fighting line at La Basse.

Enemy ships turned out of the Suez Canal.

October 27th.—Germans in Belgium alleged to be falling back.

Russians defeated the enemy at Roudour.

October 28th.—Allies advance at several points.

Russians defeat the Germans at Palitza.

October 29th.—Portugal drawn in by Germans invading Angola.

General Botha routs the rebels in South Africa.

October 30th.—News received of a naval battle off Penang.



THE WEALTH OF INDIA

A Monthly Magazine of Practical Information and Useful Discussions

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The Wealth of India.

Current Topics

BY ECONOMICUS.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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When will the war end? This was the subject of animated discussion and speculation in the early weeks of the struggle; but looking to the tremendous issues involved and the determined and desperate character of attack and defence recently witnessed, people have now almost made up their minds that the present is bound to be a protracted and exhausting conflict. This means a horrible waste of life and wealth and the infliction of untold hardship and misery upon millions of men, women and children. But we, the subjects of the British Empire and those of the Allied nations, can look forward with serene confidence to the future with the profound conviction that victory will ultimately be on our side. The enemy commands a large supply of men and up-to-date mechanical appliances, but his trade and industries are gone, and he cannot long stand the pressure upon his limited resources. On our side, on the other hand, there is this supreme advantage that the resources of the British Empire are well-nigh inexhaustible. Contributions in men and money are pouring in and British trade is going on untampered. As a Board of Trade statement announced recently, out of a total of 10,123 British steamers, 9,928 were plying on the sea as compared with only ten German known to be at sea out of a total of

of the Conference, one finds that while the sale of the Conference publications, reports and Directories has been a decent source of income, it is nearly counterbalanced by the printing and other charges that must be set off against it, and the financial balance has been maintained mainly by the generous donations given by a number of public spirited gentlemen from various parts of the country. It is a matter of notoriety that the financial position of our national organizations is not very satisfactory nor is the system in this respect sound and conducive to efficient work. The routine work of the Conference is done by the office and if possible the Assistant Secretary goes about the country doing propaganda work. The Conference also appoints committees from time to time to investigate important questions and submit reports, but I do not know if such committees have so far done any tangible work. Like the National Congress, the Industrial Conference focusses public opinion in matters industrial and places popular views before Government urging upon the State reforms needed to promote the economic development of the country. Secondly, it seeks to enlighten the public upon the industrial position of the country, studies its wants and tries to supply information. The Conference when it annually meets in Christmas devotes an afternoon to the passing of a number of resolutions on the important industrial topics of the day and the main part of its programme is left to be carried out by the office of the General Secretary.

NEED OF REFORM FELT LONG AGO.

That the organization of the Industrial Conference described above was not found satisfactory may be seen from the thirteenth Resolution passed at its Calcutta Session in 1911 whereby Mr. N. A. Dravid of the Servants of India Society was appointed Honorary Assistant Secretary along with Mr. M. B. Sant, the salaried Assistant Secretary. This proves that the work to be done is more than can be

discharged by one Secretary under the direction of the General Secretary. The Resolution goes on to say :—"This Conference deems it desirable that there should be a Standing Committee of the Conference appointed for each year to co-operate with the General Secretary in carrying on the work of the Conference during the year and to advise on all such matters as the General Secretary may submit to them and that the following gentlemen do constitute the Standing Committee for the year 1912 :—(Here follow twelve names of prominent gentlemen from the different provinces)." The need and usefulness of such a Standing Committee is obvious. Questions arise from time to time which the General Secretary alone cannot solve and a body competent to deal with such matters is essential if the work of the Conference is to be in any way effective. In a large country like India, frequent meetings of this Committee are impossible, but something can be done by interchange of views by correspondence. The Conference has no duly constituted body corresponding to the All India Congress committee of the premier national organization and the above committee was perhaps intended to do duty for it.

FUNDAMENTAL PRINCIPLES STATED.

A fair idea of the existing organization of the Conference and its work will have been conveyed to the reader by the account given above. That there is much room for improvement and that, in fact, reform is urgently called for, will be easily conceded. But what are the lines along which the reform should be effected? This question cannot be easily answered and no cut and dried scheme can be put forward. But it may be permissible to make a few suggestions. At the outset, a few preliminary remarks are necessary to clear the ground. At the Karachi session of the Industrial Conference, a resolution was passed welcoming the scheme of an All India Commercial Congress formulated by Sir Fazulbhoy Currimbhoy and

appointing a Committee to consider how the existing Conference could best co-operate with the proposed Congress. The new organization has yet to come into being, though its constitution and rules have long been published and it must remain an open question whether the old and the new bodies will be amalgamated or should remain separate. To my mind, the existing Conference has its work cut out for itself and it will not be rendered superfluous by the starting of the Commercial Congress. It is needless to say that the Conference must remain entirely a non-political body open to all classes and creeds in the country. The interests of European and Indian merchants are indeed often times seen to clash and the aspirations of Indians seldom find favour with the European merchants. But as Sir Fazulbhoy said at Karachi, the Commercial interests of Europeans and Indians are interwoven, and the co-operation of the two is absolutely essential for the success of the work of the Conference. This is also the principle on which we have been all along acting, and the active sympathy and co-operation of officials and European bodies with our leaders has materially contributed to the success of the Conference. The problem before the Conference is how to bring together our educated people who have an amount of enthusiasm in them and the few merchants and men of enterprise who have on their side experience and capital. At the present moment, the two classes tend to stand apart and the work of industrial regeneration suffers. The enthusiasm of the people is a valuable asset and it must co-operate with business acumen, experience and capital which can be supplied by our merchants, bankers and others. While the commercial bodies, like the Chambers of Commerce, may be left to tackle questions which chiefly concern them, the general questions which are no less important, and the work of enlightenment and organization in the districts will lie within the exclusive domain

of the Conference. Finally, let me add, that whatever constitution we may frame, everything must depend upon the earnestness of the people, their capacity to do sustained work and their faith in that work. These things are not abundant in this country and our success will be limited by the fund of these qualities we bring to bear upon our work. That the above remarks are not superfluous may be seen from the fact that our failures in this respect in the past were due to drawbacks, some of which I have noticed. The late Mr. P. L. Nagpurkar of Sholapur, who used to take deep interest in the question of industrial progress, in submitting his views in connection with the starting of the Industrial Conference thus described the attempts which were made in Poona about twenty years ago through the inspiration and under the guidance of the late Mr. Ranade :—"Delegates from several parts of the Bombay Presidency, including a few Native States, attended. Papers on industrial questions were read and discussed and the resolutions which were arrived at, during the course of the two or three days' sessions, were printed and published for the information of the general public and also of Government. But all this came to a standstill, owing to several causes the chief of which was the non-participation therein of the industrial and commercial leaders. Most of those who took the lead in political agitation, had also a considerable share in the organization and up-keep of the Industrial Conference; but the energies of these gentlemen were spent up and a complete collapse was the sad result." (Report of the First Industrial Conference, 1905.) We have progressed a good deal since these lines were written, but they are instructive even at the present moment as they describe a state of things which has not yet passed away.

CONSTITUTION SUGGESTED.

The existing constitution of the Industrial Conference seems to be modelled on that of

the Social Conference with the exception of the standing committee. I should like to suggest that the constitution should, in the main, be modelled on the pattern of the National Congress. Every Province should have its own Industrial Conference Committee with District Committees affiliated to it. The various provinces, with certain conspicuous exceptions, hold their Conferences in connection with the political and social reform movements and discuss questions peculiar to themselves and also of general interest. In the absence of Industrial Committees, the cause of the Industrial Conference is not promoted in the provinces. Latterly, in Presidencies like that of Bombay, the Provincial Social Conference has been independently holding its sessions though the corresponding political activity appears to have ceased. This shows the earnestness of the social reformers as well as the advantage of having Special Social Reform Associations. It will always happen in a country like India where education has made little progress that the same leading men will be actors upon the political, the social and the industrial stage. That is inevitable; but there are several people who are interested only in industrial progress and are hostile or indifferent to the other movements. These men must have a platform which can be supplied only by the creation of Provincial Industrial Conference Committees. We may have a number of Chambers of Commerce and similar other bodies in each province, but the Industrial Conference must have its own committee there. The duties of these committees are obvious. They will consist in promoting the industrial development of the provinces by every available means, organizing Conferences and exhibitions, making inquiries and representations to Government facilitating the starting of new industries and so forth. Every Provincial Committee will have affiliated to it District Industrial Committees and if possible even Taluq Committees. Each district has its own peculiar industrial

conditions and economic problems and they should be tackled by the District Committee. Associations and bodies, interested in industrial progress, other than the above committees, should also be affiliated to the Provincial Industrial Conference Committee. Rules with regard to affiliation, fees, etc., should be left to be framed by the Provincial Committees.

It will be apparent from the above that I have taken the Congress constitution as my model and I would draw the attention of the reader to Articles VI to XII of the constitution and rules of the Congress organization. From the District and Provincial Committees I shall pass on to the Central Conference Committee which will correspond to the All-India Congress Committee. We have such a standing committee even now and it may be expanded into the Central Committee by having three or four members nominated by each Provincial Committee. This body need not be very large, but it will be representative of all the provinces, of course with the Native States of India included in them. Call it a Standing Committee or Central Committee as you like, its duties will be precisely those of the All-India Committee of the National Congress, *viz.*, "to take such steps as it may deem expedient and practicable to carry on the work and propaganda of the Conference, and it shall have the power to deal with all such matters of great importance or urgency as may require to be disposed of in the name of and for the purposes of the Conference." I am not sure if it is necessary for the Industrial Conference to have two general secretaries, like the Congress. It all depends upon the quantity of work that has to be done and the enthusiasm that will be brought to bear upon the work. Obviously it is desirable to locate the office of the Conference in a commercial and industrial centre, say like Bombay, but the facilities of such a place must be combined with the earnestness and self-sacrifice which are at present made available to the Conference at Amraoti by the

General Secretary, the Hon'ble Mr. Mudholkar. Unless we secure the latter advantage, I would keep the office of the Conference at Amraoti. The President of a Session of the Conference will be the President of the Central Committee for the next twelve months, and this committee will hold office for the same period.

THE FINANCIAL QUESTION.

The financial question, as every where else, will be the most difficult to solve. The position of the Conference in this respect is far from enviable and were it not for the generosity of a few of our public spirited and wealthy men, it would have been well nigh hopeless. This will be clear from the accounts that are published in the reports of the Conference from year to year. In his report on the work done by the Conference office submitted to the Bankipore Session, the General Secretary complains of the extreme difficulty that he had in realising the promised donations towards the current funds of the Conference which have to be raised from year to year. I do not think that delegation fees which will have to be small and contributions from District and Provincial Committees which they will not be in a position to make, will bring any substantial grist to the Conference mill. We shall have to depend, as at present, on donations from year to year, from our business men and other public-spirited and well-to-do people. This is why the hearty co-operation of our merchants, bankers, landlords and others is imperatively necessary and the gulf which separates these classes from earnest and patriotic people who lack business experience and money has got to be bridged. As regards the work of the Conference office, it has so far been admirable and it must be continued on the same lines. With better resources at the disposal of the General Secretary, and with the creation of conference committees throughout the country I am sure more valuable work may be turned out.

FEWER RESOLUTIONS ADVOCATED.

This is a broad outline of the organization of the Industrial Conference and I have left several matters in connection therewith out of consideration. I feel that if the main points are agreed to, the details may be easily settled. Before concluding, however, I shall refer to one point. The procedure followed by the Conference at its annual session is subjected to criticism in the press on the ground that its programme slavishly follows the system of the National Congress and it has therefore to hustle through a number of resolutions to observe the time limit. As things stand, it is inevitable that the Conference should wait upon the convenience of the Congress. It cannot be a success if it is separately held without reference to the Congress. An Industrial Conference to be held for three days in a place and at a time to be chosen by itself is an ideal beyond our reach for years to come. The experiment is going to be made by the Commercial Congress. Perhaps it may succeed but not the Conference which must make the best of the situation. I should, however, give the go bye to the usual lengthy speech from the Chairman of the Reception Committee and the Presidential address too shall be short and confined to a few important topics or aspects of the industrial situation. The resolutions of the Conference should be few in number and relate to questions of urgent importance. I find that the number of resolutions passed by the Conference annually has gone up from six or seven to thirteen. Imagine how efficient the work of the conference must be when within the short space of six hours or so, so many speeches have got to be delivered! The Industrial Conference should be not only a demonstration, but a business like meeting of experts and others interested in industrial progress. A few questions should be selected beforehand and they alone should be discussed at the Conference with a view to arriving at some decision. For example, the

2,090. Mr. Lloyd George spoke sometime ago of Britain's use of 'silver bullets' and the last £100 millions winning her victory. The enormous wealth of Great Britain is a subject of common knowledge and the Chancellor of the Exchequer told Parliament the other day how the national income of Britain which was only £250 millions a hundred years back is now ten times as much. In his financial statement made to the House of Commons Mr. George intimated that provision had been made for £535 millions for war and ordinary expenditure and that additional money to be found amounted to £339½ millions. It was necessary to borrow £230 millions to carry the nation on to the end of the financial year and a loan of £350 millions at 3½ per cent. was proposed. The Chancellor expounded his scheme of additional taxation on tea, beer, and incomes so that all classes of the population might be reached and none might escape. He has faced the situation boldly and has handled the financial problem with consummate skill. The nation has likewise risen to the height of the critical occasion and accorded its warmest support to the Government. With such splendid economic resources at its command, the British Government may well feel confident of its capacity successfully to stand the strain of the war, however, prolonged it may prove.

After six years, it is once more the pleasant duty of Madras to well come the Indian National Congress to its hospitable roof. If we carry our memories back to 1908, we may recollect under what unprecedented circumstances the Congress Session was held in this city in that year. The Congress had been wrecked the year previous at Surat by people who were fighting for the famous 'four resolutions' and who, because they could not have their own way, went to the length of opposing the election of the President and creating a row in the Congress pandal. The Congress leaders immediately set themselves to the task

of framing a constitution and rules and laid down in definite words the goal of political agitation in India and the constitutional methods in which it was to be carried on. This necessarily kept out those whilom Congressmen who disapproved of the procedure adopted by the conventionists as they were called. The party which remained out of the pale of the Congress organization could not be reconciled to the new order of things as they were not prepared to make a written declaration of their acceptance of the Congress ideal and methods, as they thought that the goal of Colonial self Government was too narrow for them and generally as they refused to regard the work of the convention as regular and legal. They raised the cry of a 'United Congress' and a 'People's Congress,' and were prepared to convene a Congress of their own. But they had overshot the mark and found themselves in a quandary. Their big guns were soon silenced and they had to retire into sullen silence and moody contrition. Lacking in true statesmanship and incapable of discerning the direction in which the real interests of their country lay, they did not give up the struggle without firing a few parting shots and trying to damage the reputation of the organization they had deserted. It was while this final operation was being fought most desperately that Madras was called upon to hold the first session of the Congress in conformity with the new constitution and rules. The responsibility was tremendous and the opposition most obstinate. But under the resolute and vigorous leadership of the late Mr. V. Krishnaswami Iyer, the Madras people made the session of 1908 a distinct success and thus ushered in the new epoch under auspicious circumstances.

We do not want to take up old sores, but have given a plain and unvarnished account of the unfortunate events of six years ago simply to bring into a clear perspective the issues of the discussion now going

on with respect to a united Congress. Every sensible person will welcome a reconciliation provided it does not necessitate any sacrifice of principle. The history of the last six years is the history of continuous attempts made by and on behalf of the seceders at a 'compromise' that will pave the way to their admission to the Congress. At Allahabad, at Calcutta, at Bankipur overtures were made and the Congress went so far as to allow the election of delegates by public meetings convened by recognized bodies. Let it be remembered that opposition to the so-called 'Congress creed' has been dropped and there is perfect willingness to subscribe *in writing* to the fundamental article of the new Congress constitution. But the difficulty still remains that people who have so long remained outside cannot get in unless they are members of or are elected by Congress Committees and bodies affiliated to them. Of course many people whose patriotism and level headedness triumphed over their scruples, have managed to get into the Congress fold. But many still remain outside and want a royal road made for them. This they would obtain if right of *any* public meetings, by whomsoever convened, to elect delegates is recognized by the Congress. This is the crux of the problem now before the leaders and they are exercising all their ingenuity to find a solution. A United Congress which will enjoy the confidence of the whole country and excite enthusiasm among all classes of people is indeed a desideratum, but the concession that is demanded is certainly a large order. To be fair to them, it must be admitted that several of those people who have been knocking at the doors of the Congress all these years are animated with genuine earnestness and desire to work. And to speak the plain truth, the division in the ranks of Indian politicians has robbed the Congress of much of its usefulness and influence. The need of union is thus patent, but the difficulty is, how to do it? Can a *via media* be found which without sacrificing prin-

ciples, and doing harm, immediate or prospective, to the Congress, will satisfy both sides?

If the concession of electing delegates to public meetings is the only price of reconciliation and unity, why not pay it and have done with the whole trouble? That is the way in which some people put the thing. But they forget that the small concession, as it appears, invades an important principle of the Congress constitution. Those who feel that the claim is an impossible demand, do not fight for a mere technicality. If the doors of the Congress are thrown wide open to any one that may choose to enter it, and if any public meeting may elect delegates, what becomes of the Congress constitution? Is not a wide gulf opened between those who are members of and are elected by responsible and recognized bodies on the one side and those who come in through the door of the public meetings which are in no way connected with the Congress? The fact that delegates were so elected before 1908 is no serious justification that they should be allowed to be admitted to the Congress in that way now. The suggested method is unheard of in the constitution of any responsible organization in the world. Everywhere on the face of the earth the right of election is confined to people who have a certain measure of responsibility fixed on them. The Congress is a people's organization, but any man among the people cannot claim the right to be admitted to its deliberations. After all, rules are made for the regular and proper working of an institution, and it would be turning back the hands of the Congress clock if big openings are deliberately left for irregularities to flood in. So far as we see, this is the danger of the amendment of the Congress constitution that is proposed. This is, of course, not to be taken as precluding all possibility of a reconciliation which will undoubtedly strengthen the hands of the Congress. But we must be on our guard against delusions created by such phrases as, a United Congress,

national harmony, patriotism and so forth. Let the issues be frankly and boldly faced. Lest we be misunderstood, it is necessary to state that no one will be more delighted than we if a reconciliation takes place, but we feel it our sacred duty to point out the rocks and shoals ahead before we approach them. It must be left to the majority of congressmen to decide if the step recommended to them will do more good than harm to the interests of the Congress which people of both the parties have avowedly at their heart. We yet feel that without undoing of the constitution, some satisfactory solution will be found. This ought not to be beyond the ingenuity and patriotism of our leaders.

Many people who have not taken care to study carefully the peculiar conditions under which the operations of

the European—now the world-wide—war, especially in the Western theatre, are being conducted, have become impatient of the tediousness of the struggle as if the soldiers sacrificing their lives were fighting for the amusement of newspaper readers. Their expectations were indeed raised to a high pitch by the rapidity with which the Germans marched, as in a triumphal procession, from place to place in Belgium and North-eastern France and they believed that the enemy would throw himself headlong on the Allied troops and be soon smashed to pieces. The German retreat from the Marne was to them the beginning of the end and they cannot understand why the British and the French are not now drawing the Germans precipitately beyond the Rhine. To understand the situation properly, it must be remembered that the Germans who have been preparing for the

present struggle for the past many years were better equipped with men, material and machines, and almost took the Allies by surprise. The Kaiser has staked everything upon the issue of the present conflict and is therefore recklessly wasting German manhood and wealth. The war opened most hopefully for the Germans, but the early elation has been now converted into depression. The dust upon Paris ignominiously failed, so also the easy entry into Warsaw. Next, a desperate attempt was planned upon Calais; that too was frustrated. The enemy is throwing masses of men and quantities of shell and shrapnell to dislodge the Allied troops; but he is only breaking his head against a stonewall. The Allied troops have shown a splendid bravery and tenacity which have hardly any parallel. The glory of the magnificent work is equally shared by the Belgians, the British, the French and the Indians. It is a matter of extreme pride and satisfaction that our soldiers in their first copy with the enemy of the British Empire on European soil have distinguished themselves for all the fine qualities which are admired in brave and chivalrous warriors. The British and the French papers are full of eulogies of the bearing and daring of the Indian soldiers and for the first time an Indian soldier has been honoured with the much-coveted Victoria Cross. The very fact that the enemy has failed to make any progress is tantamount to a defeat and his position is bound to become more difficult with every day that passes. All things considered, we have every ground to be satisfied with the progress of the war during the past four months and more and our hopes of ultimate victory are being strengthened every day.

Articles.

THE MAN AS HE MAKES HIMSELF

BY HIS GRACE THE DUKE OF ARGYLL.

A GOOD MANNER.

It may be said that life is now so various that the old maxims fail. This is true, and as the times will not adapt themselves to us, we must adapt ourselves to the times. Varied observations and as much reflection as you can indulge in, gives you best the measure of men and things, and prevents any one man or thing from bulking too large, as compared with others. Your mental pictures must not be all foreground. You must get all subjects into proper perspective, see their relative value, and not be like a man who has eaten too much food and sees in his dreams and nightmare an object the size of a pea that grows so big that it oppresses his eyes, looms gigantic just in front of his nose, and weighs upon his chest. You must not be smothered with insignificance. Let not one detail swallow up your general view. If you come across an obstacle you think you can't surmount, get round it if possible, and see what there is on the other side and beyond it. Inexperience is like sleep for what seems insuperable and measureless when reason is not present to give real proportions, is not to be so seriously regarded when we are awake with knowledge that makes us compare and justly estimate relative size. To tell men to read only two or three books is as useful as to tell them to know and cultivate, the society of two or three men. What a bore this would be for a person so cultivated, and intruded on. What a nuisance would you be to any society if you only repeated at second-hand the thoughts and manners of another. An echo may be fair enough to listen to for a while, however grotesque the repetition, but a second-hand echo is only tolerable when it dies among very distant mountains.

Carpe diem. Snatch the benefit of each day, each being various in its experiences, that you may know more than one side of life, more than one phase of character, and be moulded into many sidedness. Do not think there is a danger that you may, by the buffets of fortune, get so many knocks that you will be beaten into a shape having no sides at all, and become a mere ball for fortune's foot to play with. Such malleability is not possible where there is any wit. The man of the world may seem all things to all men, and to present on the surface no salient angles, no immutable sides, but try him and you will find angles sharp enough, and walls that will stand four square to all the winds that blow. Versatility and address is not weakness, although you may see that the weak often have a pliability of manner. In the march westward of the Aryan races they have lost much of the supple and adroit and cunning, if courteous, manner that may have distinguished their forefathers in the East, for these qualities are now most marked among Orientals. It is also in the less fortunate races in western Europe that we find these types of demeanour most prominent. But never be afraid of seeming weak, through the use of courtesy, nor despise the cultivation of a good manner, which is in truth not one that is subservient, but unites with dignity the gentleness of truth. "Manner is not idle but the fruit of loyal nature and of noble mind." It is of the greatest value also in the practical business of life, and more men succeed through a good manner and address than through bellowing themselves into fame, or by treading on their neighbour's toes. Openings given for advancement by the use of

disturbing the first, but on another level, preserving a separate stream. So will you be able to dive into one or other as you require a different temperature for your bath of reason. Above all things do not let the mere social or trivial or even necessary ties of every-day existence absorb entirely your time. Keep some of the precious minutes of each day of your brief life for the purposes you set before you of building up something that you can look back upon in the evening of your days as marking your course as not useless or wholly insignificant. In holding fast to the higher things, in the sure refuge of lofty thought, you will have a means of avoiding misery when unsuccessful. Indeed each one ought to have in life not only these higher aspirations which will be an unfailing comfort in adversity, but also "a second string to your bow," "another arrow in your quiver" in your usual and common every day pursuits. Lead in this respect a double life. Have some pursuit, follow some taste, that cannot be hurt and extinguished by the cloud of sorrow or disappointment that may meet you in business or other relations. Let this double life give your mind an alternative pursuit, and devote as much time as you can spare to it. It will brace your mind for your professional labour, for relaxation is in itself a bracing of the intellectual powers. No one can endure the drag of one strain of trying thought for long without a diminution of mental energy. By wandering into some other field of thought, your nerve and brain will be refreshed, and if you can in such excursions keep to the airy highlands or open fields of an entrancing occupation, your steps will be the firmer when you return to narrow and darksome ways of other labours. So lead in this sense a double life, in that you may rest yourself on some other support that cannot fail you.

LASTING AIDS AND COMFORTS.

What is there that is so enduring, that mental shock shall not harm it, you may ask? There is not one such lasting aid and comfort,

but many. For some this abiding joy may be found where Art leads her votaries onward, and ever on, to take delight in new forms of loveliness; teaching them as they fervently pursue her, how to attain nearer and nearer to that perfection of which even Nature herself shows only broken parts. To others happiness may last in the ever new and captivating search into the mysticism of that nature herself. To explore the methods of creation, and trace the chain of life from the lowest to the highest of the creatures that are alive now in earth, or air, or sea, or have lived where we now exist, their bones and even their outward shape preserved in the truth-telling rocks; to summon before our eyes the scenes of a world enjoyed as we enjoy our own, long before man came from the hand of the Almighty Artificer, is in itself a wondrous pleasure. Others may prefer to lighten their labours by weaving for themselves the webs of fancy and romance. They may develop that happiness they knew as children in listening to the tales of fairyland, and the exploits of elfin knights and lady sprites dwelling in the hollows of the blossoms and sipping honeydew. They may even make their fortune by clever plays showing the follies in crises of actual life on the dramatic stage or exhibit the last infirmity of noble minds in the weaving of verse. They may do much if they aspire to do little at a time, and by making the pen, or the chemist's laboratory, or the painter's studio their charm against melancholy in the hours that they can spare, they will be leading that double life of which I speak, and which, I commend to you as a wise division of your thought in that lower plane of existence it is our duty as well as our inevitable fate to tread here. We can thus in freedom from mental weakness place our hopes on that higher plane of thought which is not so much a mental exercise, as a calling forth of that faith without which life is emptiness—faith that in all we do, we may gain the reward that He alone can give from Whom all things are, and in Whom all things move and have their being.

Articles.

ORGANIZATION OF THE INDUSTRIAL CONFERENCE.

BY V. G. KALE, M.A., PROFESSOR OF ECONOMICS, *Fergusson College, Poona.*

There can be no two opinions, I think, as to the desirability of having an All India Organization like the Industrial Conference to promote the economic progress of this large country. The principle has now been fully recognized in India that a healthy development of her people can be ensured only if the nation progresses simultaneously in the different fields of activity, political, social, industrial and so forth. Politics and social reform were seriously taken up in India at an early date and spasmodic efforts for industrial development were made in certain parts of the country. It was the desire to bring the latter work in a line with the political and social organizations that led to the institution of the Indian National Industrial Conference ten years ago. The industrial regeneration of India is rather an up-hill task in which much spade work has got to be done. As in politics, one aspect of it does appeal to the patriotism of the educated people, but unlike politics, it offers no immediate rewards in the way of self-satisfaction or the achievement of success. Industrial development is more like social reform; in which most of the work has to be done by the people themselves, though the active sympathy of Government is a great desideratum. Almost every one is dissatisfied with the way in which the Indian National Congress is working and suggestions are made from time to time for placing the organization upon a more sound basis. The Social conference is similarly found fault with for talking too much and doing too little. What wonder then if the Industrial Conference should be subjected to hostile criticism and declared to be a useless body? Those, however, who have direct experience of public work in this country and are cognizant of our national

drawbacks, will not endorse such sweeping assertions and while admitting that there are defects which require to be removed, will frankly acknowledge the valuable work the three national organizations have done in the peculiarly difficult situation in which they are placed. The General Secretary of the Industrial Conference, the Hon'ble Mr. R. N. Mudholkar, deserves the most cordial thanks of the country for the task of love he has been doing all these years at so much personal sacrifice and in the face of tremendous difficulties. It is but due to him to say that had it not been for his patriotism and earnestness, the work the conference has done, inadequate as it is, would have been impossible.

PRESENT CONDITION.

The National Congress has a constitution and rules; so has the Social Conference. People interested in the two movements are besides endeavouring to make the organizations living bodies whose work will be systematically carried on throughout the year. The feeling has been long prevalent that something of the sort should be done with regard to the Industrial Conference. The General Secretary of the Conference has a paid assistant and a regular office and to defray the expenses of the establishment an appeal for funds is made every year. The office has done much good work in the past by collecting useful information and giving it to the public in the shape of Directories and the annual reports afford evidence of the labors of the Secretaries in this respect. The value of their work cannot be overrated and the present arrangement as to a permanent establishment doing conference work throughout the year must be continued. Looking into the reports

question as to how India should benefit by the cessation of the trade of Germany and Austria-Hungary and generally by the situation created by the war ought to dominate the deliberations of the conference this year. If necessary, the Committee system should be adopted and the recommendations of the Committees should be submitted to the Conference.

MADRAS SESSION AND CONSTITUTION.

I do not claim any originality for my suggestions, and the reports of the Conference will show that attempts have been made in the past at forming Provincial Committees and appointing Committees for other purposes. Those experiments do not seem to have succeeded and a paper constitution like the one I have tried to sketch may have the same fate. To succeed, constitutions and rules must be animated with the spirit of devotion, faith

and practical work. But it is my belief that it is always better to have an organization and rules for everything than to grope in the dark and do things in a slipshod, unmethodical manner. An earnest and sustained endeavour will have to be made if any life is to be put into the Industrial Conference. Much propaganda work will be necessary for the starting of Committees in the provinces and Districts. The experience of the Congress in this connection is not more encouraging, and we need not be disheartened by our failure in the industrial domain. A few enthusiastic workers from every district must come forward to promote the work of the Conference and I suggest that at the forthcoming session at Madras, this question of organization and propaganda work should be seriously taken in hand.

CO-OPERATION.

By K. S. RAMASWAMI SASTRI, B.A.

The most successful movement of modern times is Co-operation. Especially, the form of co-operation that deals with distribution and consumption has made great progress and seems to have a magnificent future before it. The happy little device of the twenty eight flannel-weavers of Rochdale has become a world-famous institution.

THE SCOPE AND EXTENT OF THE MOVEMENT.

The co-operative associations of consumers in Great Britain number about 1,400 with an aggregate membership of some three millions. Some of these societies are very large with a membership of 30,000 each and a turnover of 3 quarters of a million per annum. The average society has 2,000 members and does £1,000 of trade per week. The total turnover of the 1,400 societies amounts to 84 million £. This vast amount of retail distributive trade com-

prises almost every commodity of household consumption.

In Germany the total number of associations seems to be 2,400 with a membership of two millions and a quarter and with an aggregate annual trade of 30 millions sterling of which nearly 6 millions represent articles of co-operative manufacture.

This form of co-operation has made great progress in other European countries, *i.e.*, Belgium, Denmark, Switzerland, France and Italy. Their aggregate turnover may be estimated at a hundred and fifty millions sterling.

ADVANTAGES.

These associations of consumers have always been a subject of praise. Really when one looks at the many economic evils they have removed or minimised, or at the valuable help and culture they have brought to the wage-

earning classes, it is impossible to avoid an extravagant laudation. Co-operation has proved a most genuine alternative to capitalistic ownership and control. The wage-earning classes have been protected from exploitation by the credit system and from the extortions of monopolist traders and speculators. The profits which the capitalists and merchants were consuming now return in the shape of dividends to the wage-earner and add to his personal wealth. The dividends afford a financial reserve to the wage-earner and may be used against all emergencies and as an instrument for their elevation from the penury and ignorance in which they are now depressed. The management of great business enterprises on a democratic basis has added to the culture and administrative experience of the labouring classes.

DRAWBACKS AND LIMITATIONS.

But still we have to recognise that like all human institutions, co-operation too is liable to certain drawbacks and that there are even limitations to its development. These drawbacks and limitations are the more interesting to us as some of these have cropped up in India also. The drawbacks are however such as can be remedied by the use of proper means.

The first of these remediable drawbacks is the failure on the part of some societies to maintain cash payments. Many societies allow credit in particular cases, sometimes merely for convenience but sometimes because of slipshod ways and unthriftiness. The rule of cash payments can, however, be strictly maintained with some variation, if necessary, in the case of poor customers who receive their wages only at the end of a week or a month.

The voluntary nature of co-operation has made possible the growth of rival societies. This danger does not at present beset India. But the danger has assumed big proportions in Europe. Competition among rival societies lead to high dividends, waste of money in advertisements and duplication of business and establishment expenses. The remedy is, however, found, as British and German co-operators have shown, in amalgamation and arbitration.

The third and more serious evil is what has been known as "Dividend-hunting." In the desire to receive high dividends, prices are kept up. This policy tends to exclude the poorest class of purchasers. Further it shows an extremely selfish attitude on the part of the members, quite out of keeping with the true spirit of co-operation. The thing is however

not beyond remedy. On the other hand, the Belgium co-operators have shown quite a marked advance in this matter of the surplus dividend. In Belgium, a part of the common surplus is used for common purposes concerning the co-operators, such as providing free bread to the members when sick or unemployed or at child-birth; maintaining a medical and nursing staff for the use and benefit of the members. A beginning has been made in Britain in the way of convalescent Homes, of which half a dozen exist. We cannot omit to mention one admirable work British co-operators have done in the way of "collective life insurance" of all the members of the society together with their wives with benefits proportionate to the purchases, the premiums being met by the society's surplus. These forms of co-operative work seem to be most worthy of imitation. But in India where the societies are so few and the capital and turnover so small compared with those of European societies, we will have to wait long before we can aspire for such social benefits.

Corruption and favoritism are found in some instances of co-operative work. But we may say that few forms of Government and industry are free from those vices. Still one of the great advantages of the co-operative movement is that it introduces and maintains, by the mere fact of the publicity of its proceedings, a far higher standard of commercial honor and business integrity than that in use among the capitalists.

The more serious evil with which all these are associated as the result is the general apathy of co-operators in the supervision of the society. This apathy is a serious obstacle to the progress of co-operation. It behoves co-operators to combat this evil and promote more active interest in the work of co-operative societies.

LIMITATIONS.

When all is said and done, the associations find themselves face to face with limitations to their possible expansion which seem to be inherent in the very form of their organisation. The poorest sections of the community are unable to take advantage of co-operation. The wealthy do not care for it. Certain industries too are beyond the scope of co-operation, *viz.*, the greater part of agriculture, the greater part at any rate of all manufacture for foreign consumption, the industries providing the material and plant for other industries; and all those industries like the Post and Railway system in which administration by the compulsory machinery of the State is required for other reasons.

PUBLIC OWNERSHIP.

By O. T. GOVINDA NAMBIAR, M.A.

Of late years there has been a growing activity on the part of socialists to extend the sphere of economic activities of the State and to substitute public ownership and operation for every species of private enterprise. They assume that, if private enterprise is suppressed, States and municipalities will produce all things necessary to man much more abundantly and in a much more regular and economic fashion than private enterprise has succeeded in doing and that the moral and material welfare of the nation will advance at a more rapid pace than hitherto. Their leader in France is Edgard Milhand, occupying the chair of Political Economy in the University of Geneva, and he puts the case for public operation in the following words :—

"Private monopoly, seeking nothing but maximum profit, is far more costly than public monopoly, which is not bound by the same conditions. Money costs public enterprises less, and therefore they can amortize their debt and thus reduce general expenses. On the other hand, heavier expenses for labour can be supported by public undertakings. The management of a public enterprise can even hope for profit, and all this can be accomplished within less rigid limits than those which necessarily confine private monopoly."

This view is ably controverted by Yves Guyot in a book entitled "Where and Why Public Ownership has failed." (The Macmillan Coy., New York, 1914, 6/6 net). The author examines the assertions of the propagandists of public operation in the light of rigidly investigated, authentic facts and figures collected from various sources, and shows the vanity and "bluff" of the socialist propaganda. He establishes three important propositions on the subject :—

(1) Neither States nor municipalities should attempt tasks especially adapted to individual effort.

(2) In the case of those utilities in which the public interest is general, such as railways, water, gas, electricity, tramways, etc., there must be a physically and morally responsible body, accountable to the public on the one

hand and the service on the other, and protected by contracts against vacillations of public opinion and the extortionate demands of interested groups, whether employees, consumers or politicians.

(3) For individuals, the watchword should be action; for local and State Governments, control.

Experiments in the way of nationalization and municipalization of public utilities, with the socialist ideal in view, have been sufficiently numerous, and before they have proceeded too far, it is necessary to take stock of the advantages reaped so far and see how far the promises held out by their advocates have been fulfilled.

In the first two parts of the book, the various state operations such as railways, gas, electricity, tramways, housing of the working classes, food supply, fiscal monopolies, etc., are examined in their financial aspect. Of these, the railways are the most widespread and the most extensive, and from the facts and figures furnished concerning them it would seem that so far Government ownership and operation has not, with a few notable exceptions, paid off all its expenses and that it has consequently been a burden upon the tax-payers, whilst on the other hand, it has failed in most cases to supply the citizens with a particularly excellent service. The question of railway nationalization has been of late engaging some attention in India, and those who are desirous of knowing how it has fared in other parts of the world cannot do better than study the chapters of Mr. Guyot relating to it.

The last two parts of the book are devoted to a consideration of the administrative, social and political consequences of state ownership and operation, and would seem to lead one to the belief that state and municipal operation is incontestably inferior in its results to private enterprise and that experiments with state and municipal socialism have almost everywhere resulted disastrously.

Apart from the value of the work as a refutation of the socialist arguments in favour of public operation, it is a storehouse of the latest information regarding the various state-owned utilities in the different countries of the world.

Notable Speeches and Writings.

The Indian National Congress.

Mrs. Besant recently threw open the columns of the *New India* for the discussion of questions connected with the ensuing "Indian National Congress." Responding to her invitation, many eminent men, including some veterans of the Congress, have offered their suggestions to reform the institution. We summarise below some of the more important suggestions here.

Is There Any More Need for the Congress?

The opinion is expressed in some quarters, that with the expansion of the Legislative Councils, the usefulness of the Congress is extremely doubtful. The reason urged is that the proceedings of the Congress are but a pale reflex of what passes in the Legislative Councils, and therefore the need for these periodical gatherings no longer exists. Yet, all the writers are of opinion that there is still need for the Congress.

FOCUSsing PUBLIC FEELING.

Rao Bahadur N. Krishnasawmi Aiyengar, late Member of the Madras Legislative Council, points out that when the same question is discussed and considered by different political organisations with the same purpose in view, the proceedings of the one must reflect on the other, and they must act and re-act upon each other. This mutual action and re action may, perhaps, produce a pale reflex in one place, but they will nevertheless help to accentuate what the public feel upon the vital questions of the day.

HELPING LEGISLATIVE COUNCILLORS.

What is most sadly wanted is an agency working all through the year, gathering public opinion and placing it before the members of the Legislative Councils, in a form which it

would be convenient for them to accept and act upon. Such an agency does not now exist. No better agency can be thought of than the Congress.

CREATION OF NATIONALITY.

In the opinion of Mr. Ramasami Gounder a big land-holder and an ardent worker in the field of local self-government in this presidency, the feeling of nationality and oneness among the diverse creeds of India, is the peculiar product of the Congress, and it is to keep up and vivify this feeling of oneness, that the Congress is absolutely necessary and nothing but the Congress can do it. This national spirit must serve as the bed rock for the future building of a United India. No doubt, we move resolutions in the Legislative Councils, and put interpellations, and these have been concerned with departmental injustices and oppressions; but there is no certainty that they will be really considered or carried out. Until India attains self-government, there is bound to be the spirit of division, because the Government and the people are diametrically opposed, owing to the conflict of interests between the two. It is to reflect the feeling of disappointment and injustice felt in the different Legislative Councils, including the Imperial Legislative Council, that an All-India Congress, is needed, wherein the voice of India will pour forth.

TRAINING FOR POLITICAL WORK.

Further, in a country, where the study of politics is declared to be forbidden fruit, and is not actively encouraged as in other civilised countries there cannot be a better organisation than the Congress, which gives out matured and sound thoughts on the various political problems of the day, thus equipping every political worker with sufficient knowledge.

DIFFUSING RIGHT KNOWLEDGE.

Again there is a great gulf between the English-educated and the non-English-educated population, so far as the knowledge of politics is concerned, and the enlarged Legislative Councils render it all the more imperative that the Congress should continue to exist, always diffusing right knowledge on political questions to the electors, lifting their mental outlook to the political horizon of India, and cheering the disappointed with hopes of a glorious future for India under the ægis of British rule.

These tasks cannot be accomplished by the enlarged Councils, and in the interest of the full development of the Indian constitution, the Congress must continue to exist.

REPRESENTATIVE FOR WHOLE OF INDIA.

Moreover, any further advance towards popular Government can only be obtained by continued and well-directed efforts, not only in this country, but also in Great Britain. These efforts have, of necessity, to be made by a representative body acting on behalf of the whole country, and have to be kept up year after year till our objects are attained. The prestige of political institution is of slow growth, and the present position of the National Congress, speaking on behalf of the people of India, is the result of thirty years of hard and incessant work. Will it be wise to disturb this established position of our National Assembly?

BROADER QUESTIONS TO BE CONSIDERED.

Lastly, the Imperial Legislative Council and the Provincial Councils are hedged in by many restrictions in regard to discussion, even of matters of great general importance. The foreign policy of the Government of India, or matters affecting the relations of His Majesty's Government with the Indian States, all matters affecting the Indian Army and the Military expenditure, the Public Debt of India and the Customs Duties, questions affecting the Currency of the country, these and other important

problems, closely affecting the well-being of the people, are excluded from the purview of the Legislative Councils. These are the very questions which have greatly agitated the Indian public mind, and well informed and trenchant criticism of the measures of the Government from the platform of the Congress in regard to these questions has attracted the attention of the authorities in this country, as also in England, and were responsible in some cases for the appointment of various Commissions of Enquiry. How is all this work to be done hereafter except through the Congress?

The Work of the Congress in Future.

LOCAL SELF-GOVERNMENT.

On this point, Mr. Hirendranath Datta states that the Congress should steadily and persistently work—not merely for three days in the year, but from day to day and year in and year out—to secure real and effective Self-Government on the same lines as obtain in the British Colonies, and thus change the complexion of the Government. In the business of the Empire, Indians must insist on being admitted as partners—not merely as servants, remunerated with a share of the profits—agreeing at the same time to England being the senior partner. As immediate steps leading to this consummation, it should work to get the education and the sanitation of the country into the people's hands, and also to free local Self Government from official trammels, so that at least the Municipal and the Local Boards may be truly popular bodies—worked and controlled by the people.

EDUCATION OF VILLAGERS.

The Congress should set itself to get the restrictions imposed on the Press in India by the Press and other Acts removed at the earliest opportunity, and also work to get the Arms Act repealed, and National Volunteering promoted. We should no longer attend the Congress with the object of listening to the "Trumpet Voice of India," but attend with

determined hopes of making the British Parliament feel that we are not "crying for the moon," but for Self-Government on Colonial lines. To achieve this, as a preliminary, the Congress should start by educating the villagers on the following lines:—

- (1) The early History of India.
- (2) India under Muhammadan rule.
- (3) The Conquest of India by the British.
- (4) The machinery of the India Government.
- (5) Taxation in India, and how it is spent.
- (6) What is meant by a
 - (a) Taluk Board.
 - (b) District Board.
 - (c) Municipality.
 - (d) Panchayat.
- (7) The industrial progress of India and Indian economic policy.
- (8) The elements of good citizenship.

If the Congress should begin a propaganda of active education for villagers on these lines, by organizing lectures, issuing pamphlets and starting vernacular newspapers in every district, the Congress is bound to be popular, and to gather life, which would ultimately fuse India together permanently in bonds of sacred Brotherhood and as Members of the same Empire.

LIMITED NUMBER OF RESOLUTIONS.

To avert the monotony and the comparative uselessness of too many resolutions, their number must be limited, and the more important of them must be announced at a sufficiently early date before the Congress assemblies, so that people may come prepared and infuse life into them. This would serve as a great incentive to the study of political problems, and would rear really good and true citizens. The sittings of the Congress should not be limited to 3 days but must be prolonged to at least a week. The Congress must resemble the House of Commons in every respect

with this difference, that Resolutions in the House of Commons are for the immediate purpose of good Government, while the resolutions in the Congress are for the immediate good understanding by the people of the political problems of the day. But at particular periods of time, it often happens that particular topics are of more importance than others. It is fitting that stress should on such occasions be laid upon these topics.

MRS. BESANT'S VIEWS.

Mrs. Besant classifies the future work of the Congress under the following three headings:—

- (1) To educate public opinion, in order that it may support legislative action in the Councils.
- (2) To prepare materials for proposed legislation, i.e., to gather the facts on which is to be based the brief from which counsel shall argue.
- (3) To formulate and proclaim the opinion of educated India on all urgent public matters and to take the steps necessary for making that opinion effective.

The important questions that the Congress might immediately take up in hand are the granting of complete fiscal autonomy to India, the granting of protective tariff, the nationalization of the public services, the rights and liberties of Indian subjects in British Colonies, etc., including, of course, the question of Indians volunteering for the Military service.

The Appeal for a United Congress.

Every Indian paper as well as every eminent man calls for a united Congress at Madras. Old party differences between the Moderates and the Extremists must be soon made up and all Indians without party distinction, should work hand in hand to achieve our grand common ideal. The portals of the Congress should be thrown wide open. If it is necessary to disagree, it is equally important that we should know how to make up our quarrels, when there is no longer any reason for disagree-

ment. The Madras Congress should see all the old patriots, who have been standing aloof as sullen, discontented, or eager spectators for one reason or other. This reconciliation ought to be easy now, inasmuch as the first condition of the constitution, namely, that self-government on colonial lines is the goal of the Congress, is admitted and agreed to by the so-called Nationalists as well as Moderates. *Delay is dangerous.*—Such are the cries heard far and wide in the land.

Mr. S. K. Altekhar of Satara, in a letter to Sir Subramania Ayer, Chairman of the Reception Committee, points the way in which the desired result can be produced. The following from his letter is on the point:—“Some will bring the technical objection of the Constitution of Article XXX which deals with changes in the Constitution or Rules. They will say that the desired change of admitting delegates elected by public meetings must be first brought about this year and then a united Congress should be held next year in accordance with the changed Constitution of this year. This kind of postponement on technical grounds should not be allowed to go on indefinitely. If the Congress-leaders on both the sides are *really sincere*, the technical difficulty can be got over in a number of ways. Mr. Altekhar makes a suggestion also.

The General Secretaries should at once communicate with the members of the All-India Congress Committee and with the several Provincial and District Congress Committees, as also with the prominent members of the non-Conventionist party. If the Secretaries find they, or at least a majority of them, are for a United Congress on the lines of the last Satara Provincial Conference, they should immediately publish the fact widely all over India, and ask the non-Conventionists all over India to elect delegates to the Madras Congress. The delegates thus elected should attend the Congress

on the first day as *spectators*, to honour the Allahabad Constitution. After the two inaugural addresses of the Chairman and the President-elect, the Subjects Committee should as usual be formed. It should formally decide what has been already previously settled, to make a change in the Constitution by extending the electorate to public meetings as before. The proposition should then be moved *from the Chair* in the Congress on the first day; and then the Congress should be adjourned for the next day. On the second day the spectator delegates of the first day should attend as *delegates*, and before the United Congress thus formed, the Allahabad Constitution should *formally* be placed *from the Chair* to get for it the sanctity of a Congress Resolution. Then a new Subject-Committee should be formed from the delegates of the United Congress, and the prominent resolution on Indian loyalty should regularly be moved, seconded and supported before the United Congress.”

The objections to adopting this suggestion are many—

Firstly, there is no time to make references to the Congress Committees as suggested.

Secondly, no one, however influential he may be, can hold out any guarantee that the agreement arrived at between the leaders, will be carried out by voting in the United Congress.

Thirdly, the proposal involves the risk of the existing constitution, especially the article known as the Congress creed being thrown out, if it is to be put before a United Congress for voting.

Fourthly, it is not advisable to allow the privilege of electing delegates to *any* public meeting, but only such public meetings should be authorised to elect delegates as are held under the auspices of a responsible public body or association of some standing.

These arguments seem weighty but any way,

it is time that we should this year see a United Congress at Madras, if possible.

Germany and the Prussian Spirit.

The latest issue of the *Round Table* is a special war number. It has been prepared with the purpose of reviewing, as clearly and impartially as possible, the origin of the war and the great issues raised by it. There are four articles entitled “The War in Europe;” “Germany and the Prussian Spirit;” “The Austro-Servian Dispute,” and “Lombard Street in War.”

It is the second article that is really interesting. In it an endeavour is made to trace the modern history of the German Empire, to indicate the main ideas which have taken shape in its institutions and to mark the causes which have brought it into conflict with its three great European neighbours, in particular Great Britain. It is pointed out that Germany has two ‘German types.’ The one is a genial wool-gathering professor, the other a military figure of imposing build with a powerful arm encased in mail. While the former has the longer sanction of tradition, the latter, which dates from the consolidation of Germany under Prussian leadership in Bismarck’s hands, now represents German influence and temperament in the councils of the world.

Then follows a discussion of the means by which Bismarck built up the modern German Empire and of the principles on which he considered that its policy should be based. It is shown that while Germany has taken to its heart the methods of his diplomacy, with its cynicism, its materialism, its ruthless use of force, modern German Statesmen have discarded his canons of policy and ignored his warnings regarding the dangers by which Germany seemed to him to be beset. Bismarck, in fact, saw the weakness of the constitution which he had framed for the Empire—in particular the preponderating power given in it to the autocratic head of the State and the huge military

machine. Wise Statesmanship, he said, was needed to keep this power in check. “*It only becomes dangerous under a monarch whose policy lacks sense of proportion and power to resist one-sided and constitutionally justifiable influences.*”

The constitutional system of Germany is next discussed and the result of it upon German policy is then set out.

“The key to practically everything intolerable in modern Germany is Prussian dominance. Bismarck fastened this Prussian autocracy, with its reactionary and militarist discipline, upon the whole German people, and gave it unassailable power over the national destiny. The German of all kinds is docile to authority; he accepts, indeed he demands, the guidance of the State. Professional Germany, scientific Germany, scholarly Germany, literary Germany, even artistic Germany—as witness modern German architecture—caught in the reaction from national inefficiency and dominated by the success of Prussian leadership in two wars, have taken the Prussian mould as completely as the army or the bureaucracy. Human beings who concentrate on one idea develop a terrible efficiency against their fellow-men. Germany as an Empire-State has done the same thing.”

The effect of this system has been to develop a religion of war. “Western civilization has come to regard war as an evil to be avoided by every resource of statesmanship—the last dread arbitrament when every other means of settlement has failed. German thought meanwhile has been taking exactly the opposite course, and has preached war as the necessary instrument of policy, good as a means and good in itself, to be used without scruple whenever the national interest may be advanced thereby, without regard to human loss or suffering.” This belief in war has naturally been the source of constant friction between Germany and her neighbours, and it has led in particular to the development in Germany of a fierce sense of rivalry against the British Empire.

which is held to stand between Germany and her proper place in the sun.

The German political creed and the British political creed are then contrasted. The one is a hot-house creed, the other a creed of open air. "British citizens carry the tradition and temper of British life about them wherever they may go, to the ends of the earth; it thrives in every sky. German subjects who emigrate beyond control of the Prussian system lose the real temper of their German patriotism more rapidly and completely than any other race." The article concludes:

"No people can think out in a generation, or conquer by mere force, the road to world-wide power. If German mind is to re-establish its influence over human development, it must cease to ally itself with a gospel of dominion by the sword. The power of German intellect in the world is lower to-day than at any period since Luther; and every civilized nation rejects with loathing the Prussian cult in which it has been imprisoned since Bismarck's time. It is not by such acts as the destruction of Louvain that German culture will increase its hold upon men.

"Civilization must subdue a system which aims itself at dominion by such means; but none who knows and loves the older Germany of history will not pray that it may pass through its present ordeal to some political system in which the German spirit may express itself with freedom and security from foreign menace, and without menace on its part to the rest of the world."

Ethics of War in Ancient India.

Mr. T. Rajagopalachari, Professor in the Madras Law College, writes a learned article in the October number of the 'Indian Review,' on "the Ethics of war in ancient India." War in ancient India must have been a very familiar event in national life. The mutual rivalries among the early Aryan families, the contact of the Aryan tribes with the original inhabitants

of the country—these must have kept up the martial spirit of the young Aryan people. Even the Gods of ancient India are described as fighters and 'Indra' was the hero *par-excellence*. Battles on a large scale were not unknown, as references are found to "a hundred and one huge castles shattered," "a hundred thousand of the enemy slain." The necessity for the ultimatum before commencing the war was also recognized and sending 'Dutus' for overtures of peace was common. The despatch of *Hanuman* in the *Ramayana* served the purpose of declaration. The principle of the inviolability of an envoy's person is also explicitly referred to, when the unholy attempt of Duryodana to imprison Krishna was justly condemned by all the senior advisors. Corresponding to the rules compiled in the Hague Code, a number of rules of humanity against killing a fallen, flying or disabled foe are laid down from the earliest times. What more, wars in India in ancient times and also in pre-Mussalman times were conducted with a minimum of inconvenience to private property and personal safety of the non-combatant subjects of the belligerent states.

As a rule, our sacred books condemned unrighteous war. The Bhagavad Gita says "there is nothing more productive of good to the Kshatriya than *righteous* war." The *Mahabharata* repeatedly says, "*yato dharma tato jayah*" "where there is righteousness, there is victory." Says the writer:—

"The rules of war in ancient India are however a credit to the sagacity of its statesmen and disclose a keenness for justice and fairplay which must excite the admiration of modern jurists. The discipline of the army, the disposal of fortresses, the objectives in war and peace, have all been subjects of deep study. The outstanding feature in all these is that statecraft in its international aspect was by no means a neglected science, and that many of the rules laid down will bear comparison with those of the present times, in their regard for efficiency

and insight into human nature, and due attention to considerations of justice and humanity. And if we regard the generality of the ancient rules of Policy and War, we see a sustained preference of Dharma in War: the maxim is laid down without hesitation that in Dharma lies victory: *yato dharmah tato jayah*:

It is this historic nurture in the school of justice that has enabled India to appreciate Great Britain's worth, and to rise with one voice and proclaim its unswerving loyalty and devotion to the British power in its great strife in the cause of Righteousness and Friendship.

POINTS FROM THE PAPERS.

GOVERNMENT HELP TO INDUSTRIES.

To those in this country who are wedded to the fetish of Free Trade, the following item of news wired by Reuter will, we hope, be an eye-opener:—"In view of the deficiency of dye-stuffs and colours owing to cessation of the supply from Germany, it is proposed to form a large supply company. The Government has indicated its willingness to subscribe a portion of the share capital and guarantee the interest on a large debenture issue. Preliminary arrangements have been made enabling the Government to acquire important dye-producing work in this country." What is this, if not partially departing from one of the root principles of Free Trade, that the State should have nothing to do with the financing of industries? Why cannot the Government do in India, where according to so many competent authorities, Protection in some measure would be absolutely justifiable, what the Government does even in England, the home of Free Trade? Is the replacement of German and Austrian trade less important and less urgent a duty in India than it is in England? Or has the collapse of supply from Germany caused less inconvenience or less hardship in India?—*The Panjabee*.

BRAVERY KNOWS NO COLOUR.

"Bravery knows no colour bar." But if the *dictum* is true—which undoubtedly it is—it is true in its widest application. Is it, however, enough that Indian troops should be only eligible to the coveted distinction of the Victoria Cross? That has already been done by the King-Emperor during the Royal visit. All distinctions, based upon colour between European and Indian soldiers, should be done away with, and nothing would be more graceful, or more enthusiastically welcomed than the announcement which, we think, may now at once be made, that Indians should be eligible to the Commissioned ranks in the army. The justice of this measure has never been questioned. Its expediency is beyond all controversy. Sir Henry Lawrence, one of the greatest of our soldier-administrators, said, so far back as the early fifties of the last century, that when Russia and France admitted their Asiatic and African subjects to the Commissioned ranks, and with the best results, there was no reason why England should not follow the example set by these European Powers? And they are now the allies of England in this great War. That was said more than sixty years ago—*The Bengalee*.

POINTS FROM LEADERS.

Muslim Loyalty.

You are well aware that though I have always been convinced that Germany was a most dangerous enemy of Turkey and all other Muslim countries, for she was the one that was most anxious to annex, by peaceful penetration, Asia Minor and Southern Persia; she has been at the same time posing for years past, to serve her own ends, as a sort of protector of Islam—Heaven forbid that we should have such an immoral protector! and is only too eager to turn to mischievous account such unguarded expressions from Englishmen of eminence. Happily, so far as the Muslim and other subjects of the King-Emperor are concerned, these efforts of our enemies are absolutely futile. We will never break down the strong wall of loyalty, based on the certainty and consciousness that not only our truest interests, religious as well as civil, are guaranteed to us by British rule more securely than they could ever be otherwise, but that our ultimate aspirations to rise in everything to the standard of Europe and America can only be obtained through permanent association and union with British rule—*H. H. the Agha Khan.*

Efficiency of the People.

What are the people doing to help themselves? To what extent will they exert themselves for a more active participation in the civic and industrial life of the country? These questions will be repeated with growing persistency in the coming years and you must see to it that your response is hearty and increasingly unanimous.

The spirit of enquiry should be cultivated by our people and they should study what science has done for promoting human enterprise in foreign lands and practise the lessons deduced from such comparison.

Changes are going on unnoticed in the practical life of the people and many good and useful habits and practices of the past are disappearing. It behoves us to single out the more useful methods and practices, both our own and those of foreign countries at the present time, and familiarise the public with them, till they come to be accepted as standards in the daily life of our people.—*M. Visvesvaraya.*

Education and Success in Life.

The general or professional knowledge you (graduates) have acquired, the taste for learning you have cultivated, the principles of conduct you have imbibed, and the habits of industry and self-denial you have formed, will be of immense help to you in the world you are about to enter. It is, however, useful to warn you against a too confident expectation that the prizes of life will be proportioned to success in the University examinations. The abilities and qualities of which you have given proof will, so far as they go, be factors of success in life. But the sterner conditions of the outside world will demand, not merely a higher development of the qualities already acquired, but others not tested by examinations or guaranteed by the course of training already undergone. Shrewd knowledge of human nature, tact, readiness of resource, power of initiative, force of character, and the strength of mind to overcome distractions and temptations—these are among the qualities which make for success in life. External circumstances also count for a great deal and serve to help or hinder a man's way in life. Prize-winners at college sometimes turn out dismal failures, but you may take comfort in the thought that, in the average, academic distinction does give a man a start in the world and is a precursor of success.—*the Hon'ble Mr. P. S. Sivaswami Aiyar, C. I. E.*

Official Pronouncements.

The High Prices Question.

The following is the Resolution of the Government of India, dated Simla, the 24th October 1914, on Mr. Datta's Report.

The rise in prices in India, though in evidence from an earlier date, began to attract general notice from about the year 1907. In 1910 the Government of India decided to undertake a full and detailed investigation of the problem, and the task was entrusted to Mr. Datta, a senior and experienced officer of the Finance Department, assisted by Mr. Findlay Shirras, late professor of Economics of the Dacca College, and Mr. S. D. Gupta of the Finance Department. Mr. Datta was instructed to tour throughout British India, to collect and analyse the relevant statistics, to ascertain the views of both the official and non-official community, and to report his conclusions to the Government of India. The specific points referred for investigation were:—

- (1) What has been the actual rise in prices in India during the past fifteen years? Has the rise affected all commodities alike or is it specially marked in the case of food grains? Are there marked differences in respect of enhancement of prices as between different areas?
- (2) To what extent is the rise in prices due to what may be styled "world factors," and how far may it be ascribed to local conditions?
- (3) Does it appear that the rise is a permanent feature or is it only temporary?
- (4) If it be more or less permanent, what are its probable economic effects on the country as a whole, and on the different sections of the community?

2. Mr. Datta was placed on special duty in 1910. His report was received in 1913, and the complete subsidiary volumes of statistics, on which it is based, were finally ready by April 1914. The Government of India desire to place on record their appreciation of the care and industry which Mr. Datta and his assistants brought to bear on their arduous task. The report with its statistical appendices constitutes an almost complete survey of the progress achieved during the past 22 years. It brings together, and exhibits the inter-relation of, a mass of statistical material, drawn from a wide variety of sources, and illustrating the many sided evolution of the country. Whatever view may be taken of the conclusions reached in regard to individual issues arising out of the terms of reference—some of which inevitably involve controversial points of economic theory—the report as a whole must be recognised as a very valuable contribution to the recent economic and financial history of India.

GENERAL COURSE OF PRICES.

3. The general course of prices is indicated in the following table, taken from page 29 of the report, which exhibits the variations in average wholesale * rupee prices, during the years 1890 to 1912, of different groups of articles, for the 24 more or less homogeneous economic circles, into which, for the reasons noted in Chapter II of the report, Mr. Datta has divided India exclusive of Burma and the Native States. The figure 100 represents in

* Wholesale prices have been used for the reasons noted by Mr. Datta on page 29 of the report, viz., that they are more sensitive than retail prices in reflecting industrial and trade conditions, and that retail prices in India correspond in their movements generally with wholesale prices, because the cost of retailing is extremely small.

this table the average wholesale price of each group of commodities for the years 1890 to 1894, which have been selected by Mr. Datta as the standard or basic period for the purpose of estimating the fluctuations in the price level; and the prices of each group in the different years are accordingly shown as percentages of this figure.

Years.	Food Grains—Cereals.	Food grains—Pulses.	Sugars.	Tea and Coffee.	Other articles of food.	Oilseeds, oils and oilcake	Textiles—Jute.	Textiles—Cotton.	Other textiles.	Hides and skins.	Metals.	Other raw and manufactured articles.	Building materials.	General average.
1890	93	97	99	95	99	97	92	102	101	95	98	100	99	97
1891	99	100	100	94	97	98	94	96	97	95	98	98	99	98
1892	110	107	98	103	101	101	105	95	95	96	100	99	99	103
1893	103	101	102	98	103	104	103	105	104	105	100	102	101	102
1894	95	95	101	110	100	100	106	102	103	109	104	101	102	100
1895	94	102	98	100	94	104	103	102	99	120	105	106	104	101
1896	109	114	98	94	99	109	104	102	92	111	104	108	107	106
1897	148	159	101	83	110	114	92	98	88	109	105	103	109	121
1898	109	115	100	78	110	101	89	91	84	113	106	101	112	106
1899	100	102	97	71	109	101	97	87	94	124	122	103	113	104
1900	134	139	101	67	120	122	109	108	88	115	137	112	116	122
1901	116	130	101	66	117	118	101	104	83	118	121	107	118	116
1902	109	116	91	65	108	114	95	102	84	126	116	101	120	111
1903	101	106	92	66	106	100	103	106	93	136	116	106	122	107
1904	97	99	96	65	106	95	109	121	91	141	113	110	125	106
1905	112	115	105	65	115	112	127	113	98	148	115	112	128	116
1906	132	140	99	65	124	132	157	121	98	164	126	118	131	129
1907	139	147	99	72	125	141	154	123	102	161	137	123	134	133
1908	168	179	106	68	124	145	119	121	86	150	131	122	136	143
1909	146	148	109	71	124	131	111	119	93	152	116	122	138	133
1910	127	124	112	79	130	143	119	141	96	164	118	127	142	132
1911	126	122	109	83	133	149	144	145	95	159	119	126	146	134
1912	143	141	111	85	136	156	160	137	98	172	128	132	149	141

4. It will be seen from the above table that—
 (1) Apart from a slight rise in 1892-1893, the price level was fairly steady from 1890 to 1895. With a severe famine prevailing over a large part of India, the general index number

rose to 106 in 1896, and 121 in 1897. The rise was practically confined to food grains, other articles of food and oilseeds. Agricultural conditions were generally favourable in the two following years, and food grains fell to about the level of the basic period. There was a considerable rise, however, under hides and skins, metals, and building materials, and the general level stood at 106 in 1898 and at 104 in 1899.

(2) With the advent of famine conditions in Northern India, the Central Provinces and Bombay, the general price level rose again in 1900 to 122. The proportionate increase was greatest under food grains and oilseeds, but was shared by almost all classes of commodities. In the following three years, the prices of food grains and oilseeds fell rapidly, the index numbers for 1904 being lower than the average of the basic period. Hides and skins and building materials continued to rise. The price of textiles (cotton) rose to 121 in 1904; and that of textiles (jute), after a fall in 1901-1903, to 109. The general level stood in 1904 at about the average of the years 1898-1899.

(3) From 1905 to 1908 prices rose rapidly and continuously. The general level rose to 116 in 1905, to 129 in 1906, and 133 in 1907. The highest point (143) was reached in 1908 when famine conditions prevailed in Northern India. The general average fell in the next 3 years, but that for 1912 was only slightly below the figure of 1908. The rise during this period extended to almost every kind of commodities.

PARTICULAR COMMODITIES.

5. The table on page 30 of the report, exhibiting the quinquennial average index numbers of wholesale (rupee) prices, indicates that the increase in prices in the years 1908-1912 has been most marked in the case of hides and skins, oilseeds, food grains, and building materials, which have risen 40 per cent. or more above the level of the basic period 1890 to 1894. The

quinquennium 1908-1912 includes, however, the famine year 1908 and does not therefore accurately represent the proportionate rise in the various classes of commodities. A better index is the average of the triennium 1910-1912. During these years the proportionate increase as compared with the basic period has been greatest in the case of hides and skins (65 per cent.); raw cotton (58); raw jute (58); oilseeds (49); building materials (45). Food grains have risen 30 per cent., cotton manufactures 31 per cent. and metals 22 per cent.

LOCAL VARIATION.

6. The report analyses in some detail the local variations in the price level. Comparing the general average of prices in the years 1910-1912 with those for the basic period, the smallest increases (under 33 per cent.) are shown by the ports (except Karachi) and in Assam, where prices in the earlier years were somewhat above the general level. The rise has been greatest (38 per cent. and over) in Karachi, parts of Madras, Berar, Sind, the Bombay Deccan and the Punjab. In the quinquennium 1908-1912 the increase has been most marked, (40 per cent. and over) in Karachi, Bundelkhand, Berar, Sind, South Madras, the North and West of the United Provinces, the North-West Frontier Province, the Punjab and the Bombay Deccan; and has been lowest (below 35 per cent.) in the ports of Calcutta, Bombay and Madras and in Assam. The variations reflect, it is clear, the agricultural conditions obtaining in the different circles during the years selected for comparison with the basic period. Taken as a whole, the provincial statistics illustrate strikingly the extent to which the development of communications has tended to equalise prices throughout the country.

CAUSES OF THE RISE.

7. Mr. Datta traces the rise in prices above analysed in part to causes peculiar to India, and in part to causes which have influenced the price level throughout the world. Under the

former head the causes suggested are a comparative shortage throughout the period under enquiry in the production of food stuffs, the increased demand for India's food products and raw materials, both in India itself and in world markets, the development of communications internal and external, the decrease in the cost of transport, and the growth of banking and monetary facilities. Under the head of world influences he distinguishes the increased supply of gold, the development of credit, the destruction of wealth in recent wars, and the expenditure on armaments. In Mr. Datta's view, it is in the combined action of these numerous factors that the explanation of the great rise in Indian price levels is to be found.

8. As will be shown later, the relative importance of causes which may be classed as peculiar to India, and of causes which fall rather under the head of world influences, has varied greatly in the course of the years under review; and the latter have been on the whole the dominant factor in the upward movement of Indian prices. This movement has, nevertheless, been conditioned throughout by developments of an internal order, and amongst these Mr. Datta justly selects for special mention the great expansion of communications. As shown in the tables on pages 78, 79 and 82 of the report, between 1890 and 1912, the mileage of Indian railways rose from 15,865 to 81,981, the passenger and goods traffic more than trebled, and freight charges fell on the average by 28 per cent. During the same period the length of metalled roads increased from 36,400 to 51,900. This development in the means of communication, apart from its levelling effect already referred to, has brought all parts of the country into much closer touch with foreign markets, and has thus immensely facilitated and enhanced the influence in the direction of a rise which, as will be brought out further on, these markets have exercised on Indian prices.

9. Another factor of smaller, though still

considerable, efficacy, has been the improvement in banking and monetary facilities. Relatively to the immense developments in western countries, the Indian banking system is still in its infancy. Remarkable progress has nevertheless been made of late. As indicated in paragraphs 214 to 218 of the report, the paid up capital and reserves of the Presidency and major joint stock banks, (excluding the exchange banks) increased by 55.7 per cent. during the decade ending 1911. Private deposits available for commercial enterprise in the Presidency and joint stock banks, including exchange banks, rose, from an average of about 26 crores in the five years 1890 to 1894, to an average of 61 in the quinquennium 1905 to 1909 and of 83 in the years 1910 and 1911. The increase has been exceptionally rapid since 1900. The deposits, which in that year amounted to 81 crores, rose to 51 crores in 1905, 73 in 1909, 82 in 1910, and 85 in 1911. Again, between 1890 and 1912 the value of the cheques cleared at the clearing houses in Calcutta, Bombay and Madras increased from 138 to 517 crores. There can be no doubt that as observed by Mr. Datta (page 83, paragraph 214, of the report), the extended use of credit has had an important effect on prices.

10. A still greater influence has been attributed in some quarters to the large additions which, as shown in the table on page 90 of the report, were made to the monetary circulation, during the years 1903-04 to 1907-08, by the coinage of new rupees. It has been suggested that these additions were excessive, and in the long run largely contributed to, if they did not wholly cause, the exceptionally great rise in Indian prices. The facts set forth on pages 88 to 94 of the report indicate what little foundation there is for this suggestion. As shown on page 88 (paragraph 229), whenever the Government of India have coined more rupees, they have been compelled to do so by the depletion of their reserves, due to the demands of trade.

In 1902-03 the percentage of the rupees held in the currency reserve to the total circulation of currency notes was 30.6; in 1903-04, 30; in 1904-05, 28.7; in 1905-06, 30.4; in 1906-07, 29.2; while in 1911-12, when coinage was again resumed, after having been in abeyance for some years, it fell to 25.1. Moreover, as Mr. Datta has clearly brought out on pages 91-92 (paragraphs 233 and 234), whilst the volume of metallic currency has expanded greatly since the year 1890, there is nothing to indicate that the increase has been larger than what has been required by the growth of business transactions. As far as can be judged from the suggestive statistics (page 93, paragraph 234) in which Mr. Datta has collated the leading data relating to external and internal trade, railway traffic, post office and treasury transactions, the capital of joint stock companies, the consumption of rice, wheat and coal, and the production of jute and cotton, the expansion of business as a whole has probably been more rapid than that of the metallic currency.

The Indian currency system of to-day is, in fact, as Mr. Datta brings out (page 88, paragraph 228) really quite as automatic as it was previous to the closing of the mints to the free coinage of silver. Additions to the rupee coinage are determined by the needs of the trade of the country, and the action of the Government is confined to fixing the amount of fresh coinage which it is desirable to undertake at any particular moment. If its action should prove inadequate, trade demands will force on further coinage; if it should be excessive, the surplus rupees simply lie in the currency reserves till called forth by further trade demands. A rise in prices which is not the result of a diminished supply of commodities must necessarily be attended by an increase in the volume of currency. Both facts are different sides of one and the same phenomenon. But the suggestion above referred to reverses the true order of causation. It has been the increased demand

for Indian commodities and the rise in prices resulting, as will be shown later therefrom, which has necessitated the increased coinage of rupees.

11. Amongst the other possible causes of a rise in prices which are grouped as peculiar to India, Mr. Datta devotes special attention to the interesting, but difficult problem of the relation between the supply of food stuffs and the demand for food as measured by the growth of population. The conclusions he arrived at may best be presented in his own words: "Considering the growth of the population and the increase in the external demand" (he observes on page 61, paragraph 156) "the supply has been short during the greater part of the period embraced in the enquiry. The demand for both internal consumption and exports having increased at a quicker rate than the production of food grains, it is only natural that the general level of prices of food grains over a series of years would rise, although in a particularly favourable year it might have fallen to some extent. The food supply in India, compared with the demand, both internal and external, reached, its lowest level in the quinquennium 1905-09, and this shortage of supply has doubtless contributed, in no small measure, to the unusual rise in prices during that quinquennium". And in the final chapter of the report, summing up the causes of the increase in the price level, he states that "in recent years the production of food grains has not been keeping pace with population. This would explain the almost continuous rise in the price of food grains" (page 188, paragraph 458). This result is attributed in part to unfavourable seasons, and in part to the failure of the area under cultivation to expand *pari passu* with the population; and on pages 64 to 66 (paragraphs 169 to 175), it is suggested that the substitution of non-food for food crops has to some extent been responsible for the latter circumstance.

12. It is evident that Mr. Datta intended these generalisations to be treated as qualified by his remarks elsewhere on the effect of the extended cultivation of non-food crops, and of the increased external demand for India's food products. Thus, on page 66 of the report, he observes that the total area which commercial crops have occupied at the expense of food grains is very small compared with the total area under cultivation of the latter, and consequently the effect of this substitution could not have been very great; and on page 96 (paragraph 240) in discussing the imposition of an export duty on food grains, he points out that the proportion of exports to the total production is ordinarily very low, not rising even in exceptionally favourable years much above 4 per cent. An even more important quali-

cation is supplied by his confident and evidently well-founded conclusions—to which fuller reference will be made below—as to the generally beneficial effect of the rise in prices. The whole question, however, is one of much obscurity, and it may be convenient to bring together the leading data bearing on the problem.

13. Mr Datta's main statistical results, as far as this question is concerned, are presented in the following table (page 58, paragraph 145), which compares the growth in population with that in the area under cultivation, and in the production of food grains. The figures have reference to the official year ending on the 31st March, and the average of the first quinquennium is denoted by the figure 100, the figures for the years which follow being expressed as percentages of this.

	Average of the quinquennium 1890-91 to 1894-95.	Average of the quinquennium 1895-96 to 1899-1900.	Average of the quinquennium 1900-01 to 1904-05.	Average of the quinquennium 1905-06 to 1909-10.	1910-11.	1911-12.
Population ...	100	101.6	103.7	105.7	107.8	108.4
Total area under cultivation.	100	98	103	105	108	106
Area under food grains ...	100	96	101	102	106	103
Production of food grains ...	100	98	105	99	113	109

As Mr. Datta, however, is careful to point out—page 54 (paragraph 134) and page 226 (Appendix D, paragraph 11)—the data from which this table has been constructed are, with the exception of the population statistics, largely conjectural and uncertain. For the immense areas of Bengal, Bihar and Orissa, for about one-third of the Madras Presidency, for the hill tracts in the United Provinces, and in Assam—and, it may be added, for the Native States, which, though excluded by Mr. Datta, cannot legitimately be ruled out of account—neither the area under cultivation nor

the area under food grains is known with any accuracy; and for such areas Mr. Datta had no alternative but to base his statistics of cultivation on more or less arbitrary assumptions. Further, attempts to estimate the total out-turn of agricultural produce, even when the area is definitely ascertainable, are beset with insuperable difficulties. The normal yields per acre, the foundation of all such estimates, are notoriously untrustworthy. These yields have been revised from time to time—there has been some revision even since Mr. Datta's report was written—but the figures are still far

from satisfactory, and the Government of India have had for some time under consideration the substitution of a more reliable agency for the conduct of the investigations from which the yields are ultimately derived. The remaining factor in the calculation, the percentage of the yearly out-turn to the normal, is a still more uncertain quantity, resting as it does on district returns, which are little more than loose conjectures, vitiated in particular by a distinct bias in the direction of under-estimation. Finally, the whole mass of material, comprising elements of every degree of validity, has to be reduced by a complicated process of averaging and weighting, and it is evident from a study of the detailed results that here, too, considerable further difficulty

has been experienced and divergent methods employed.

In such conditions, the sounder course from the statistical standpoint is to dispense with the superficial and misleading appearance of completeness, and to consider what inferences are suggested by a less ambitious enquiry, which confines itself to the more trustworthy of the available statistics.

14. The following table shows the total acreage under cultivation and the population during the period 1890 to 1912, in the tracts for which relatively accurate returns are procurable, *viz.*, parts of Assam, the United Provinces exclusive of the hill districts, the Central Provinces and Berar, the Punjab, the North-West Frontier Province and the Bombay Presidency.*

	Average of the quinquennium 1890-91 to 1894-95.	Average of the quinquennium 1895-96 to 1899-1900.	Average of the quinquennium 1900-01 to 1904-05.	Average of the quinquennium 1905-06 to 1909-10.	Average of 1910-11 to 1911-12.
Area under cultivation in acres.	123,480,000	115,352,000	126,217,000	130,253,000	132,018,000
Index No. ...	100	93.4	102.2	105.5	106.9
Population ...	99,649,000	100,029,000	101,008,000	102,383,000	103,018,000
Index No. ...	100	100.4	101.4	102.7	103.4

Except during the quinquennium 1895-96 to 1899-1900, the figures for which reflect the results of repeated and severe famines, the area under cultivation has expanded more rapidly than the population.

15. The area under food grains during the same period was as follows:—

	Average of 1890-91 to 1894-95.	Average of 1895-96 to 1899-1900.	Average of 1900-01 to 1904-05.	Average of 1905-06 to 1909-10.	Average of 1910-11 to 1911-12.
Area in acres...	101,121,000	93,978,000	101,213,000	103,055,000	103,332,000
Index No. ...	100	92.9	100.1	101.9	102.2
Population ...	99,649,000	100,029,000	101,008,000	102,383,000	103,018,000
Index No. ...	100	100.4	101.4	102.7	103.4

* (1) No figures have been included for the Madras Presidency. In one-third of that Presidency, as explained in paragraph 13, no accurate data are available. For the remaining two-thirds, or thereabouts, the figures are sufficiently correct for each year taken by itself, but cannot be used for the purpose of a comparison extending

Excluding again the famine quinquennium 1895-96 to 1899-1900, this table exhibits an almost precise parallelism between growth of population and extension of food cultivation; and the only interpretation which the figures can bear is that the correspondence between the two has been substantially maintained.

16. These figures, can, however, be supplemented to some extent. As already explained, it is idle to attempt any exact estimate of the yield of any given acreage—and without such exactitude, no further progress can be made on purely statistical lines, when a fractional

discrepancy only remains to be dealt with. But it is known that the cultivated area at the close of the period under review included irrigated land to a considerably greater extent than at the outset, and the consequent improvement of outturn and increased certainty of securing it, must have more than counterbalanced any slight defect in area as compared with population, if indeed any such defect has existed. The statistics bearing on this subject, which have been extracted from the records of the Irrigation Department, are tabulated below.

Area in acres irrigated from State-owned sources.

Average of triennium.							Average of 1911 12 to 1912-13.
1890-91 to 1892-93.	1893-94 to 1895-96.	1896-97 to 1898-99.	1899-1900 to 1901-02.	1902-03 to 1904-05.	1905-06 to 1907-08.	1908-09 to 1910-11.	
7,580,884	7,601,620	10,675,722	11,543,631	12,156,391	13,755,121	13,780,891	14,441,922

Area and outturn, moreover, are not the only factors involved. An additional factor of crucial importance is the great development of communications already referred to, and its incalculable effect in enhancing the "efficiency" of any given aggregate of food production.

This principle, which is a truism of famine policy, is also applicable to the conditions of supply in normal years, and its bearing on the question of food supply must not be overlooked.

(To be continued.)

over a series of years, owing to the gradual extension of the reliable statistics, which is due mainly to progress of statistical work in respect of proprietary villages.

(2) Certain small areas in the Bombay Presidency, for which statistics are not available in all the quinquennia, have been omitted. A corresponding deduction has been made in the population figures.

(3) The figures of population in the different quinquennia have been calculated by the method of interpolation on the assumption of equal annual increments.

The Literary World.

WAR POETRY.

The Prayer of Germany.

"God help us," cried the Great War Lord,
 "To devastate these plains,
 And let the rivers run with blood
 From peaceful peasants' veins.
 Help us to hurl our shot and shell,
 To carry sword and fire,
 To make the country round a hell
 And satisfy my ire.
 Let hamlets blaze with ruddy glow,
 And towns belch forth in flames,
 Let Famine stalk and Misery flow
 On those who baulk my aims.
 Those little nations who would dare
 To stand athwart my path,
 And meddle with my strategy.
 God! Let them feel my wrath.
 What reck I treaties, friendship, peace,
 These my ambitions cheat.
 My bloody efforts must not cease
 Till Europe's at my feet.
 As for that little island there
 That claims to rule the waves:
 Whose flag has braved too long to dare,
 I'll make her people slaves.
 The German Fleet in triumph shall
 Ride o'er her sunken hulls,
 Her corpses cover every sea
 To feed the fish and gulls.
 She claims the sea as heritage
 On which she fears no foe
 God help us now to make of it
 A heritage of woe."
 Thus spake the German Great War Lord
 When from the British ports
 Her fleet emerged—the Teuton horde
 Took refuge 'neath her forts.
 And there they lie inert, slack!
 Guarded by mine and boom
 Watching our flaunting Union Jack
 Challenge them to their doom.

The Great War Lord cried out to God
 In this blasphemous strain
 Summoning the Heavenly Host
 His evil to sustain.

The Prayer of England.

Oh God of battle give us strength
 To strike tyrannic might.
 We seek not land, nor power, nor wealth,
 Oh God! defend the right.
 We bare our right arm to protect
 The weak, the poor, th' oppres't,
 In reverence we ask Thy aid,
 To Thee we leave the rest.—*Selected.*

The Swords of India.

The following verses dedicated by Harold Begbie to H.H. the Maharajah of Mysore appeared in the *Daily Chronicle* :—

They said, the gentle Germans said :
 "When we, the mighty host, attack
 This England whom the nations dread,
 India will strike her in the back!"
 But you another tale unfold;
 You offer treasure, and your lords
 Cry to their Emperor, "Sire, behold
 Our swords, our myriad swords!"
 They said, the jealous Germans said :
 "This bloated England, like a beast,
 Too long her coward soul has fed
 At the rich manger of the East!"
 But you who scorn the tyrant's lash,
 Our Peace the shield of all your hordes
 Under the Flag of England flash
 Your swords, your warriorswords!
 They said, the jeering Germans said :
 "India, who waits, will not be loth—"
 Her conscripts' blood be on the head
 Of them who lied about us both!
 India, with us you live and breathe,
 Our steadfast will with yours accords;
 God knows our pride when you unsheathe
 Your swords, your faithful swords!

British Authors and the War.

British authors have published a joint declaration on the subject of the war. The signatories are men of the most divergent political and social views, some of them having been for years ardent champions of goodwill towards Germany and many of them extreme advocates of peace. They are, nevertheless, agreed that Great Britain could not without dishonour have refused to take part in the present war.

Here is a passage that voices their feeling:—

The treaty with Belgium made our duty clear, but many of us feel that even if Belgium had not been involved it would have been impossible for Great Britain to stand aside while France was dragged into war and destroyed. To permit the ruin of France would be a crime against liberty and civilisation. Even those of us who question the wisdom of policy of Continental ententes or alliances refuse to see France struck down by a foul blow dealt in violation of treaty.

THE GERMAN PLEA.

Various German apologists excuse the barbaric behaviour of the Germans by fancying that German culture and civilisation are so superior to those of other nations that all steps taken to assert them are more than justified, and the destiny of Germany to be the dominating force in Europe and the world is so manifest that ordinary rules of morality do not hold in her case. But actions are good or bad simply as they help or hinder the accomplishment of that destiny.

ENGLISH AUTHORS' COMMENT.

"Dangerous" and "insane" are the subdued remarks of the British authors on the German plea.

They say "Many of us have dear friends in Germany, many of us regard German culture with the highest respect and gratitude, but we cannot admit that any nation has the right by brute force to impose its culture upon other nations, or that the iron military bureaucracy

of Prussia represents a higher form of human society than the free constitutions of Western Europe."

The Poetry of India.

The October issue of the *Young Men of India* contains a valuable article by Mr. J. N. Farquhar, Literary Secretary of the Y.M.C.A. on "The Vernacular Religious Poetry of India." Mr. Farquhar's article is written from the missionary standpoint. He sees in the vernacular hymns of India a valuable point of contact, a line of approach to the people.

"There can be no question (he writes) that of all the numerous types of literature produced in India the religious poetry of the vernaculars is by far the most important for the practical work of missions. The contrast between the literature in Sanskrit, which arose in the priestly schools, and the poetry in which the deepest religious feelings of the people have expressed themselves during the last fifteen hundred years, is exceedingly great; and, while the former requires to be seriously studied, in order that the history and the constitutive ideas of Hinduism may be understood, it is quite impossible through it to influence the common people. But in the hymns and the narrative and epic poems, which sprang from the temple-worship and from the personal religious experience of the leaders of the popular religion, we possess a key to the popular heart of very wonderful power. Apart from hymns and romantic poems glorifying individual gods, the great bulk of it consists of popular renderings of the two great epics and of the Puranas. This poetry rises here and there to great excellence from the point of view of language and literature. It is all steeped in the popular beliefs and superstitious practices of Hinduism; yet many portions are good both morally and religiously; and, above all, the popular heart responds to every note struck in it.

A very large part of the Indian vernacular poetry is lyric in character, and from the begin-

ning it has been associated with suitable music. These poems are comparable with the psalms and the great hymns of the Church as expressions of personal piety and vehicles of united feeling. Many of them are pilgrim choruses which are sung as bands of men and women march to popular shrines; others are psalms of praise chanted at certain points in the ritual of temple; while many are intimately devotional and personal. They have thus been sung into the heart of the people for many generations, like our own hymns. Finally, we must realize that the very illiteracy of India has the effect of giving this vernacular poetry a greater hold than it would have in a literate community. Being the only literature that comes to their ears, the people prize it and love it and their vivid memories, not being constantly harrassed with fresh literature, brood over it and retain it.

"It will thus be clear that a knowledge of this literature must be of extreme value to every man or woman who wishes to know the religious thoughts, feeling and prejudices of the simple poor of India. These poems, whatever their moral and religious value, are a trustworthy expression of the mind of the Indian villager. The missionary must know them, if he is to know the people and to find the nearest way to their hearts."

Specialization in Economics.

A large number of books have been placed before the public who may have an ardour to specialize in Economics.

First, for the benefit of any who might prefer the official University course, the following are the books that students for the Economics Tripos are expected to read: Marshall, "Principles of Economics"; Taussig, "Principles of Economics"; Cunningham, "Growth of English Industry and Commerce" (Vol. III., Modern Times, Part II.); Andreades, "History of the Bank of England"; Egerton, "History of Colonial Policy" (Book II, Chaps.

9 and 10, Books III.-V.), Strachey, "India" Bogart, "Industrial History of the United States"; Goldwin Smith, "History of the United States"; Alison Phillips, "History of Europe" (1815-99); Fisher, "Bonapartism"; P. Ashley, "Modern Tariff History"; Bagshot, "English Constitution"; Sidney Low, "Governance of England"; Ilbert, "Parliament"; Harris, "Problems of Local Government"; Woodrow Wilson, "Congressional Government"; and Lowell, "Governments and Parties in Continental Europe" (Chaps. V, VI, VII, XI and XII.)

A writer in the *Newspaper World* hazards his personal opinion when he says: "I should not expect a youth who began his study of Economics with Professor Marshall's monumental work, to get much further." As an introduction, he would recommend Jevons' shilling "Primer of Political Economy" (Macmillan), which covers the whole ground simply and clearly. That thoroughly digested, the student might go on to H. R. Seager's "Introduction to Economics," Professor S. J. Chapman's "Political Economy" (Home University Library), or Marshall's "Elements of Economics of History," an adaptation of the great economist's "Principles of Economics" to the needs of junior students. Seager is perhaps the most interesting, but either Marshall or Chapman should be read as well by the student who wishes to be acquainted with the latest economic theories.

"Mr. E. Cannan's brilliant study "Wealth" (P. S. King and Son) might well follow, and either Jevons' "Money" (International Science Series) or Hartley Withers' "Meaning of Money," which is perhaps more up-to-date. An admirable description of modern industry is to be found in Mr. J. A. Hobson's "The Industrial System," which might be followed by the same author's "Evolution of Modern Capital" and Bastable's "Commerce of Nations."

FREE TRADE AND TARIFF REFORM.

On Special subjects such as Free Trade and Tariff Reform perhaps the best presentment of the case for a tariff is to be found in Professor Ashley's book "The Tariff Problem" (King). Professor Smart's "The Return to Protection" is one of the ablest discussions of the question from the Free Trade standpoint. Two other valuable little books that should be studied on this question are Professor Pigou's "The Riddle of the Tariff" and Cunningham's "Rise and Fall of Free Trade in Great Britain."

EMPLOYER AND EMPLOYED.

The relations between employer and employed are ably and impartially discussed by Mr. W. T. Layton in "Capital and Labour," just issued in the Nation Library (Collins). After this should be read Sidney Webb's "History of Trade Unionism" and the same author's "Industrial Democracy," Fay's "Co-operation" and Jenks' Trusts.

REVIEWS AND NOTICES.

Modern Germany.—By J. Ellis Barker. 764 Fourth Edition, London-Smith, Elder & Co., Price 10s. 6d.

We know of no book on Germany published within recent years at once so informative and interesting, so comprehensive and lucid, so suggestive and thought-provoking, in short, so brilliant and amusing as Mr. Barker's book on Modern Germany. That it has run through four editions is a sufficient evidence of the peculiar value of the book. It is a one long but brilliant, lucid, well-balanced and a thorough statement of the basic causes of the Anglo-German differences. Verily it contains a vast amount of encyclopædic and immensely interesting information on the political and economic problems, the foreign and domestic policy of Germany. It also gives a brilliant description of her ambitions; the causes of her successes and of her failures. Now that a conflict between England and Germany has

Junker and Junkerism.

One of the terms, frequently used just now is "Junker," although many who make use of it have no clear idea of what it means. Properly speaking, the word "Junker" implies a young nobleman or squire, but in modern Germany it has acquired a special signification. The Junker is a Lutheran, cold and unimpressible. He detests trade and abhors the rise of the wealthy business man of the type of Her Ballin. Exclusive, proud, the Prussian landowner looks with a suspicious eye upon the Kaiser's friendship with the wealthy representatives of the commercial classes. The Junker is with the War Lord in his devotion to the army, but he would have him much more insistent upon suppressing the growing liberties of the Press and support him in every effort to keep in its place that hateful thing—"The people."

begun in right earnest, it is of peculiar interest to know the points of strength and weakness of the militant's matter of fact, hard-headed, calculating, cunning, business like, totally devoid of sentimentality, and sometimes even of sentiment, very up-to-date Germany, the most active and most dangerous industrial rival of England. The book is, moreover, of paramount importance in revealing the means of the economic regeneration of India because of Germany which has a poor soil, an unfavourable climate, an unfortunate geographical position and structure and a somewhat dumbed country population—has in a few years wonderfully developed her rural industries and possesses such an industrial supremacy as to oust English manufacture from Great Britain and many other countries, why cannot India revive her decayed and decaying industries by adopting the same vivifying means.

BALKRISHNA.

The Educational World.

Educational Science.

During the course of his long but interesting address delivered in the Australian Meeting of the British Association, Prof. John Perry said that in England and Germany, 99 per cent. of genius was destroyed by the present school system, keeping a boy with his nose to the classics grindstone from the age of eleven to the age of twenty. The result is not so bad in England as in Germany because in England the average boy neglects his school room work and keeps his mind active and his soul alive by means of foot-ball and cricket. It is from this great characteristic, that knowledge and wisdom come from doing, and not from abstract reasoning, that the British race rules the world.

Still, the system produces, even from clever boys, only clever, dull men, fit to be barnacles in the public services. It destroys the higher qualities of men and makes them narrow.

For the average boy at public school the school work is a terrible uphill grind all the time; a soul destroying, stupefying business, so stupefying that he makes no complaint, he merely suffers. He feels that he is a failure, learning nothing that can be of spiritual or material value to him in his future life. Of course, he can pass examinations; anybody can be crammed to pass an examination, but after the examination he forgets what he was supposed to have learnt.

Many men enter the services by examination, and it is always through cramming that they pass. The whole system is foolishness from top to bottom.

STONES FOR BREAD.

"We ask the schools for mental power as of old one asks for bread, and they give us a stone. No doubt public school form is a beau-

tiful stone, a diamond; but we want some bread as well. We want from the school what nature has not been accustomed to give, and what home life cannot give, the development of the intellect, and the school fails to give it in ninety-five out of every hundred cases. The great danger in school life is that it may hurt individuality, originality, because a boy, however harum-scarum, is naturally conventional and imitative. Good form comes easily, therefore, and the master is more than satisfied, he is proud. He often speaks of it as *character*, but he is quite wrong. Character comes from home life, not from school life, which indeed is rather antagonistic to character. It comes from contact with fathers and mothers, brothers and sisters, relations and friends. School life tends to induce a contempt for the lower classes and a slavish admiration of the upper classes, which is altogether wrong in a democracy, and can only lead to evil.

RULES.

I want you to understand that we have established some fundamental principles in our science: (1) A subject must interest a pupil. (2) A man who trains dogs or seals or bears or other animals makes a close study of their minds. In the same way we must recognise that one boy differs from another, and study the mind of each boy. (3) If a boy is not very receptive of an important subject we must do our best with him and try to settle what is the minimum with which we ought to be satisfied. Only a few subjects ought to be compulsory on all boys. (4) There are two classes of boys unequal as to numbers, (a) those fond of, and (b) those not capable of abstract reasoning. (5) Another two classes are (a) those fond of, and (b) those not fond of language study. (6) Every boy may be made to write and read in his own

language, and he may be made fond of reading. (7) The average boy's reasoning faculties are most surely developed by letting him do things. That is, for example, through his sports, or through wood or metal working, or gardening, or experiments involving weighing and measuring. Through the last of these he learns to compute. A boy of eight learns decimals in an hour if he weighs and measures, whereas by the usual method of teaching he is ignorant of decimals at the age of fourteen. A boy learns whist very quickly if you seat him with three other people at a table with a pack of cards; he would not learn in a month if he had no cards. Would you teach a boy to swim by mere talk? (8) Every boy must get a good deal of personal attention. (9) However good a system may be there can be no good results if the teachers are cheap; cheap teachers are usually stupid and overworked. Men in charge of schools and colleges never seem to learn this. The market price must be paid for a capable man. (10) Fairly good results may be expected from a good teacher, even when he is compelled to work on a bad system, but really good results can be obtainable only from a good teacher with a good system.

JAPAN'S LESSON.

"Unbelief in education for the average man is so general among the higher classes that I am afraid we shall have no reform unless some great national disaster causes conversion. There is a lesson for England, and, indeed, for all European races, in the recent history of Japan. The old structure of Japan was in many ways beautiful, but it proved to be without physical strength. Its extreme weakness proved its salvation. Even the teachers of ancient classics saw that for strength it was necessary to let scientific method permeate the thought of the whole population. And now, at the end of the first chapter of Japan's modern history, we find a nation which can not only defend itself, but which retains all of its

spiritual life which was beautiful. Every unit of the population can not only read and write, but it is fond of reading, and its education did not cease when it left school. It is getting an increased love for natural science, so that it can reason clearly; it is not carried away by charlatans; it retains its individuality. One result of this is that in time of war Japan has scientific armies. Not only are its Admirals and Generals scientific, but also every officer, every private is scientific. Everything in the whole country is being developed scientifically, and we Europeans, hag-ridden by pedantry in our schools and universities, refuse to learn an easy lesson."

Medical Inspection of Schools.

Rao Sahib Ganesh Nagesh Sahasrabudhe, Vice-Chairman, Ellichpur Camp, Municipal Committee, writes an useful article on the above subject in the "*Jayaji Pralap*" of November, 4th, 1914.

Remarking on the deplorable condition of the health of our school-boys and schools, he says.—There can be no two opinions as to the desirability of making attempts to combine physical with mental education, with a view "to make men with strong brains, as well as muscles." Movements have been set on foot, both in India and foreign countries, to improve the physique of the boys and make them fit citizens. But the physical training cannot be properly undertaken, without medical examination of boys when they attend the school. Masses of the rising generation are having too many subjects crammed into them, injuring, if not wearing out, their power of mental digestion. Realizing the vital importance of this question, the Boards of Education in England and in America have set on foot a practical working scheme of inspecting the boys at schools. Lord Crewe said that the deliberations of the International Congress of London on medical inspection of schools "would do much to advance the knowledge of school-

hygiene and remove what all must regard as having been a serious blot on the civilization of the world."

No doubt, the difficulties to be overcome in the way are many, but the public have to be brought to a realization of what it all meant. The question of finance has to be solved through the Agency of the Provincial Medical Department, the Educational department and the Local Boards. If the system proves a success, a Central Board of Health may be established.

In the beginning, the scope of the inspection may be confined to those schools only which are in the towns where there is a dispensary maintained by Government or District or Municipal Boards. The Assistant Civil Surgeon or Sub-Assistant may be given a suitable allowance for the additional work of inspection he may have to do. The Medical officers should examine.

(I) the general conditions; such as (a) weight, (b) height, (c) nutrition, (d) cleanliness, etc.

(II) Special conditions, such as (a) nose, (b) throat, (c) eyes (vision), (d) ears (hearing), (e) mental condition.

(III) Diseases and deformities, such as heart and circulation, lungs, nervous system and any other defects.

They should then submit their reports to the Headmaster and to the Inspector of Schools of the Division. The Headmaster should inform the parent or guardian of the respective children of the Medical Report, who will then see that their children are treated by a Medical Officer, poor boys being sent to the Dispensary for treatment. Medical Officers should attend to children regularly and give a final discharge certificate of cure. If anybody is found suffering from contagious disease, a report should at once be made to the Headmaster, who should take steps and see that the contagion is not spread.

Besides this, principles of hygiene should be regularly taught in the schools and if need be,

elementary text books can be introduced in the curriculum of studies. Stress should be laid by the proper authorities on selecting sites and building schools in sanitary places. The work done in India in this direction may be summarised as follows:—

The Annual Sanitary Report of C.P. and Berar for 1912 shows that there is Medical Inspection of Schools in force at present in the province. The Educational Manual provides for it, and a modest beginning has been made in the Central Provinces. On the Bombay side the Honourable Mr. Lalu Bhai Samaldas moved a resolution on this subject in the last meeting of the Bombay Legislative Council, and a promise was made by Government that a similar scheme was under their consideration and something practical would be done in the matter. In the Punjab a scheme for the medical inspection of Government Schools is under consideration and a certain amount has been provided in the Budget. The Government of United Provinces appointed a Committee to report on "Educational Hygiene," composed of Lieut.-Col. Young, I.M.S., Major Graham, Capt. Dunn, Mr. Banister, and Rai Gokul Prasad. "The Committee made many recommendations, the most important being the periodical inspection of the sanitary condition of all schools, and periodical inspection of all scholars by qualified doctors. The system does not seem to be in force in other Provinces." The Government of Madras have recently approved the Director of Public Instruction's proposal to institute a medical inspection of the seven elementary schools recently opened by the Corporation of Madras and of the pupils thereof. The time has come in order to keep pace with the changed conditions of the world, to introduce a more systematic and thorough medical inspection of schools.

Educational Advance.

The following extract from Viscount Hal-

dane's speech explains the kind of education that ought to be imparted to our children.

"I look forward to a time when the school-age will be extended. It must be if we are to prepare that future generation; but it is not enough merely to extend it—the boy or girl must be taught a trade in such a way that with trade they learn some of the big things of life—how to be a good citizen, how to understand what their duties as well as their rights are, and what their position is in a great nation. We have heard a good deal of continuation schools. On the Continent they have done far better than we have done, and that is a very alarming prospect. We are outgrowing the old system of apprenticeship. It is as dead as the dodo, and it will never be revived as it used to be. Yet on the Continent they have revived it in a different form, and instead of the old continuation school there are now all over Germany the special trade continuation schools. Suppose the boy is going to be a baker. He gets in his last year of school a certain amount of training, and when he leaves he goes into the employment of a baker; but he has nine or ten hours a week in the special continuation school for young bakers. He goes there for four years, and there he is taught everything connected with the trade of baking, not by a schoolmaster who has studied baking, but by a baker who has studied schoolmastering. The result is that at the end of his time he gets perhaps 25/- a week at once, because he is a much better workman than the average. That is going on on the Continent to an extent that makes me dread our future unless we pick ourselves up. This education is combined in Germany with teaching in high subjects of citizenship, a knowledge of the State, its history and its duties, a knowledge of economic questions, some study of literature. We have to take that up here" yes, in India.

War and Education.

We understand from the *Journal of Education*, London, that at Oxford and Cambridge

nearly half of the undergraduates are absent in the field, and in schools there will be many gaps in the staff, but, though the teaching may suffer, one need have no fears as to discipline.

A harder lesson that it will behove teachers to impress on their pupils is not to confound individual Germans with the German Government. In resisting and denouncing the dominant aspect of German thought and politics, the aggressive militarism and unscrupulous *Faustrecht* of a Bismarck, are to be looked on as a passing phase, and the pupils are to be reminded according to our contemporary that Germany in the past has stood for intellectual and religious freedom, that it is the land of Luther and Lessing, of Kant and Hegel, of Froebel and Herbart, of Schiller and Goethe.

"The war will test our power of organization, our capacity for endurance, our national fibre. It will probe, too, the soundness of our system of education. Croakers have warned us that education has been helping to make the nation soft. We shall see. This is the first great trial of fortitude which the generation educated in our national schools has had to bear and the first great struggle into which the democracy, since its advent to power, has had to enter. An educated democracy has to show that it can carry on that struggle with the same unflinching purpose, the same stubbornness and "bull-dog grip" with which an aristocracy resisted Napoleon. We have no fear of the result of such a test."

Board of Education in U. P.

By a resolution dated November 6, his Honour the Lieut.-Governor has constituted a Board of Education for the United Provinces. Its duties will be consultative. It will act as an adviser to the Government in relation to such matters as may be referred to it by Government or by the Director of Public Instruction for an expression of its opinion. The Board will consist of 16 members with the Director as the President. The Chief Inspector, the special Mahomedan Inspector of Schools, 3 officers of the Education Department, 2 chairmen of District Boards and 8 non-official members of whom not less than 5 will be Indians will be members,

The Scientific World.

Applications of Aluminium.

A great deal of research has been done within the last few years on the industrial applications of aluminium, particularly in the alloyed state. According to the *Ironmonger*, the useful alloys of aluminium fall naturally into three groups—viz., (1) aluminium containing not more than from 10 to 25 per cent. of added metals; (2) metals containing not more than from 10 to 15 per cent. of aluminium; (3) alloys of rare metals with aluminium containing from 0.5 to 5 per cent. of added metals. In order to make aluminium harder, stronger, and of better wearing properties, at the same time keeping its valuable lightness and beautiful colour, it is alloyed with small percentages of such metals as manganese, zinc, tin, or copper-nickel. Zinc is the cheapest known hardener of aluminium, and when added in quantities up to 15 per cent. it increases the rigidity and strength of the aluminium. Tin when alloyed alone with aluminium develops brittleness, and alloys of 15 per cent. of tin and aluminium have been known to disintegrate in the course of a few days. Nickel by itself produces unstable alloys; but the introduction of a third element, such as copper, is an advantage. Phosphide of copper, added in quantities of 1½ per cent. to zinc-aluminium alloy containing from 12½ to 15 per cent. zinc, gives fluidity to the molten metal. Phosphide of zinc containing 25 per cent. phosphorus may be substituted in the proportion of 0.05 per cent. The alloys of copper, nickel, magnesium, and zinc have good tensile strength when newly made; but in the course of time chemical electrolytic action renders some of them brittle, and in some cases leads to the entire disintegration of the alloy, especially if iron, sodium, and silicon are present as impurities. Aluminium is liable to

take up silicon from the crucible, especially if overheated.

The Electrical Auctioneer.

Auction sales are accompanied by a great deal of noise, and in order to do away with this an electrical method has appeared in Holland which seems quite promising, and the sales are now carried on almost in silence. It is now applied to selling eggs by auction, according to the custom which prevails in the agricultural centres throughout the country in the weekly markets. Eggs are auctioned off in 2,500 lots, and on the new plan each bidder has a numbered seat with a push button and wiring. The seller is stationed in front of a large dial having prices ranged around it from lowest to highest. There is also a large board containing like numbers which can be electrically lighted, and these are connected to the seats. After the proper announcement of the lot of eggs as to quality and weight, the seller starts the hand slowly moving around the dial. When, at any figure, the buyer presses his button and the corresponding figure on the board lights up, his number is registered by an annunciator. As the hand moves on the next bidder can register a higher number, and so on until the bidding is finished. The method is said to work very well, and no doubt can be applied to all kinds of auction sales.

Sapphires Changed by Radium.

Another property of radium is that of being able to change the colours of precious and semi-precious stones. The change is effected merely by continued exposure to radium salts, and the stones which give the best results are sapphires.

A young German chemist is said to have secured the most sensational results from this

remarkable discovery. He recently purchased several varieties of sapphires and placed them in a box with a small quantity of radium bromide. The astonishing transformations of the stones after only about one month's exposure to the radium are described as follows :—

Original Colour.	New Colour.
White, or uncoloured.	Topaz-like yellow.
Blue.	Emerald-green.
Violet.	Sapphire-blue.
Wine-coloured.	Beautiful ruby.
Inferior dark-coloured.	Deep violet.

Scarcely daring to credit the evidence of his eyes the chemist visited the jeweller from whom he bought the stones at an average price of 1s. 8d. per carat, and asked what the jeweller would offer for the "new" parcel. The jeweller suspecting nothing even after a close examination, offered £1-17s.-6 per carat for all the stones, with the exception of the small but exquisite ruby-coloured one, for which he said he was willing to give no less than £20 a carat!

A Moisture Tester.

An apparatus known commercially as the *brown-duvel moisture tester* affords what is claimed to be an easy means of determining the moisture content of cereals and of practically all substances which admit of a free circulation of oil during heating. It consists of a heating chamber divided into compartments so that a number of samples can be tested at the same time, a tank for cold water through which the condenser tubes pass and a suitable stand for supporting the heating chamber and cold-water tank, together with certain accessories such as thermometers, distillation flasks, graduated measuring cylinders, etc. Each compartment of the heating chamber is provided with a small mica window through which the operator can observe the action within the flask while the test is in progress. Tests are made by heating grains, seeds, spices or other similar substances in a mineral oil having a flash point

much above the boiling point of water, by condensing the water which distils off and by collecting and measuring it in a graduated cylinder. A single moisture determination can be made in twenty-five to thirty minutes, and with a six-compartment tester six tests can be made in approximately the same time. In commercial work, where a large number of tests are to be made, one man and a helper, with the use of three six-compartment machines, can, it is claimed, readily make 200 or more tests in a day of eight hours. In addition to the rapidity with which moisture determinations can be made by this method, it is claimed to be especially valuable in testing substances which have a large percentage of water, are difficult to grind, or contain such large quantities of volatile oils that determinations based upon differences in weight during drying are unreliable. This method also obviates the grinding of samples, thus eliminating the loss of water which accompanies the grinding of material of relatively high moisture content. It is interesting to note that an Indian firm in Calcutta have recently succeeded in manufacturing this apparatus with apparent success.

Another View of the Origin of Life.

The origin of life, and the part probably played by sunlight in this process, formed the subject of a paper by Prof. Benjamin Moore, F. R. S., and Mr. Arthur Webster, presented at the last meeting of the British Association, in which the authors reported the results of extensive laboratory experiments which appear to have a bearing on the question. They first pointed out that the whole world of living plants and animals, as we know it, depends for its continuance upon the synthesis of organic compounds from inorganic by the green coloring matter of the plant acting as a transformer of light energy into chemical energy. However, chlorophyll, which acts as the transformer, is one of the most complex of known

organic substances, and therefore represents an advanced stage of evolution. Starting from a purely inorganic world, without a trace of organic matter, what is the first step in the production of the latter? The authors find that when dilute solutions of colloidal ferric hydroxide, or the corresponding compound of uranium, are exposed to strong sunlight, or the light of a mercury arc, there are synthesized the same organic compounds that are at present formed as the first stage in the process of organic synthesis by the green plant, *viz.*, formaldehyde and formic acid. As a planet cools down, first only elements would be present, then binary compounds, and next simple crystalloidal salts. Then, by the union of single molecules into groups of fifty or sixty, colloidal aggregates would appear. As these colloidal aggregates increase in complexity, they also become more delicately balanced in structure, and are metastable or labile, *i.e.*, they are easily destroyed by sudden changes in environment, but are peculiarly sensitive to energy changes, and can take up energy in one form and transform it to another. These labile colloids take up water and carbon dioxide, and, under the action of sunlight, produce the simplest organic structures. The latter, reacting with themselves and with nitrogenous inorganic matter, continue to build up more and more complex, and more labile, organic colloids, until ultimately these acquire the property of transforming light energy into chemical energy. Thus life has originated, and probably still originates, by the "law of molecular complexity."—*Scientific American*.

Healing Power of Nature.

Speaking at a public meeting on the above subject in Aberdeen, Prof. J. Arthur Thompson referred to the extraordinary capacity that many living creatures had of healing their wounds and regrowing lost parts. A sponge, he said, could be cut up and planted like a potato. It might be minced and pressed

through a sieve without losing its power of re-growth. An earth-worm thought nothing of regrowing a new head or a new tail. A snail has been known to regenerate its horn and the eye at the tip of it, even unto forty times. The curtailed lizard grew a new tail. For various reasons there was not regenerative capacity in man. We could regrow our hair—often but we could not regrow a tooth or a single nerve-cell. Nature's power of healing tended to occur in these animals and in those parts of animals which in the natural conditions of their life were particularly liable to non-fatal injury. Lanky animals like crabs and star fishes usually showed much of it; a self-contained globular animal, like a sea-urchin, showed little. The chameleon was one of the few lizards which cannot regrow its tail, for it kept safely coiled around the branch. A very interesting fact was that what was regrown was not always quite true to pattern—the crab did not always get an eye for an eye, but it might be an antenna for an eye. The lizard did not always regrow its own tail, but its grandfather's so to speak. Another very interesting aspect of the healing power of nature was the way in which organisms defended themselves from injurious intruders, or parasites, or poisons.

Tirupati Temple Inscriptions.

According to a writer in the *New India* the curious fact that the image in the temple on the Hills of Tirupati has certain uncommon features of Siva and Vishnu combined in it may perhaps prove the antiquity of the temple itself. On the one hand the image has coils of serpents and long matted hair; and on the other, there is a beautiful image of Lakshmi on its right chest. The image was perhaps carved when all the sects of the Hindus were compelled to sink their differences and unite to overthrow a common enemy—the Buddhists. If this be the case the image ought to have been existing for the last two thousand years or more.

Before the time of the great Vaishnavite reformer Sri Ramanuja, the image was passing for a purely Saivite one; but it was Ramanuja that established its Vaishnavite character and brought about the present form of worship. Ever since that time many members of the royal families in Southern India seem to have been ardent devotees of this God. Many of them have enriched the temple by their voluntary offers in cash and kind.

On crossing the first *Gopuram* of the temple, one sees to his right three bronze statues, and to his left three more of which only one is of bronze and the other two of stone. The first three are but the world-wide Krishna Deva Rayulu of Vizianagar and his Queens Chinna Devi and Tirumala Devi. The respective names are inscribed on the arms of these statues. The bronze statue on the left is but Venkatapathi Rayulu of the same family. Some are of opinion that the stone statues are the sculptor who chiselled these royal images and his devoted spouse. The writer doubts, they may represent some other royal pair, because the crown on the head of the male does in no way differ from that of Krishna Deva Rayulu himself.

In a small room to the left of the *Dhwaja Stambam* are two full sized busts of a Muhammadan male and a female and a complete statue of an evidently younger Muhammadan woman. One can know from the inscriptions that the last is the wife of Todar Mall, the great minister of Akbar.

Substitutes for Celluloid.

The increasing use of celluloid for the manufacture of imitation ivory, horn, shell, linen wood, glass, porcelain, etc., is due to the cheapness of this mixture of pyroxylin and camphor. It has, however, the serious drawback of being highly inflammable, and even explosive at high temperatures.

Hence substitutes lacking this dangerous property have long been sought. Such a one

is acetyl-cellulose, made by the action of acetic acid on pure cellulose. This, however, is more costly, and therefore has not made its way except where price is a secondary consideration.

Very recently, however, substitutes have been invented which are not only effective, but cheap. These are *viscose* and *formyl-cellulose*, already known because of their employment in making artificial silk.

While they are not as yet utilizable for objects which must have great solidity like those of horn and ivory, the *Scientific American* predicts a great future for them, since already blocks of *viscoid* have been produced which can be readily colored, polished and worked.

The Flight of the House Fly.

At a recent meeting of the Cambridge Philosophical Society, Dr. E. Hindle described some experiments which he made with Mr. G. Merriman in order to determine the house fly's range of flight. During the course of the experiments, about 25,000 flies were released under various conditions of weather and temperature. No less than fifty observing stations were arranged where the flies were caught in traps or on flypaper. In order to identify them, they had been dusted with red or yellow chalk powder. The experiments showed, says the lecturer, that the flies winged their way either directly against the wind or obliquely to it. This phenomenon has also been observed in the case of other insects as well as of birds. The greatest distance covered by a fly was about 760 yards, and a large part of this lay over open ground. In densely crowded cities, Dr. Hindle does not believe that the fly travels more than 80 yards. In order to secure the widest distribution, fine weather and warmth are necessary.

Artificial Silk.

A German artificial silk from jute is made by fermenting the jute with glycerine, rinsing in water, and bleaching in sodium peroxide. It is claimed to be strong, brilliant, and otherwise equal to silk.

The Sanitary World.

Remedy for Mosquitoes.

Every body knows that mosquitoes—particularly the female ones, which alone suck blood out of the human body—play a prominent part in the spread of Malaria.

In swampy places where they live and lay eggs in large numbers, sometimes a hundred at a time, there is no dearth of Malaria. These insects lie horizontally beneath the surface film of the water and have their breathing orifices freely exposed to the air. One of the common methods of preventing the prevalence of the insects, is, of course, the draining up of the swampy places. Where this is not possible, the method commonly adopted is to keep a film of petroleum on the surface of the water so that the larvae cannot reach the air and are thereby prevented from breathing. A method quite recently suggested is the use of Naphthalene. If it is put in water where mosquitoes are present it will, of course, drive away the mosquitoes, but will impart an unpleasant taste and odour to drinking water. In order to remedy this the following plan is suggested. Instead of sprinkling naphthalene on the surface of the water, suspend a bag containing it over the water. The readily volatilised substance will charge the air in any confined space and drive away the female mosquitoes that select such places for laying eggs. The same method may be effectively adopted for the protection of dark and damp places in and about our houses.

Evils of Smoking Tobacco.

From a physical, moral, mental, and sanitary point of view, an indulgence in tobacco is to be highly deprecated.

PHYSICAL.

The growth of the body is hindered.—Our

authorities are the "physical directors of universities"—Dr. Seaver and Dr. Anderson of Yale, Dr. Hitchcock of Amherst and Dr. Mylin of Columbia. Their conclusion is irrefutable as it is the outcome of "repeated, careful measurements" both of the victims and the antagonists of tobacco.

MORAL.

The boys' moral power is minimised.—Dr. Coffin of the Whittier Reform School bears testimony to the aforesaid fact. He declares that out of about 1,700 boys belonging to that institution, "98 per cent. are cigarette smokers" and that one can generally tell when there is a supply of tobacco in the school by the conduct of the boys themselves and by the poor work they do in the school room. Dr. Coffin asks "where can you show a young criminal who is not a user of tobacco?"

MENTAL.

The development of the mind is painfully retarded.—Dr. Hitchcock said: "Out of our highest-scholarship men, only a small percentage (about five) use tobacco, while of the men who do not get appointments, over sixty per cent. are tobacco users." Drawing from the experience of teachers of High Schools, Principals of Colleges and Directors of Gymnasiums, we have to state that the intellect of the young man is dulled because he is a slave to tobacco.

SANITARY.

The slave to tobacco is a heap of filth. His clothing gives out a sickening smell. And tobacco aids such diseases as cancer, blindness, deafness, heart-disease and dyspepsia. As for the poisonous nature of nicotine—"so violent that a drop or two on the tongue will kill a cat"—, nothing need be said.

Having exposed the evils arising from an indulgence in tobacco, it is hardly necessary to caution our youths against the folly of yielding to a temptation which begins as a fashion and ends in a regular habit. Of course this occidental vice has only just begun to be rampant in the oriental world and the sooner it is nipped, the better.

Open versus Closed Drains.

The old idea that open drains are the best because they could be easily cleaned is apparently wrong because modern sanitarians are voting for closed drains now-a-days in municipalities where drainage works are being erected. The arguments in favour of the new idea seem equally convincing and they are neatly told in a minute of dissent against open sullage drains recorded by W. B. Bannerman Surgeon-General with the Government of India, as a member of the Sanitary Board.

Open drains, he says, are fit for nothing but storm water. Open drains which are used for sullage always give rise to nuisance; they are not self-cleansing, and when not running full have a deposit of black evil-smelling material on their sides. To remove this the constant attention of sweepers is necessary, with the result that the surface of the cement soon gets broken up, and the drain becomes rough, uneven and full of holes. The deposit scraped up by the sweepers is flung out on the side of the drain, and proves an ideal place for the breeding of flies. These are facts that any one with eyes in his head can see for himself at any place where these insanitary open drains are in use. Flies are well-known carriers of diseases such as cholera and typhoid, etc., and any scheme which favours the breeding of these pests in our towns is objectionable. This slime not only breeds flies but gives off disgusting odours. There is no objection to a system of open drains for storm water. What is objectionable is the connection of these open drains to the house bath-rooms, because these

latter are frequently used at night as latrines, and the offender not only creates a nuisance in front of his own house, but along the whole street. It is these sudden calls of nature during the night that constitute one of the dangers of these house connections. For example, a cholera stool is passed in one of the house bath-rooms, and is then washed down into the open drain, and long before the sweeper comes along in the morning, flies convey the infection to the neighbours. Cholera stools ought never to be exposed to the air but either at once be carried off by *closed drains* or disinfected and burned. Flies should never have access to infectious faecal matter, and it is obvious that an open drainage system gives every opportunity for this. Therefore it stands condemned for a tropical country.

Best Light for the Eyes.

Some three years ago the American Medical Association appointed a Special Committee to make a study of the effect of different lighting systems on the eye.

The work of this committee is not yet completed, but preliminary announcements of results are of considerable interest. Among the aspects of lighting that have definite relations to the eye are: (1) evenness of illumination; (2) the angle at which the light falls on the object viewed; (3) the diffuseness of the light; (4) the evenness of surface brightness; (5) the intensity of the illumination; and (6) the quality of the light. The first four of these factors have been found by means of experimentation to be closely connected, although not absolutely uniform in their variation. Together they constitute what the experts call the *distribution* of the light. The ideal condition of distribution is to have the illumination as uniform as possible over the field of vision, with no extremes of surface brightness.

Daylight has been found to be the most satisfactory form of illumination, from the point of view of distribution. Daylight is pretty well

diffused by numerous reflections before it reaches the windows. Inside the room, the window or skylight has a comparatively large area of relatively low brilliancy. These two factors contribute to a nearly uniform illumination of diffused light, with absence of extreme surface brightness.

Of the systems of artificial illumination, the so-called indirect is the best. In this system, the source of light is concealed from the eyes, the light being reflected to the ceilings or walls, and from these to the working surface. Indirect illumination there is always the danger of having extremely bright spots in the illuminated surface. A system called the "semi-indirect" was found to be little better for the eye than the direct system. In this the light is thrown to the ceiling or walls, as in the indirect system; but part of the light is allowed to come through translucent shades.

The relation of the different systems of lighting to the diminishing efficiency of the eyes was brought out in a series of experiments in which daylight was shown to be almost without effect upon the eyes after three or four hours of work; under direct artificial illumination the eye loses working power at a very rapid rate, and almost as rapidly with the semi-indirect illumination. The indirect illumination was found nearly as harmless as the daylight. Sharpness of vision was also found to be highest, for any given degree of illumination, under daylight, and poorest under direct artificial lighting.

The deteriorating effect of the light upon the efficiency of the eye seems to be due to the fatigue of the muscles, rather than to any action upon the retina. Both the muscles of accommodation and of fixation seem to be affected. The explanation of the fatiguing effect of direct illumination is given by Dr. C. E. Ferree as follows:—

(1) The images of the bright spots near the margin of the retina arouse a reflex tendency

to fixate on them instead of on the objects held in the centre of attention; (2) the bright spots in the field of vision, but not in focus, arouse an unconscious reflex tendency to focus on them, so that there is constant variation in the accommodation of the eyes; (3) the bright spots fall on portions of the retina that are not adapted to them, cause discomfort and lead to spasmodic contractions of the muscles, which disturb the clearness of the image and add greatly to the fatigue. The result of these factors working together is excessive eye strain, which shows itself in a loss of power to do work.

This explains why work in daylight, under proper distribution of windows, and with sufficient intensity of illumination, is not so tiring as artificial illumination.

Of course this is not the only element that concerns the health of the eyes. The intensity and the quality of the light are also of great importance.

For daylight and the indirect system, a wide range of illumination allows the eye to continue at work for several hours without undue strain, or rather without considerable falling off in efficiency. But with the semi-indirect and the direct system, there is evidence of fatigue at every intensity of illumination. In the semi-indirect, however, the eye can continue at work comfortably at an illumination represented by something more than two candle-power at the distance of a foot from the working surface. When the intensity is considerably more or less than this, even the semi-indirect illumination soon tires the eye. As most artificial lighting systems give a much greater intensity than this, the semi-indirect systems are as injurious to the eyes as the direct systems.

However, the safe intensity of illumination for the semi-indirect system is far too low for clear vision in most kinds of work. It is, therefore, impossible to get high acuity and low loss of efficiency with any system of artificial

lighting except the indirect, although the semi-indirect will suffice at the safe intensity for most home work and office work.

Cottonseed as Food.

We in India know of cottonseed as a food for cattle. There is apparently a great future for it as it appears that men are likely to compete for it with cattle.

"It is not impossible that a large number of people will be driven by economic reasons to search for meat substitutes. In such an emergency, cotton seed-meal would deserve serious consideration. The available supply is enormous and is increasing yearly. It is cheaper than all but a very few of the staple foodstuffs and is enormously cheaper than meats. In proportion to its food value it is the cheapest foodstuff known to the writer."

This is a passage from the *Bulletin* No. 163 of the Texas Agricultural Station. The author of the Bulletin, Mr. J. B. Rather, Assistant Chemist at the station, advises the use of the cottonseed-meal mixed with corn-meal or wheat-flour, and believes that when eaten thus it is a valuable food. He writes to suggest that "the flour should be bright yellow in color free from any trace of rancidity, and of a sweet odour. Cottonseed-meal is equally as valuable as cottonseed-flour, if it is finely ground and sifted free from hulls and lint. Old meal, damaged meal, or dark meal should not be used.

"A proportion of four parts corn-meal or wheat flour to one part cottonseed-meal has been found to give satisfactory results. A larger proportion of cottonseed-meal should be avoided. The meal should be eaten as a substitute for meat and not in addition to it, unless it is known that the regular diet is deficient in protein. A diet too rich in any nutrient may easily cause trouble. We do not recommend the continued use of cottonseed-meal in large amounts."

Tuberculous Cows.

Even if all tuberculous cows were eradicated

we should still have to deal with the problem of consumption, said Dr. Nathan How of Liverpool at the Health Congress in Edinburgh. It was the problem of the insanitary house. One cow in every four was tuberculous.

You can feed on tuberculosis milk year after year and not be anything the worse for it, and if you go round the country murdering cows it will not only cost the country a lot of money, but it will make food very much dearer. Tuberculosis is due to poverty and insufficient nourishment, he declared. The importance of clean milk is shown in the *Times* report of experiments at Broadstairs, where the committee of a convalescent home founded a dairy of their own. The effect of pure milk on the children was tested by comparing the increase of weight of the children before and after the establishment of the dairy. During ten weeks prior to this the average gain per child was 1.47 ounces. During ten weeks in the following year, the average gain per child per day was 1.90 ounces. In other words, there was an increase in the average daily gain per child of 0.43 ounce. The main features of the model dairy are that the cows and cow-sheds are kept clean; milkers must wash their hands with soap and water before milking; and a covered milking pail must be used with an opening in the side.

The Care of Teeth.

Few people seem to know the real value of teeth. "Mastication by breaking up the food enables it to be more easily swallowed. The tough food needs to be broken by the teeth and the dry food to be moistened by saliva. Mastication by comminuting the food, brings it into intimate contact with the digestive juices. Moreover, the digestibility of the more common articles of diet, whether animal or vegetable, depends in the main upon the physical constitution of the food-stuffs themselves, i.e., they all tend to be equally digestible if reduced to the same degree of comminution. That is a fact of the greatest importance, for it amounts to this: that we may often allow to those with very weak digestion foods generally debarred as indigestible, provided only that they are thoroughly comminuted, either by mastication or by other means."

The Economic World.

Industrial Fatigue.

Mr. T. W. Ramsbottom contributes an article to the latest issue of the *Economic Journal* giving a few suggestions for a correct inquiry into the problem of Industrial Fatigue.

It is necessary both to the employer and to the worker to have some knowledge of the way in which output per day varies with the length of the day. While an efficient employer, working on a one-shift system, desires to obtain maximum output per normal worker per day, a full informed worker would desire that length of day which would be less than that yielding maximum output. If this system prevails, there will be always a conflict of interests between the employer and the employed. In practice, however, the prevailing length of day in many industries is too long for even maximum output and by a reduction in the working hours, both of them would gain much. To form a correct judgment as to the suitability of hours of labour in any given industry, we want more data providing more information as to any particular industry and a greater variety of instances in different industries.

It is possible to get some information, at least with regard to staple industries, from some individual firms. It is possible to obtain (i) the gross output in units of the commodity per week of certain departments, (ii) the gross number of hours per week worked therein. From these, the average output per hour, or the normal output per week can be calculated and a comparison of this from any particular firm, checked if necessary from similar figures from some other firm of the same industry would furnish useful data. A better method suggested is to obtain the hourly output in specified weeks of each of a number of individuals and in the case of piece-workers, a sufficient index would be their weekly earnings.

The effect of the change on different types of workers, such as the old and young, can be known from taking individual cases as in the first instance. Some employers maintain that no gain would result in output proportionate to the reduction in hours amongst time-workers, though in the case of piece-workers such a gain might take place owing to the desire of the piece-worker to attain a normal wage. The published instance of Mather and Platt shows the opposite result, but it is dangerous to draw any inference from one case. By adoption of this method, more valuable data can be obtained relating to the effect of short-period alterations, over-time, etc., from firms in seasonable trades.

The securing of maximum output depends not only upon the length of the day, but also upon its division into working spells and the allowance of intervals between them. Experiments alone can settle these points definitely, but much light may be thrown if we know how the output per hour of the normal worker varies throughout the day—"whether it falls, and, if so, in what degree, in the later hours of the spell and recovery occurs after the midday break." Individual returns, as in the above case, may be obtained and where this is not possible, even aggregate returns would be of use. Further, the returns of piece-workers as well as of day-workers must be collected "in order to see whether the former method of payment results in a tendency to "rush" in the earlier hours, with consequent exhaustion in the later ones." If a satisfactory account of these things be made without the knowledge of the workers, then the employer may well try and give intervals when work generally 'drops.'

The length of day for maximum output may also result in nervous or other physical troubles and hence an investigation into such matters

becomes essential. It is enough for this purpose to know the percentages of the total number of accidents which occur in each hour of the working day for each hour of the week during a fixed period. Of course, allowance must be made for the different working hours and intervals in different factories and the standard of calculation must be the same in all cases. Fatigue generally increases with the longer working spells and accidents happen, as a rule, only in the latter half of the periods. Accidents can be classified into (a) those in which subjective conditions (carelessness etc.) could in any way have contributed to the accident, and (b) those which were obviously due entirely to objective factors, e.g., breakage of material or plant, etc. As usual, analysis of the records of large individual firms whose hours and meal times are similar and where the conditions of work are definitely known, must be made and the necessary particulars as to manner of occurrence, time, age of worker should be obtained. These would furnish information as to the influence of fatigue on accident occurrence.

Ruralization of the Punjab.

In a pamphlet published on this subject, Mr. M. Balakrishna, M.A., F.S.S., Professor of Economics in the Gurukula writes :—

"My study of the Census Reports of the Punjab has forced upon me some important conclusions such as these :—

(i) that the Land of the Five Rivers is becoming more and more agricultural under the British administration,

(ii) that the indigenous industries are being constantly killed by the stress of unrestricted foreign competition,

(iii) that low paid workers and tribes of menials are increasing by hundreds and thousands,

(iv) that we are becoming a nation of petty shopkeepers in the sense of distributors of foreign articles alone,

(v) that in short, during the last thirty years we have been more and more subjected to the dangers pointed out by List. Instead of progressing we are being crippled, our arm of manufacture is being cut from us and we are thus on the way to become a purely agricultural state instead of the agricultural manufacturing state in the pre-British period. These points will be proved by facts and figures quoted from Blue-books and I will be much obliged if any gentleman would take the trouble to contradict them after studying this matter."

The advantages of a harmonious combination of agricultural and manufacturing industries are thus described by the eminent economist List.—

"The productive power of the cultivator and of the labourer in agriculture will always be greater or smaller according to the degree in which the exchange of agricultural produce for manufactures...can proceed more or less readily.....A nation which has already made considerable advances in civilisation, in possession of capital, and in population, will find the development of a manufacturing power of its own infinitely more beneficial to its agriculture than the most flourishing foreign trade can be without such manufactures, because it thereby secures itself against all fluctuations to which it may be exposed by war, by foreign restrictions on trade, and by commercial crises, because it thereby saves the greatest part of the costs of transport, because improvements in transport are called into existence by its own manufacturing industry, while from the same cause a mass of personal and natural powers hitherto unemployed will be developed, and especially because the reciprocal exchange between manufacturing power and agricultural power is so much greater, the closer the agriculturist and the manufacturer are to one another, and less they are liable to be interrupted in the exchange of their various products by accidents of all kinds."

Protection.

We take the following eulogy of Protection by Jack Willey from the *American Economist*.—

What was it gave us lots of pay,
That made us happy ev'ry day,
And kept the wolf far from our way?

Protection.

What kept us busy all the while,
And made the wife and children smile?
What kept us clothed in A 1 style?

Protection.

What raised the mortgage on our cot?
What made home such a happy spot,
Made us delighted with our lot?

Protection.

What was it made this mighty land,
So powerful, so great and grand,
With always lots of work on hand?

Protection.

What was it that they took away,
That closed the mill and stopped our pay,
That makes us hungry men to-day?

Protection.

What was it that Free-Traders smote
(Who got in on a one-third vote)?
What felt their fangs right in its throat?

Protection.

What is it we'll bring back again,
For ever in this land to reign,
From California to Maine?

Protection.

It must be admitted that protection must raise prices. If it fails to raise prices, it lacks its *raison d'être*. But if prices are to be raised, how would the agricultural population benefit? If protection was imposed, the result would be to render higher in price, partially the whole of the manufactured goods imported into India. Now the chief manufacturing industry at present is the cotton industry. At the outside, this industry employs about 300,000 hands. There are also the handloom weavers, who for argument's sake may be estimated at 10,000,000. If

protection means anything at all, it means that the whole of the remaining 340 millions of our population are to be taxed (*viz.*, forced to pay a higher price for their cotton goods) in order to assist the 10½ million workers in the cotton industry. Other industries would presumably be similarly pampered.

U.S.A. Food Production and Population.

There is a deal of apprehension about the future foodsupply of every country as it is considered that a time will come when the population will outgrow the available foodsupply. Examining the condition in the U.S.A., the Committee on Statistics and Standards of the Chamber of Commerce of the United States of America have found that the dismal feeling is unfounded. This committee attempts to show so far as the U. S. A. are concerned, that the theories mentioned are based on erroneous figures of the statistics for the decade 1899-1909. The fear of less food for more people is declared to be merely the old Malthusian doctrine which, according to the committee, "sought to show that the food-supply of the world increases only in arithmetical progression, while population grows in geometric progression, so that hunger, self-denial, and poverty are the inevitable portion of the greater part of the human race. This proposition is entirely unanswerable on paper, but is principally remarkable for not being so, since it is contrary to all human experience."

Another "fallacy" attacked by the committee is that "the land is being impoverished by constant and unintelligent cultivation, and that its productive power is, therefore, decreasing from year to year." It is claimed that Government statistics show a steady but slow improvement in the right direction, and that "innumerable Federal and State experiment stations and intelligent farmers all over the country have demonstrated clearly the ability of scientific and intensive farming to produce crops at a greater rate of increase than any probable increase in population."

The committee's conclusion is: "If, therefore, we survey the field in sober thought rather than the Cassandra-like spirit of prophecy, the outlook seems to be for a greater variety, increasing abundance and a more reasonable price of food for the people."

Economics and Religion.

In a very interesting and instructive article in one of the October issues of the *Commonweal*, Prof. V. G. Kale points out that the widespread feeling that Economics and Religion are not compatible with each other is not true. The fact is that the harmony between the two is becoming more and more evident every day, 'even in the present age which is supposed to be hopelessly materialistic.'

What Economics aims at is to promote the brotherly feeling between man and man, to alleviate the sufferings of the poor, to prevent the intolerable hardship which every worker, old and young—is subject to in factories, and in fine, to promote and improve all the conditions existing in society, so that ultimately a strong feeling of sympathy and care for others may prevail among all. The lesson that religion teaches us is not far from this. The ethical teaching is the most important of all religious teachings.

"If we understand by religion, the appreciation of our social responsibility, a sense of justice and fairness, a feeling of brotherhood for our neighbours and even strangers, the desire to do good to others, readiness for self-sacrifice and a striving after the betterment of one's country and of humanity in general—if these are the essentials of religion, the tendency of the world is certainly towards becoming more genuinely religious."

The so-called materialistic science of economics too practically demonstrates the way to realize the Oneness of soul,—the higher soul which is generally talked of in Religion.

"This social religion may not have the sanction and the authority of any holy book or pro-

phet, but it is founded on an equally strong basis of reason, of faith and intensity of feeling. The ethical tendencies of recent times are thoroughly in harmony with the main teaching of the world's religions, and there is thus no conflict between Religion and Economic Science. If any incompatibility is apparent between the two, it is a result of the misunderstanding of the character and purpose of the two. If religious and economic ideals have varied from time to time and have appeared false, that is because they have not been correctly interpreted."

Export Duty on Indian Produce.

In connection with the steps to be taken to capture German and Austrian trade, Mr. Musgrave, the Secretary of the East India Section of the London Chamber of Commerce, sent to the members a letter in the following terms:—

"I am desired by Mr. C. C. McLeod, Chairman of the East India Section of this Chamber, to say that a suggestion has been received to the effect that the present may be an opportune time for the various associations working in Indian produce, to consider whether general representations might be made to the Imperial Government regarding the usefulness of taking steps to place an export duty on all Indian produce destined for Germany and Austria. The arguments adduced in favour of some consideration being given to this matter at the present time and (although it bears on the question of fiscal policy and to that extent is semi-political) is that hostile continental countries which only obtain certain raw materials from India, and can only obtain them from India, should be made to pay an additional duty. I am to add that in the opinion of the Chairman of the East India Section, it is advisable before bringing this matter up for discussion at a meeting of the Section to enquire from members of the Section whether they are in favour of such a matter being considered, and also to ask for an expression of their views."

The replies naturally showed considerable difference of opinion and the proposal was accordingly dropped.

The Financial World.

Co-operation in Investment.

Mr. V. Everest advocates, through the pages of the *Financial Review of Reviews* co-operation in investment as the greatest security against the dangers that at present be set the individual investor. What with the machinations of the speculator or the market-rigger on the one hand and what with the complexity of modern investment and financial relations, the isolated investor is unable to understand the intricacies and principles of investment, still less to protect himself from any loss accruing therein. The great enemy of the investor is the speculator who, without the least interest in the intrinsic merits of a particular stock, possesses and uses the power of causing that stock to belie the apparently stable conclusions which studious researches on the part of the investor have evolved. The writer calculates that the loss suffered by the public during 1913 exceeds £200,000,000.

The writer says that one might have imagined that the Stock Exchange, which stands between the public and the financial world, whose existence, after all, depends on the public's interests, would take steps to legislate against enterprise contaminated with the irregularity of over-capitalisation; would refuse to countenance dealings in stocks and shares of ill-repute and put down the creation of fictitious prices. But the Stock Exchange has not done that. The public has to look elsewhere for the protection of its interests.

The writer believes that here in investment as in other branches of economic activity co-operation is the safe and real policy to be resorted to. Co-operation would be a boon to the investor even as it has proved so to the consumer and the labourer.

By co-operation in investment, the writer

means an enterprise whose business shall be to undertake the investments of a co-operating body of investors so as to secure them the maximum of safety and productivity. Each investor is a shareholder, and, consequently, an interested individual in the undertaking or medium by which his investments are controlled. Among the many advantages of such co-operation, the writer points out the following. The financial power of a combination of a number of capital units (as in the case of a co-operating community) must essentially exercise an economy in purchase and give increased power and scope to each capital-unit. Such a body of investors can obtain the services of the best financial experts and ensure their combined capital being placed, over the investing area of the world in those exact proportions of quantity and quality of stocks necessary to maintain an equilibrium of capital-value and regularity of income-yield. Additionally, the profits of entrepreneur or individual issuing-house, accruing from the purchase of loans or part loans, are secured to an enterprise established in the interests of a combination of investors, which is enabled thereby to issue such acquisitions to its members at a lower price than that at which they would have been offered to the public through the medium of an individualistic concern. Though it is impossible for an average individual to influence either the conduct or market-value, of any stock in which he is interested, yet a powerful community of investors can exercise a deterrent against undue periods of market-depression or inflation, as their stocks are firmly held and offer no scope to the devastating operations of the speculator or the market-rigger.

In the end of his article the writer forcibly points out the morale of the present situation.

"Universal competition to-day is forcing the small employer to the wall: and it is the operation of the same force which is behind the disappearing millions of the isolated investor."

An Advertisement Tax.

Chancellors of Exchequer must now be hard put to it to find new sources of revenue consequent on the decrease in the revenues and increase in expenditure owing to the war.

An advertisement tax exists in three continental countries at least. The whole principle on which the suggested tax is based is the belief that the man who thinks he will probably better himself by advertising, and who can afford and is prepared to risk one or two shillings on the chance, will assuredly not be deterred from carrying this out by the knowledge that he will have to pay an extra halfpenny in the one case or a penny in the other as a contribution towards national expenditure.

The profit derived in England would be at least between two and three millions, more than enough, to provide the cost of the finest aeronautic fleet in the world.

The definition of an advertisement is given by the writer as follows:—

"A written, printed, inscribed, or otherwise visible and intelligible public notice, made circulated, or exhibited for the purpose of attracting purchasers, customers or business."

It must be held to be in the essence of such a notice that—

(a) It shall mainly depend on diffusion or publicity for success.

(b) The provision of means of publicity shall be a matter of contract for money or other valuable consideration between the person or persons desiring the publicity, and the persons undertaking to furnish the same.

(c) In deciding what constitutes an advertisement, any notice describing, or mentioning or recommending the concern with intent, in such a way and with sufficient clearness to enable it to attract and be identified by custom-

ers, shall be an advertisement within the meaning of the Act.

No order for the insertion for exhibition of an advertisement, should be permissible without a memorandum of the consideration, or a receipt for the money paid being furnished, and no memorandum, acknowledgment, or receipts to be permissible or legal without a stamp.

As matter of fact, advertisers are generally furnished with a ticket bearing a current number, a date, and a note of the amount paid, and this serves both as a receipt and as a means of identifying the advertisement itself. All that would be necessary to add to such a ticket or memorandum, or receipt would, be a separate memorandum, of the amount of the *advalorem* stamp and the stamp itself. It might be necessary to insist on a current number being added to every advertisement for general convenience, and also to enable the officers of the Inland Revenue Department (on whom, of course, the administration of the Act would devolve) to identify any particular advertisement.

Mr. C. E. D. Black, writing sometime ago in the *Journal of the Royal Society of Arts* subjects a new source of revenue by imposing a graduated tax on advertisements which now form a homogeneous mass from beginning to end in some papers. He is absolutely convinced that from every point of view such a tax, *if paid by the advertiser himself* and not by the newspaper proprietor, agent, or other person who merely provides the means of publicity, would not only be enormously lucrative but would also be the least unpopular tax that could possibly be conceived.

In the first place it is not a tax levied on absolute necessities or means of livelihood. It is a tax on capitalists, small or large, who choose to embark on a certain form of speculation, necessary, it may be, in these days of commercial competition, but at all events not really and strictly compulsory. *Ergo*, it is not only an indirect but also a voluntary tax, the very least

objectionable form of impost that can be imagined in a highly civilised community.

Mr. Black would levy a tax of 5 per cent, as an addition to the actual cost of the advertisement on all advertisers. Beginning at the bottom of the scale, the servant or artisan, who happens to be out of work, but who can spare a shilling to advertise in the "Want places" column of a newspaper, would be required to pay 1s. 0½d. instead of 1s., the extra ½d. being for the Government stamp. This ½d. in the shilling would be a fraction less than 5 per cent., the difference being a slight concession in favour of the poorer advertiser. The wealthy manufacturer or trader or limited liability company, the cost of whose advertisement would probably run into three or four figures, would of course have to pay guineas instead of the pounds which he pays at present for his advertisement.

No Loans to Belligerents.

"The announcement made by this Government that it regards the making of loans by American citizens to the governments of nations engaged in war as inconsistent with the spirit of neutrality, has created a profound impression throughout the world" declares a writer in the *American Commoner*.

It is the first time that a great nation has taken this stand on the subject of war loans. The matter has been discussed at the Hague and at Peace Conferences, but it encountered so much opposition that nothing tangible has resulted. The president, therefore, blazes a new way when, without conference with other nations and without support from conventions, he commits the American nation to this policy.

It is inconsistent with the spirit of neutrality for a nation to make loans to belligerent nations, for money is the worst of contrabands—it commands all other things. A very forcible illustration has been used in support of this proposition namely, that as a neutral Government does all in its power to discourage its citizens from enlisting in the armies of other

countries, it should discourage those who by loaning money would do more than they could by enlisting. The Government withdraws the protection of citizenship from those who do enlist under other flags—why should it give protection to money when it enters into Foreign Military Service. In the opinion of the writer, there is only one answer.

But there are other reasons. The European war is imposing a burden upon all the neutral nations as well as those engaged in the conflict. If the United States were to loan money to the belligerent nations it would be less able to assist the neutrals and it has already received notice from neutral nations that desire loans. The writer says that the Americans are under special obligation to render such service as they can to South and Central America; it would be difficult to do this if all of their surplus money was flowing into the war chests of Europe.

Further, says the writer, America itself might be embarrassed by loans to the belligerents. Already a material reduction has been made in the Government's income from import duties owing to the partial suspension of commerce. If the war is prolonged it may become necessary for the Government to issue bonds, and foreign loans might so affect the local market as to compel a higher rate of interest. The peroration of the writer is really felicitous:—

There are still other reasons, but these are enough to show that the president's course was abundantly justified—enough to show also that in this case, as in nearly every other case, a stand taken upon moral grounds is supported by considerations of a material character.

India and the British Investor.

There is undoubtedly a feeling in India that the country is neglected by the home investor and that she does not receive her fair share of the capital he sends abroad. In her new character of the Cinderella of the Empire, India is naturally chagrined at the spectacle offered by Canada, the spoilt child of the British

capitalist, whose mere mention of the word money suffices to ensure its appearance in millions. But in justice to Canada, and, indeed, to all the countries which are just now in favour with the home investor, it must be admitted that they have at least taken the trouble to enlighten the world as to the magnitude and variety of their resources, and to advertise the excellence of the security they are in a position to offer to the foreign capitalist. People who scoff at the vigorous way in which our Canadian friends have boomed Canada are apt to forget that they had something worth booming. Realising the tremendous possibilities of their country, they devoted their energies, to making its merits known to the outside world. To-day the shop window displays of the natural products of Canada and the other Imperial Dominions are familiar sights to the Londoner, but he will search the streets of the city in vain for any remainder that India even exists. The Press keeps him fully informed of the doing of the anarchists and frontier outrages, floods and famines are duly reported to him but he is told nothing about the Commercial and Industrial progress of India and when he adopts a scheme for the investment of his money abroad on the basis of geographical distribution, India is very rarely included in it.

Even if the man in the street hears very little about India, the same cannot, however, be said of the man in the armchair. It is, indeed, almost impossible for the latter to pick up a magazine or a review without being reminded of one of the many "problems" India presents to people who do not understand her. There is the Indian political problem, the Indian railway problem, the Indian machinery problem—quite a large number indeed. A country apparently bristling with problems is calculated to bore the public, which is a bad thing; it is also liable to frighten away the investor, which is even worse. India suffers from no lack of advertisement, but unfortunately it is all of the wrong kind.—*India Man.*

Gold Standard Reserve.

The following Press *communique* has been issued by the Controller of Currency, Calcutta:—The weekly accounts of the Paper Currency Department during the last few weeks have shown transfers of gold from the Gold Standard Reserve to the Paper Currency Reserve. This is due to the fact that the Government of India have taken a loan from the Indian portion of the Gold Standard Reserve. The amount so taken in October amounts to £3,000,000 *i.e.*, this amount, which pending the recovery of exchange would otherwise have remained unemployed and inert, is being temporarily used to strengthen the Government balances in view of the special strain now placed upon them in various directions, and to avoid the necessity of reducing the amounts which the Government has been able to keep with the Presidency Banks for the general assistance of trade. This arrangement, which has been approved by the Secretary of State, is one which has been adopted on several occasions in the past. It in no way lessens the capacity of Government to support exchange; this depends upon the Government's total holding of gold and sterling securities in England and India which is not affected by the present arrangements, since the gold taken from the Gold Standard Reserve will be credited to the Paper Currency Reserve and set free from thence an equivalent amount of silver currency to aid the Government balances. In accordance with the usual practice, interest at $3\frac{1}{2}$ per cent. on all funds so utilised is paid to the credit of the Gold Standard Reserve.

English Banks.

A writer in *Capital* recently pointed out that English Banking principles and experiences were purchased at a heavy cost and previously there were many failures. "It is recorded by a Royal Commission," says the writer, "that in the year 1793 more than 100 country banks failed and that from 1810 to 1817, 600 closed their doors." More recently the failure of the Bank of Australia in 1893-94 was disastrous. All these, however, had a certain educative effect and later enterprises were successful because the promoters were careful to avoid the mistakes of those that ended in disaster. If the public will take note of the causes which led to the recent failure of so many Indian banks, they will serve as lessons for our future progress.

The Industrial World.

Nothing is Worthless.

Out of the unnumbered marvels of this scientific age, one of the most striking is the transformation of the apparently valueless stuff into truly priceless articles of every day life. The sequel will show beyond the shadow of a doubt the folly of throwing away things as "worthless."

1. The broken bottle or piece of glass makes excellent stone for buildings when worked with certain kinds of sand.

2. The scraps of leather are changed into heels and inner soles for boots and shoes.

3. The bits of horse-shoes found on the roadside and those that fall from the horse's hoof when shod by the farrier make excellent dye when mixed with certain chemicals and metal straps.

4. Hoofs are utilised according to color. White hoofs are exported largely to Japan, to be made into various ornaments. From striped hoofs, buttons and horn ornaments are made; while black hoofs find service in the manufacture of cyanide of potassium for the extraction of gold, and are also ground up as fertilizers. From the feet neat's foot, oil is extracted, and from various other portions of the body, various other oils, all of which are highly valuable. Substitutes for butter, such as butterine and oleomargarine, are made by utilizing the fat of beef and hogs.

DEAD ANIMALS.

1. Their bones are used for the inflammable compound of the lucifer match; their feet bones, for the handles of tooth brushes, knives, chessmen and nearly every article for which ivory is used; "the bones coming from cooked meat are boiled and the fat and gelatin which result are used, the former to make soap, the latter for transparent coverings for chemical preparations."

2. Studs and buttons are made from their teeth whereas pepsin, thymus, thyroids, pancreatin, partoid substances, and suprarenal capsules—gelatin, glue, fertilizers, hides, skins, wool, intestines, neat's foot-oil, soap stock, glycerine from tallow, brewer's icing-glass, and albumen trace their origin to the by-products of the shambles,—such as hair and bristles, blood and bones, horns and hoofs, glands and membranes.

3. Certain parts of their body go into medicines, oils, soaps, brushes, combs, mirrors, handles for tools, leather for harness and luggage covers.

SAW DUST.

1. Alcohol of a high quality can be distilled from ordinary saw dust—200 pounds yielding two gallons.

2. Excellent sugar can be obtained from the birch dust after treating it with certain chemicals.

3. Dirt can be prevented from sticking to the floors by sprinkling saw dust thereon—a fact the knowledge of which will stand the cafes and the shambles in good stead.

4. Among other things, saw dust is largely used for the purpose of making stuffed toys.

COTTON SEED.

1. The cotton seed is useful for the oil it yields.

2. Cotton seed oil is useful for the making of lard compounds and white cottolore, both of which are valuable foodstuffs.

3. Cotton seed oil is also used as a substitute for olive oil, by soap-makers in the making of soap, by bakers, and also in the manufacture of washing powders.

SLAG.

1. This "debris of the iron ore," once cast off as worthless, is now one of the most valuable.

ble compounds coming from the blast furnace. Blast furnaces have been reared on the fringe of swamps, so that slag can be hurled into them and they may be filled up.

2. Very good glass is now made from this slag, as well as paving blocks and bricks, artificial porphyry, and a cement which is equal to the best. Ground with six per cent. of slaked lime, building mortar is also made from slag; and ornamental copings and mouldings, window sills, and chimney pieces are fashioned of it.

3. Slag brick is stated to be quite as strong as ordinary brick, and much less permeable to moisture.

4. Slag is also used for steam pipe and boiler wrappings, in which form it is called "silicate of cotton."

Coal slag is a structural material; mixed with slaked lime, it stiffens into a mass.

Basic slag is used in large quantities by manufacturers of fertilisers, instead of phosphate rock.

MISCELLANEOUS.

According to a writer in the *Dun's Review* to whom we are largely indebted for the above facts, in the tanning of leather, there are developed as side products scrap and skin, from which glue is made; hair, from which cheap blankets and cloths are manufactured, and waste liquors containing lime salts.

2. A rather recent developement in the oil and fat industry is the distillation of fatty acids, a process in which the fat is split into its component fatty acids and glycerine, by means of small quantities of suitable reagents known as catalysers. These may be oxides of certain metals, enzymes from certain seeds, and complex organic chemical compounds. The glycerine water is drawn off, and the glycerine is recovered. It is known as saponification crude. The fatty acids are distilled in iron stills with superheated steam. They find use in the manufacture of soap and candles. Cement makers buy stearic acid, which they convert

into lime soaps for use as a water-proofing compound for cement.

3. The oils coming from waste fruit can be substituted for some of the most costly floral odours after being treated with acids and other liquids, which give them a remarkable fragrance. Perfumes, soaps, even confectionery, are now manufactured, which are flavoured with what is called the oil of bitter almonds, but which is extracted from the tar, which is a refuse of gas-making plants such as are to be found in every large city.

4. The greatest metal industry in the world, which is now being built in Indiana has iron smelters from which the gas as it rises will be returned to the fires beneath the ore and used for heat. By this system the cost of coal to smelt the ore will be about one-half the expense if the gas were not secured as stated. (2) Waste gas has been utilized by the inventors for the direct operation of engines so large that they have a force equal to the power of a thousand horses.

5. In the textile industry, the making of value out of waste has been truly remarkable. In the modern woollen factory no fewer than five products are obtained by methods now in vogue, from the greasy excretions which, after circulating through the animal's system, attach to the wool of a sheep. These products are used as a base for ointments and toilet preparations, for dressings for leather, as a lubricant for wool and other animal fibres, and in conjunction with certain lubricating oils. At one large plant in America more than 200,000 pounds of wool are "degreased" every ten hours. From two million to three million dollars' worth of wool fat and potash are estimated to have been wasted during a year in the United States before the solvent process of extraction came into general use.

Pine-Apple in India.

An article on the world's trade in pine-apples appears in a recent number of the *Tea and Coffee*

Trade Journal. The writer traces the appearance of the pine-apple in India as far back as 1548. The trade of the British West Indies, he says, has shrunk, and the European markets are now supplied with fresh fruit mainly from the Azores, while Hawaji and Singapore are responsible for the bulk of the canned product. Of recent years, Porto Rico and Cuba have developed an extensive trade in both fresh and canned fruit, while Florida also contributes a fair share. In the last-mentioned state, there are acres of shed-protected fields, the sheds being covered with canvas during frosty weather. In Hawaii there were 1,600,000 acres under pine-apples in 1913, the rows on some of the plantations extending to 2½ miles in length. The following details of the method of canning the fruit will be read with interest:—"In canning pine-apples the first thing is to remove the rind. To do this the fruit is placed horizontally between two pin clutches, which pierce the ends of the fruit. The pine-apple is made to revolve by throwing the machine into gear just like a lathe, and an operator manipulates a knife which removes the rind, cutting deep enough to take out all the eyes lying under the outer skin. As these penetrate some distance into the fruit, the loss of pulp with the rind is considerable, although a part of the pulp is recovered in a subsequent process called grating. The pine-apple is removed from the machine, the ends cut off and the fruit trimmed a little and then passed on to the corer and shaper. This machine removes the core and shapes the fruit to uniform size. The waste from this process, chiefly the core, goes directly to the dump car, although occasionally it is canned separately for confectioners' use. The fruit then passes through the cutting machine, which cuts it into uniform slices; these are carried along a conductor, sorted and put into cans. The cans are then partly filled with sugar syrup, passed through a steaming apparatus, closed and run to the cooker. When the cans are cooled after leaving

the cooker they are ready for labelling and packing for shipment. The fruit is put up in three ways—sliced, as has been described and also in a crushed and grated forms. The crushed and grated forms are used largely for pies, cakes, pudding, ices and for all cooking purposes."

India's Manufactures.

The following list, says the *Indian Textile Journal*, will give an idea of the distribution of India's manufactures:—Cotton goods in all varieties, unbleached, bleached, dyed, plain or fancy woven, hosiery table cloths, towels, woollen shawls, rugs, blankets, ready-made clothing, boots, shoes, travelling bags and general leather work, cash and despatch boxes, portable furniture in iron paper, gold and silver thread and embroidery caps of wool, cotton, silk and felt, surgical instruments, jewellery, silverware, and precious stones, lanterns, plaster casts, soaps, perfumes, syrups, pickles, condiments, etc. With regard to the districts and the location of the various industries we have,—Dhariwal and Cawnpore.—woollen goods of all kinds for clothing, blankets, rugs, worsteds, jhools and putties. Benares.—Silk cloths, plain and figured, of all qualities. Ahmedabad.—Cotton goods, canvas boots, shoe and slippers with hemp soles, inlaid boxes. Surat.—Silk in various colours and qualities, gold and silver thread work, and embroideries, carvings. Delhi.—Cotton carpets, cushions, razais. Kashmir.—Hats, caps, lacquered woodwork, "papier mache," mirrors, carving and carved furniture. Calcutta.—Sandals, steel pens, stylographs, articles of stationery, sealing-wax, combs, brushes, buttens of pearl and other materials, studs and links, household China-ware and pottery, glassware. Wazirabad.—Knives and penknives, scissors, razors, surgical instruments. Madras.—Aluminium ware. Aligarh and Rajkote.—Pad and other locks. Talegaon.—Glassware of all kinds. Mysore.—Toys, fans, jewellery and other boxes, combs

and brushes. Vizagapatam.—Ivory and sandal, wood-carving, tortoise shell work. Poona.—Paper in many varieties, envelopes, note and account books, inks, penholders, pencils in colours, brass vessels and castings, soaps, perfumery, tooth powders, drugs, etc., Bombay.—Chemical works, Iron work, etc.; safe and lock making is carried on on a large scale than anywhere else in India, the Godrej and Boyce Works at Parel being the largest in the country. This list does not represent all the industries that are at present in existence in India, but it offers a good general idea of what is being done. The most prominent feature is the cheapness of the articles, but although the quality of the material here is for the greater part excellent, the bulk of the goods do not come up to European standards. Setting aside the textile goods and a few others there is a lack of finish and accuracy in numerous articles whose material leaves nothing to desire.

The Banks and Industries.

It is most important to bear in mind the duty which the banks have in this present attempt to build up industries in India. The expansion of trade means the expansion of credit, and the dealers in credit are the banks. As the *Tribune* well points out, manufacturers and traders alike need money to carry on a trade war against the domination of Germany, and until the increased trade has actually been obtained and the goods paid for, they have no means of raising that money. To put it in more concrete form—before a manufacturer can sell goods in a new market, he must make the goods, and to make them he needs money to pay for wages, raw material, and so on; but till he has made the goods and sold them, he has no means of getting the money necessary for those wages, etc. Here is where the banks come in. They must be ready to supply credit far more readily than at ordinary times. They must extend their system so as to grant loans on the security of stocks in hand, machi-

nery, and a score of other forms of real property which they have largely been refusing to lend. It is not only in the interests of the country that they should do this, but in their own interests as well. A bank which refuses to lend to a customer who is quite solvent, but who has not at hand any of the usual forms of security, may involve that customer in bankruptcy and itself lose all that it has already lent. And the loss may not end there, for one failure almost invariably leads to others, and the bank may suffer in all of them. It is therefore to everybody's interest that the banks should take a bold course and enter vigorously into the campaign by the side of the merchants who are their customers, and by whose prosperity or loss they stand or fall.

Household Industries in the Philippines.

The scheme of increasing the earning capacity of the Filipinos of the lower classes by training the women in various household industries has made excellent progress. At one time it appeared doubtful whether the average standard of intelligence among these women was high enough to enable them to take up lace-making, fine embroidery, and the like, with success. However, this question has been fully tested in the women's department at Bilibid Prison, where industrial instruction was recently inaugurated by Miss McGee. The female convicts were generally of low intelligence and untrained in the use of a needle, yet within four months, a number of them qualified as efficient workers, and not one failed to develop the efficiency necessary to produce a marketable product representing at least a fair daily wage. Now a school of household industries has been established at Manila, providing for the instruction of about 300 women a year. The pupils are under obligation to return to their homes, scattered over the islands, at the end of the course of instruction, and to instruct the women of their communities in the same industries.

The Commercial World.

Germany's Foreign Trade.

The disastrous war now going on in Europe will cripple the trade of the belligerent powers a good deal but it is sure to be most direful in the case of Germany.

The last complete yearly trade statistics of Germany available are those for 1912, but for the purpose of showing the extent of the foreign commerce of the Empire and the way in which it is likely to be affected by the war, they will serve as well as if the figures for 1913 had been published. After England, Germany ranks first in Europe for the value of its imports and exports, France comes second, and the Netherlands third. The following table shows the rise of German trade during the past decade :—

	Imports.	Exports.
	£	£
1903	295,100,000	246,600,000
1904	312,900,000	256,800,000
1905	350,500,000	281,800,000
1906	394,400,000	312,700,000
1907	430,100,000	336,600,000
1908	376,900,000	314,600,000
1909	419,200,000	324,200,000
1910	439,200,000	367,500,000
1911	477,200,000	398,500,000
1912	525,700,000	440,400,000

Of the imports, 2·4 per cent. is now made up of live animals, 27·6 per cent. of articles of food, 55·0 per cent. of raw materials and partly manufactured articles, and 15·0 per cent. of manufactured goods. Of the exports, 0·1 per cent. consists of live animals, 8·8 per cent. of articles of food, 26·5 per cent. of raw materials and partly manufactured commodities, and 64·6 per cent. of manufactured goods. The principal business is done in the following articles, the figures being those for 1912 :—

	Imported.	Exported.
	£	£
Animals	9,895,400	267,400
Coal	9,549,400	21,828,600
Chemicals, &c.	25,189,000	41,923,500
Copper & copper wares	16,035,800	5,880,200
Cotton & cotton goods.	37,890,500	27,063,500
Grain	61,074,400	19,523,400
Hides and skins	27,225,300	18,200,900
Iron and iron wares...	15,072,100	60,062,800
Leather & leather wares	4,352,500	16,433,500
Machinery	3,962,600	34,826,300
Rubber & rubber goods	8,727,900	6,663,300
Silk and silk fabrics...	13,121,300	10,262,100
Wool & woollen goods	27,995,000	19,282,300

In addition to the articles classified above, Germany also did a big trade in certain goods either outwards or inwards, though not both ways. Thus it exports sugar to the value of £66,107,500, glass and glasswares to the value of £5,975,800, musical and scientific instruments to the value of £4,718,800, beer and hops to the value of £3,199,400, and paper to the value of £6,514,000. On the other hand, it also imports cocoa to the value of £3,179,500, tobacco to the value of £7,530,900, eggs to the value of £9,373,300, herrings to the value of £2,196,900, linseed to the value of £5,240,800, palm kernels, &c., to the value of £9,767,300, and timber, planks, and builders' materials to the value of £16,774,400.

TRADE WITH COUNTRIES.

The chief participants in the foreign trade of Germany in 1912 were as under :—

	Imports from.	Exports to.
	£	£
British Empire	99,895,000	75,170,000
United States	97,300,000	34,880,000
Russia	78,240,000	88,160,000
Austria-Hungary	41,480,000	51,765,000
France	80,860,000	35,100,000
Netherlands	27,995,000	34,150,000

	£	£
Argentina	22,245,000	11,970,000
Belgium	20,140,000	24,765,000
Brazil	15,660,000	9,640,000
Italy	15,230,000	20,600,000
Sweden	10,790,000	9,870,000
Chile	10,485,000	5,600,000
Switzerland	10,285,000	26,025,000
Denmark	10,110,000	12,710,000

These countries account for about 90 per cent. of Germany's foreign commerce, and the war must cut off the greater part of it, as the only borders open to the Fatherland are the Swiss, the Italian, the Danish, and the Dutch, and even across these, transit must necessarily be much reduced. So large a proportion of the world's commerce is carried in British bottoms that immense quantities of commodities must fail to reach German destinations from that means of transport alone being automatically withdrawn.

TRADE WITH ENGLAND.

The value of the principal articles of domestic produce and manufacture which England sent to Germany, and of those which it imported from that country for home consumption, is shown in the appended table, the figures in this case being for 1913 :—

EXPORTS.

	£
Coal	5,327,700
Cotton goods	7,576,400
Fish	3,013,600
Iron and iron manufactures	1,675,500
Machinery	1,887,400
Wool and Woollen goods	10,217,200

IMPORTS.

	£
Apparel	1,268,600
Carriages, motors, &c.	1,641,200
Chemicals	1,889,900
Dye stuffs	1,777,400
Grain and flour	1,567,900
Iron and steel manufactures	3,121,400
Leather and leather goods	1,837,000
Machinery	2,382,700
Oil	2,187,000
Paper	1,880,600
Silk fabrics	2,177,500
Sugar	10,894,100
Toys and games	1,183,700
Zinc and zinc manufactures	1,708,800

REASONS FOR GROWTH OF GERMAN COMMERCE.

Those who mean to capture German trade in this war would do well to note the methods by which Germany expanded the world's commerce noted above. The point is well emphasized in an article in a recent issue of the *Banker's Magazine*. The writer says :—

And perhaps the most instructive thing in the world would be to consider the means by which so many English markets have been captured by Germany, and why so many industries have changed their seat from Sheffield and Birmingham to the busy manufacturing towns of the German Empire. The main reason lies in the inability of the English manufacturer to change his working conditions in conformity to general changes that have taken place, beyond his power to arrest or alter, in the markets wherein he must give a free field and can hope for no favour. It must be borne in mind always that the future, and, even more and more surely, the present struggle for foreign commerce must be conducted under rules laid down by civilisation itself. No real monopoly of trade can ever exist again, except within the narrowest areas or for an inconsiderable space of time. It follows, necessarily, that all competitors must enter the lists under substantially equal conditions. Now England had controlled so large a share of the world's commerce in manufactures for so long that she apparently forgot this. She encouraged or permitted the establishment of conditions that left her hands tied as against a free competitor. Germany found that, with a more advantageous wage scale, she could go in to the world's markets and compete at prices which England could not meet. Hence the enormous growth of German exports of the manufactured articles.

CAPTURING GERMAN TRADE.

The points upon which a consensus of opinion appears to exist among the commercial men of England in their attack upon German trade

and industry may be summarised as follows :—
Incessant publicity on the part of English merchants and manufactures ; more travellers both at home and abroad ; increased energy : employment of men of sagacity, even if past their youth, to further British Commercial Interests, while their juniors are being trained up. Higher technical education throughout Britain and a more intimate knowledge of Continental languages, as well as of the metric system. An extension of the scope of British manufactures, as well as influence in the world's markets. Reorganisation of the British system so that manufacturers become more truly commercial men, which many of them, it is alleged, are not at present. While, finally, it must be instilled into the minds of British buyers of every description that their duty is to purchase British goods wherever possible and so provide employment for the working classes.

"Capture the German trade" by acting as above may be easily done. Perhaps in some directions, where practically the same articles have been made by both countries the business of capturing German trade may be ripe fruit and mean a bigger selling department, but with specialities it is different, as the practical manufacturer knows.

To exactly imitate another maker's article is almost impossible, and to make suitable substitutes needs a lot of time, money and skill.

Wheat.

India produces about 10 per cent. of the world's wheat. Indian wheats have a poor reputation in the English market as regards strength.* Any improvement in the strength would mean improved prices and an increase in value of the export trade. Mr. Howard, Imperial Economic Botanist, calculated in 1909 that, if the quality of Indian wheats could be improved by so little as 4 annas a maund, there would be an annual gain to India of

Rs. 500 lakhs, besides Rs. 400 lakhs the estimated annual loss caused by wheat rusts at 10 per cent. of the value of the crop. In other words, the production of stronger and most rust resisting wheats for India would mean a yearly increase of Rs. 900 lakhs or 6 millions sterling to the wealth of the country. This trade depends largely on the character of the season and the fluctuations are marked, the margin between prices in India and in Europe being also an important additional factor. Wheat in India is harvested in April-June.

In 1913-14, the Indian export trade of wheat was restricted, as compared with the previous year, from 1,660,187 tons and Rs. 1,769 lakhs to 1,202,205 tons and Rs. 1,313 lakhs, which is 29 per cent. of the value of food grains and 5.4 per cent. of the total exports, the highest record having been in 1904-05 when 2,150,000 tons, valued at Rs. 1,791 lakhs, were exported. The principal importing countries were :—

	1911-12 1,000 cwt. R (lakhs).	1912-13 1,000 cwt. R (lakhs).	1913-14 1,000 cwt. R (lakhs).
United Kingdom.	20,655 10,11	23,705 12,57	15 675 8,54
Sweden ...	253 12	204 10	217 12
Germany ...	380 19	457 24	502 28
Belgium ...	3,714 1,80	3,680 1,92	2,785 1,52
France ...	1,456 74	2,707 1,52	3,250 1,75
Italy ...	325 16	2,011 1,11	775 43
Total ...	27,223 13,35	33,204 17,69	24,044 13,13

Indian wheat is almost all shipped to Europe, during the months of May, June, July and August, mostly to the United Kingdom, which in 1913-14 took about 783,746 tons or 65.2 per cent. of the total. Germany, Belgium, France and Italy absorbed 365,593 tons or 30.4 per cent. Declared values averaged Rs. 5-7-5 per cwt. as against Rs. 5-5-3 and Rs. 4-14-5 in the two preceding years.

HINTS ON ADVERTISING.

Self-deception in Trade.

A form of self-deception which is not rare in commercial circles, though far less frequent than it used to be, occurs in the use of exaggeration in press publicity in order to produce some immediate results. By doing so the merchant or manufacturer is literally marking down the value of his own words, and recklessly using up a priceless prestige for the sake of a trifling profit. Similarly the manufacturer who, for the sake of profit, reduces the quality of his goods but fails to reduce his prices to correspond, pursues a fatuous policy of self-deception if he thinks the public will not detect his little plan, and, sooner or later, make him pay for it by loss of trade. Nothing in all the world of business is more sure than this well-merited retribution.

Referring to Advertisements.

At the bottom of the pages of magazines given over to advertisements are usually found these words, "in writing to advertisers please mention this publication," or a phrase conveying the same request. What good does it do to mention the name of a magazine when writing to advertisers?

Such a mention benefits the publisher and the advertiser. The publisher requests it because it proves to the advertiser the value of the magazine as a medium for his announcement. The advertiser wants it because it enables him to judge the utility of the magazine in reaching the right people, and, further, it gives him a clue to the identity of the reader.

The mention of a magazine is of distinct advantage to the reader also, a fact that is not always appreciated. It places the reader, who otherwise would be but a name to the advertiser. It may be compared to a letter of introduction. The fact that an announcement appears in a magazine guarantees to the reader that that advertiser is reputable, otherwise the publisher would not accept the matter. When the reader

writes to the advertiser, and mentions the name of the magazine, it assures the advertiser that the reader is likewise reputable. If there should be any doubt, the advertiser has merely to make a request of the publisher, who has a pretty good idea of his readers, and receive such information as will enable him to make an intelligent reply to the reader.

Advertising in the Trade Paper.

In an address before the Federation of Trade Press Associations, in Chicago, Mr. W. H. Ukers, the President, said :—Why shouldn't you be as careful when you buy trade paper advertising as when buying any other commodity? Here is a recapitulation of the rules of trade paper values. We ask that you check all your trade paper advertising by this table. It's the scientific, businesslike way to buy trade paper advertising :—

1. Typography and physical make-up	5	points
2. Serious purpose	...	10 "
3. Subscribers' potential interest	...	10 "
4. Character of contents	...	15 "
5. Paid subscribers	...	20 "
6. Standards of practice	...	10 "
7. Publisher's professional standing	5	"
8. Responsibility of publisher and agents	...	5 "
9. Verified circulation statement	...	10 "
10. Advertising rates	...	10 "
Total	...	100 "

Please try the *Wealth of India* with this test.

Greatness in Trade.

Mr. Thomas Thatcher, a book-seller, Bristol, writes:—

The stupid German General wrote
'Tis war has made our Nation's note ;
But soon he'll find, the silly goat,
That war has cut his Nation's throat.
Virtue and industry alone
Will make a Nation ; raise its throne ;
In time of war as well as peace,
Stick to your business ; never cease.
If you would rise, be ever wise ;
Put trust in God and advertise.

The Agricultural World.

Jute in Bengal.

"Jute has been cultivated in Bengal since very ancient times, but the export of raw jute, which marks the commencement of the great development of the crop, is quite modern. Even as late as the end of the first quarter of the nineteenth century the export of raw jute from India amounted to only a few hundreds of maunds—say 30 tons. Difficulty was experienced at first with jute, as with most other new products, in finding a market for it, but the trade in the raw fibre gradually expanded, the development being greatly aided by the Crimean War, until at the present time jute has practically completely replaced all other fibres as a basis for the manufacture of gunnies. To day the total produce of jute in Bengal amounts to something like 1,750,000 tons, grown on upwards of 3,000,000 acres."

After making the above observation at the International Congress of Tropical Agriculture, Mr. R. S. Finlow, fibre expert to the Government of Bengal, said that jute required for its growth a high temperature and abundant moisture in the soil. In his opinion the common supposition that jute required the land to be submerged during the period of its growth was unfounded in so far as very fine jute is grown on lands which never go under water. He added that it was indeed only during the later stages that even the more resistant of the two commonly grown varieties is capable of withstanding heavy flooding without serious damage.

Jute is a rapidly growing crop, commonly sown in April and reaped at the end of July or beginning of August. Cow dung or castor cake are the fertilisers which produce the best results, but in some tracts the land is acid, and the Bengal Agricultural Department has shown

that lime is capable of materially increasing the crop.

Apart from preparation of the land and sowing of the seed, the important operations in connection with the crop are—(a) weeding and thinning; (b) cutting, steeping (*i.e.*, commersion in water), and retting (rotting); (c) stripping the fibre from the retted stem, washing and drying. A well-grown crop may be 12 ft. high or even higher, and the yield of fibre may be from 30 maunds (over a ton) per acre in exceptional cases to 10 maunds or even less. The Government standard of 15 maunds (3 bales) per acre seems to be a fair approximation to an average yield for the whole tract.

Technical Instruction in Ploughing.

A recent issue of the "*Journal of the Board of Agriculture*," London, publishes a short account of the system of instruction in ploughing which the Agricultural Committee of the Hans County Council has fostered and encouraged for some time past. The instructor arrives at the farm when the class is held, and the pupils, varying in number from six to twelve, meet him with a team of horses and a plough.

The instructor commences by explaining the general arrangement of the plough fittings. He teaches by contrast the various positions in which he finds them with those in which they ought to be, giving reasons in each case for the change or alteration of the part or parts.

The general construction and setting of the plough is fully explained, and the proper names are given for the various fittings. Ploughs of different makes and their adaptability to special classes of soils are referred to, and also the utility of short and long turnfurrows and the influence they exert in shaping and placing the furrow.

After the oral instruction is over, the instructor taking the plough in his hand, shows the pupils how a proper "feering" should be executed. Then each pupil will have to take the plough and perform a certain amount of ploughing. The teacher will clear the doubts of the pupils.

Should the weather be unfavourable for outdoor work, the plough is brought to a shed and there taken to pieces bit by bit. The various parts are named and explained to the pupils and the plough is reconstructed.

At the close of the period of instruction, the County Council holds a competition and prizes are given to those whose work is considered of sufficient merit. All the pupils in the District may compete, except those who have not received a minimum number of hour's instruction.

Agricultural Education in Germany.

In the monthly bulletin of Agricultural intelligence and plant diseases Professor K. Von Rumker, of the Agricultural High School, Berlin, discusses the German activities in the direction of agricultural improvement.

There are three kinds of institutions in Germany which deal with agricultural education :—

- (a) Academic institutions in which research works are also conducted.
- (b) Secondary agricultural schools.
- (c) Primary Agricultural schools.

Additional facilities that exist are a large number of local continuation schools, schools of domestic economy, travelling lecturers and continuation courses for the spread of general and special knowledge in agriculture and domestic science and their allied branches.

78 per cent. of the cultivable area of Germany being cut up into small farms, the problem is to provide an efficient agricultural training to their holders through the primary and secondary schools. To this end, it is advisable, says the writer, to increase the number of travelling lecturers and of demonstration fields which

induce small farmers to adopt up-to-date improvements.

Of late an experiment has been made in Bromberg, of creating a seat of higher-agricultural research on American lines where continuous instruction is not obligatory. A recent introduction to fill up the gap between the lower and academical education is the agricultural seminary and the future is to give proof of its usefulness in serving the purpose.

The attendance of Germans other than Prussians is strikingly low. The independent Agricultural Colleges are at a disadvantage compared with the agricultural faculties of the Universities and the technical colleges in not possessing the right to grant Doctor's degrees though the standard of instruction imparted is the same.

For modern research work, considerable equipment is required and if the academies are to advance agricultural improvement, they should be equipped adequately.

There are many specialised primary schools in Germany among which the farriers' schools are most numerous while financially the dairy schools are most important. Domestic economy is not forgotten and girls who have already received ordinary compulsory primary education are grounded in it in schools which promise to be very useful in the future.

Though the Government does not stint its grants, yet considering the importance of the agricultural industry it can, in the opinion of Von Rumker, afford to be more liberal.

Pickling Wheat.

There are three methods of pickling wheat to destroy or prevent the germination of the spores of smut. The most commonly used pickles, according to the Queensland Agricultural Department, are—(1) a solution of formalin; (2) sulphate of copper (bluestone); (3) plain hot water. The solutions are :—Bluestone at the rate of 1 lb. in 5 gallons of

water, or formalin at the rate of 1 lb. in 40 gallons of water.

The seed, in either case, may be spread on a wooden floor, and the solution sprinkled over it, turning the grain over and over, either by shovelling or raking, so that all the grains become thoroughly wetted. The seed is then spread out to dry, and if left in a thin layer over night, it is ready for sowing in the morning. Instead of sprinkling, which is wasteful, dipping may be resorted to. A bushel or so is placed in a bag and dipped in the solution, taking care that all the grains are thoroughly wetted by shaking the bag and plunging it in and out. In the case of bluestone, only a minute or two is necessary for the dipping process, on account of its corrosive action; but, in the case of formalin, five minutes may be allowed and it is less injurious to the grain, the cost being about the same as for the bluestone process. Both processes are equally effective in destroying the smut germs. The bluestone solution may be used again and again, but formalin is volatile, and it follows, therefore, that only the amount of formalin should be prepared that is required for immediate use, and sprinkling, in this case, should be preferred to dipping. Formalin is poisonous and must be kept where there is no chance of children or others obtaining it in ignorance of its nature. One gallon of formalin solution is sufficient for 4 bushels of seed. For the hot water treatment, two boilers are needed, containing water at 120 deg. F. and 135 deg. F., respectively. A smaller vessel containing boiling water and an abundant supply of cold water should be at hand. The seed to be treated may be placed in a gunny bag or in a perforated kerosene tin. Plunge the vessel containing the grain into the first boiler (120 deg. F.) and move it about for a minute or two till the grain has all been warmed. Take care to keep up the temperature. Then plunge it into the second boiler (135 deg. F.). Leave it there for ten minutes, moving it about and agitating the grain. Then

take it out and plunge it into cold water and then spread it out to dry, after which it is ready for sowing.

Feeding with Prickly-Pears.

This was the subject of a paper read at the Provincial Agricultural Conference held at Poona last year and printed in the April number of the *Agricultural Journal of India*. As a result of experiments carried out at Kirkee and other places, the authors, Mr. E. W. Horn, Manager, Government Civil Dairy, Kirkee, and S. G. Mutkekar, District Agricultural Overseer, Ahmednagar, observe :—

It has been clearly demonstrated that the prickly pear if properly prepared and mixed with 6 per cent. of its weight of cotton seed, is not only enough to support life, but will enable an animal to regain condition even after it has become very poor from semi-starvation, that the cultivators could save their cattle in times of famine by feeding the above, the cost of preparation being very low. With the "Effective" stove enough pear could be prepared for a pair of bullocks, weighing 1,450 to 1,500 pounds at a cost of As. 1-6 for oil and As. 3-3 for the necessary cotton seed, or a total of As. 4-9 per pair per day. One stove would be sufficient to burn pear for 10 pairs. The pear was used with profit at Manjri, for the dairy dry stock, when fodder was dear, and effected a considerable saving. It is profitable to feed it as a part of the ration at any time when fodder is scarce and prices are high. No ill-effect was noticed at any time throughout the whole six months of the experiment, and it is still being carried on to find if there will be any ill-effect produced by feeding it for a much longer period. A point worthy of notice is, that, although the stoves used worked well if properly managed, and the directions which accompany them are carried out, they will soon go out of order, if carelessly handled or negligently treated.

As a result of these experiments, demonstrations were started at the cattle camps in the

Ahmednagar District, to demonstrate to the public the value of prickly-pear in time of famine, and to induce them to feed it to save their cattle. The authors remark that hitherto no ill-effects due to feeding the pear were noticed.

Field Tests of Soils.

According to the *Scientific Manuring*, field tests are applicable only to ordinary soils as distinguished from alkaline and saline soils:—

(1) *Nature of Soil*.—This is to ascertain whether the soil is sandy, sandy loam, loam, silty loam, clay, loam, clay gravelly or stony loam. This can be found by feeling between the fingers for the grittiness of sand, the softness of humus and the stickiness of clay. *Sandy soils* contain more than two-thirds of sand; *sandy loams* half to two-thirds of sand; *loams*, clay and sands in almost equal quantities. *Heavy clay* soils contain more than two-thirds of clay; *clay loams* half to two-thirds of clay. *Silt loam* or *alluvium* consists largely of silt with a small amount of sand, clay and organic matter. *Gravelly loams* are from quarter to two-thirds coarse grained gravel; the remaining fine soil may be sandy loam, silt or clayey loam. *Stony loams* are one third to three-quarters sandy, silty or clay loam, the remainder being rock fragments of larger size than the gravel. The above soils may be black or dark coloured, red or brown colored whitish or light coloured.

(2) *Reaction or Condition of Soil*.—This is to find whether the soil is alkaline, slightly alkaline or normal, neutral, slightly acid or acid. This can be tested with the help of litmus test papers. About 5 palls of soil should be taken in a porcelain dish and made into a thin paste with soil-water or irrigation water, and a strip of red litmus paper dipped into it. If the red paper readily turns blue, the soil is alkaline; if it turns *light* blue slowly and gradually, the soil is slightly alkaline or normal. If it produces

no change of colour in the red paper, introduce a strip of blue paper. If both the red and blue papers are not affected, the soil is neutral. If the blue paper turns light red, the soil is slightly acid. If the blue paper readily turns red, the soil is acid in reaction. The slightly alkaline reaction is the normal or sound condition of soil. All others require modification in manures. Litmus test papers can be had from any Chemist's shop in Madras.

(3) *Humus*.—The amount of humus in the soil can be ascertained only by the feeling. When it feels soft, the soil may be said to be fair in humus. The deficiency or poorness of this can be found out in the same way by the predominant feeling of grittiness of sand, of stickiness of clay or salt.

(4) *Lime*.—The soil may be rich, fair, sufficient or deficient in lime. The thin paste (made in Test 2) should be stirred with a glass rod till all the air bubbles have escaped and a couple of ounces of Hydrochloric Acid are poured on to it while stirring. If the soil effervesces briskly, lime in the soil is sufficient. If there is no effervescence or if the effervescence is so slight as to be scarcely noticeable, it is certain that the soil is very poor or deficient in lime.

Land for Trial Crop.

If you are trying any new crop or new method of cultivation for the first time, do not select your worst land or your best land, but try it on land of average quality. If you try it on your worst land without any previous experience, the trial may fail; while if you try it on your best land you may be inclined to discount any improvement on that account. On land of average quality, you will at once see if a new crop or method pays, you can then with confidence try this on your best land and you will have gained experience which will help you in making it a success on your poorest land.

The Co-operative World.

Co-operation among Farmers.

In this book on *Co-operation in Agriculture*, Mr. G. Harold Powell, states that co-operation in agriculture is a necessity because the farmer cannot struggle single handed against adverse conditions. Mr. Powell does not minimize the difficulties in the way of agricultural co-operation—the preference of the farmer for self-dependence, his comparative inexperience in organized activity, his disposition to interfere with the management of an undertaking, and the fierce attacks to which co-operative enterprises are sure to be subjected if they threaten the profits of concerns which now levy tribute on producer and consumer. Owing to these causes and some others, many attempts at co-operation have failed. Many, however, have succeeded in spite of such obstacles. In cattle-breeding, in the sale of grain, fruit, eggs and butter, in the purchase of supplies, in the improvement of crops, in spraying and fumigation in irrigation, insurance and telephone service, many farmers have found combination practicable and profitable. It is claimed that the great increase in the yield of corn in the Central West in recent years is due to the work of the Corn-breeding Association. The California fruit growers appear to have reduced the cost of packing lemons and oranges one-half. One of the California fruit associations with a capital of £500,000 has saved its stockholders £80,000 in a year in the purchase of boxes and other packing supplies. One hundred and fifty township mutual insurance companies have been formed in Minnesota since 1875, and not one has failed.

But it does not follow that co-operation will solve the farmer's problem. That problem is, of course, how to get full the value of his products from those to whom he is obliged to sell them.

He does not get it now. "Everything he buys," says Mr. Powell,—“food, wire, nails, twine, fertilizer, transportation, the telephone—is purchased from organized capital, often operating as an unregulated predatory monopoly. Everything he sells—cattle, milk, wheat, poultry, eggs, fruit—is sold to organizations of capital, which, also, may, operate as a predatory combination, or he may consign his produce to middlemen who, as dealers in the same product, are competitors of the farmers, or to commission merchants whose operations as semi-public agents are generally entirely unregulated.” And if we ask how it is that predatory combinations have such power, there are due to railroad discriminations in furnishing cars and extending transportation facilities to competitors of farmers organizations, unreasonable freight rates, the refrigeration troubles of the milk shippers, the need, repeatedly urged, of guarding farmers, organizations from being captured and controlled by those whose interests it is to destroy them. All this indicates clearly enough the main features of the farmer's problem. Admitting that isolation is doomed and that co-operation is a necessity, there is still much work to be done before co-operation can realize anything like its full possibilities.

Co-operative Education.

In the Provincial Co-operative Conference at Poona, Mr. N. M. Joshi of the Servants of India Society read an instructive paper which dealt with the above subject.

The Co-operative movement, as testified by the number of societies formed, is growing year after year, and as the number of societies increases, it becomes increasingly necessary that their members should have a thorough understanding of the principles of co-operation. An educational propaganda must therefore be set

up for the benefit both of the members of the societies and of those who assist in their formation, if the movement is to maintain the steady advance it has achieved so far.

Practically no effort is made to educate the masses in the elementary principle of co-operation. There are hardly any books or even pamphlets or leaflets on the subjects written in vernaculars. If the movement is to take a firm root in the country this matter cannot be neglected any longer.

The education work done by the Co-operative Union at Manchester may be commended to the notice of co-operators in our country. This body which is supported by a large number of co-operative societies and individual co-operators engages itself solely in educating the public in principles of co-operation and in spreading its propaganda by—

- (1) maintaining an up-to-date Library,
- (2) issuing useful bibliographies,
- (3) issuing and distributing leaflets and pamphlets,
- (4) arranging lectures sometimes illustrated with lantern slides,
- (5) and holding Conferences from time to time.

OUTLINES OF A SCHEME.

To bring work here on similar lines will require active support of co-operative societies and co-operators. No one society, much less an individual, can undertake this work. It is therefore necessary that an organization to be called "The Bombay Co-operative Education Union" should be started in a central and convenient place like Bombay which will (1) provide facilities by starting a Co-operative Library, to those interested in co-operation to study the subject fully; (2) issue literature in English and in the principal vernaculars, on the different problems of co-operation, to be distributed free or at a cheap price for the education of the masses in the principle of co-operation; and (3) take such other steps for popularizing the movement, such as starting a monthly journal solely

devoted to co-operative subjects, or arranging lectures on co-operation by honorary or paid lecturers or starting classes to train co-operative workers.

FINANCING THE WORK.

If a well thought-out scheme could be formed it should not really be difficult to finance it. At first only a small beginning may be made and, the work should be allowed to go on as more funds become available. Moreover the nature of the work is such that it involves no permanent responsibility. The work can be easily expanded or contracted according to the funds in hand. Until the funds permit a separate place should not be hired and a clerk on Rs. 25 should be the only establishment entertained in the beginning. According to Mr. Joshi, money required for the purpose may be raised by the following means:—

1. *Grants and subscriptions from Co-operative Societies.*—For the financial support of the scheme more reliance will, of course, be placed on the contributions from co-operative societies. According to the Act the societies are allowed to set apart a portion of their profits for educational or philanthropic work, after provision has been made for the statutory Reserve Fund. If the societies be persuaded to pay even a fourth of this sum for this purpose a sum of Rs. 1,500 may, under the present conditions be made available for this work.

2. *Government Grant.*—If an application for a grant of Rs. 1,000 be made to Government with support of the Conference, there is no reason why it should not receive favourable consideration at their hands.

3. *Subscription of individual Members.*—The growing interests in the subject that is being evinced justifies an expectation to raise a fairly good sum by means of the subscription of individual members also.

4. *Donations.*—This source of income will, of course, be variable.

The Ranchi Co-operative Conference.

The second Provincial Co-operative Conference was opened on October 5th, by Sir Charles Bayley, K.C.S.I., at Ranchi.

Sir Charles spoke of the progress of the Province and said:—

On March 31st, 1913, there were 597 societies in existence. At the close of the last financial year their number had risen to 822. Fifty-five more societies had been started by the end of May and the total number now exceeds 1,000. In the twelve months ending on March 31st, 1914, the membership of the societies had risen from 30,673, to 50,804 and even when allowance is made for the fact that some 9,800 members who belong to both non-agricultural and agricultural societies have been counted twice over, the increase still comes to over 10,000. In the same period the working capital of the Central Societies has risen from 1½ to 8 lakhs of rupees and that of the agricultural societies from 8½ to 13½ lakhs.

Apart from expansion which can be shown in figures, other noticeable developments have taken place. Of these the most important is the establishment of the Provincial Bank. A proposal to start an institution which should finance the Central Banks and enable them in their turn to finance the societies was laid before the last Conference with the result that after very careful discussion the member resolved that the Provincial Bank was very necessary, and that the scheme drawn up by the Registrar appeared sound and workable. Steps were then taken to give effect to this scheme and a full account of the Bank and its history will be found in paragraph 10 of Mr. Collins' report. As you will see, its funds are provided by a cash credit of 4 lakhs of rupees advanced by the Bank of Bengal, on the security of shares taken by guarantee shareholders and by a capital of 600 shares of Rs. 500 each. The guarantee shares have been taken to the extent of one lakh of rupees each by the

Maharaja Bahadur of Hathwa, the Hon. Raja Kirtan and Singh of Banaili, Rai Bahadur Hari Har Prasad Singh of Dumaon and Mr. P. C. Lall of Purnea, to all of whom gratitude and credit are due for their public spirit and readiness to support an institution which promises to be of the utmost value. Of the Rs. 500 shares, one-half has already been taken by the Central Banking Unions. About the rest there is no particular hurry, but I may point out to persons having money in hand that they could hardly do better than deposit their funds with this Bank. Interest at 5 per cent. is offered during the ensuing cold weather and it is difficult to imagine an institution which provides a better guarantee of safety.

Sir Charles Bayley also referred to the dangers of overfinancing the ryot, the usefulness of co-operative societies in promoting primary education and the desirability of big landlords assisting the movement with profit to themselves and their tenants.

Co-operative Supply of Implements.

Among the many interesting papers read at the Co-operative Conference recently held at Poona that contributed by Mr. K. B. Bhadrapur on the "Co-operative Supply of Agricultural Implements" was notable. After the introductory remarks emphasizing the importance of the supply of Agricultural Implements, Mr. Bhadrapur recommended the following propositions:—

(1) That Co-operative Societies which are a ready-to-hand institution may be utilised as a medium of popularising improved implements and encouraged to purchase and keep in stock for members' use such of them as are recommended by the Agricultural Department.

(2) That implements tried and found serviceable by the Agricultural Department should in early stages at least be sold to societies at cost price, with a view to popularising their use.

(3) That when a society obtains sanction from the Registrar of Co-operative Societies to purchase an implement, an agricultural overseer

should be sent to the place to see whether the one suited to answer its purposes is purchased.

(4) That the Agricultural Department should undertake to supervise from time to time the working of such implements, with a view to watch and guide their progress.

(5) That the Agricultural Department should, as soon as possible, communicate its experiences of experiments of new implements to societies, and recommend the useful ones for their adoption.

(6) That societies be allowed to buy such implements out of their reserve fund at the discretion of the Registrar.

Co-operative Societies in Assam.

The annual report on the working of Co-operative Societies in Assam for the year ending March 31st, 1914, states that the number of co-operative societies rose during the year under report from 188 to 249, the number of members from 10,945 to 13,629 and the working capital from Rs. 5,56,098 to Rs. 6,84,805. The reserve funds of central banks and unions increased from Rs. 4,109 to Rs. 6,125, and that of agricultural and non-agricultural societies from Rs. 43,093 to Rs. 52,954. The movement is still, in Assam, at a stage at which numerical expansion is less important than organisation on sound lines and the inculcation of sound principles, and the Chief Commissioner is convinced that any considerable development on safe lines is impossible except under the guidance of an officer who can devote more personal attention to the guidance of the movement than is practicable under existing arrangements. The necessity for the creation of a new post in order to provide for such an officer has been accepted by the Government of India.

Co-operative Possibilities in Mysore.

The Mysore Agricultural Committee have appointed three lecturers under the direct control of the Registrar of Co-operative Societies for devoting their full time to organise co-operative associations for the benefit of the agricul-

tural population. This will be productive of beneficial results, if continued for a number of years. There is a wide field for the development of co-operation among the large body of persons permanently depending on the cultivation of lands for their subsistence for rendering effective aid in obtaining, at minimum cost and without delay, agricultural implements and machines, seeds, oxen, capital for current expenditure, payment of kadayam and for meeting the most necessary domestic expenses and for organising exports and imports of agricultural produce and agricultural industries from and into village centres. The ultimate aim of Co-operation should be to place at the hands of raiyats an agency which by reason of honorary work willingly done and the close supervision and guidance of Government officers, specially appointed for the purpose, would provide them with every kind of facility and also extricate the more solvent among them completely from indebtedness and place them on a par with the farmers in advanced countries in the West. But this is a work of time and has to be pushed forward with vigour and caution and without dismay at the obstacles which obstruct our progress. The Committee in Mysore have recently made a commencement in the direction of collecting and publishing, from time to time, statistics in regard to the number of raiyats actually receiving help from co-operative societies.

A Co-operative Building Society.

Co-operative Building Society has started in Ootacamund. It has for its objects the following:—(1) to build or own houses on behalf of the Society, (2) to enable members to build, rebuild, repair or overhaul their houses with the aid of loans advanced to them (to acquire land for the erection of houses and to lay roads wherever necessary), (3) to construct houses for members, (4) to erect common buildings as may be required for common use, (5) to undertake such other works of common utility, as may be decided upon by the general body of members from time to time for other purposes of the Society, (6) to construct and maintain water works and drainage work of common utility, (7) to further every kind of undertaking connected with the housing question, and (8) generally to help the Municipality in its endeavour to remove the congestion in the town by the construction of houses.

News and Notes.

RELIGIOUS.

War and Religion.

The question has often been raised and answered variously according to the varying mental prejudices of inquirers whether the enterprise of war is compatible with the religious spirit. This difference arises from the fact that the word "religion," does not carry the same set of conceptions and sanctions, and does not move the inner springs of actions in exactly the same way. But we have no hesitation in saying that war is totally at variance with the Christian spirit. Those who are Christians and yet maintain that there are circumstances in which an appeal to the sword is justifiable, can only do so by bringing the uncompromising idealism of Christianity to the level of the world-spirit which is, in the language of the Christian Scriptures, at enmity with God. It seems to us to be a vain effort to elaborate the machine-gun from the morality of the Gospel, and Kruppism from the character of Christ. But say the apologists of war even in countries where militarism is not supposed to be of the same type as in the "philosophy of Potsdam," that if the strong oppress the weak, it is a paramount duty to overthrow the oppressor. From the point of view of this world, such a duty may be conceived but not from that of Christ. For if the real object be destruction of the wicked by means of physical force, it follows that we are resorting to that very brute force which is the theme of our detestation. That among men constituted as we are by our inheritance of age, long prejudices and deep-rooted antipathies, the settlement of international disputes should be referred to the arbitrament of the sword, may be admitted, but there is no room for holding that Christianity lends its countenance to the suppression of brute force by itself. This is

Satan casting out Satan. Such a disposal of our quarrels does not raise us to a higher level at all. The plea that a higher purpose is to be achieved by the use of military power degrades your ideal by such unnatural alliance, and throws the cloud of suspicion over all the proceedings.—*U. I. & N. States.*

Caste and Hinduism.

According to a Madras contemporary, Hinduism recognises that the undying Spirit passes from body to body and is the true Man; this idea is embodied in the well-known slokas of the *Mahabharata*, that the Shudra who shows Brahmana qualities is a Brahmana, and the Brahmana who shows Shudra qualities is a Shudra. According to this we may say that the Hindu who shows western narrowness, based on the importance of a single life, is a Westerner; while the Westerner who shows the eastern width, based on the character of the Inner Man, is a Hindu.

The narrow view is consonant with the modern orthodoxy, which decries the value of a statement made by a white person, and extols to the skies the same statement when made by a coloured person.

Such orthodox gentlemen who insist on the importance of maintaining the Colour Bar for their own narrow objects, should not object to the Englishmen maintaining it for theirs.

India—the Home of Religions.

India no longer belongs to the Hindus alone says the *Herald of the Star*. In her beneficent lap, rest many of the races and all the religions of the world. The East is the home and nursery of all the world religions, and India is the soul of the East. There rests in her that mighty genius of spirituality which has shaken the slumbers of the world, and given peace and sanctity of life to millions on the globe.

SOCIAL.

Social Forces in India.

The National Indian Association had a "social, meeting" recently at which Mr. Yusuf Ali, I.C.S. retired, gave a very interesting address on "Social Forces in India." Before the war broke out, we used to hear much about unrest in India. A great deal of this unrest, the lecturer said, was social rather than political. In its social aspect, at any rate, it was, to use Lord Minto's expression, "wholly justifiable unrest." The unrest was inevitable. Society in India is not static; it is being moulded by dynamic forces which are as interesting to study as they are elusive to describe. Many controversies have arisen about caste, much energy has been wasted in a static treatment of the subject. In fact, caste is still a moving surging current, though its direction changes and its intensity is modified in contact with the streams of other forces. The formation of Sabhas, he pointed out, is still embryonic, but holds out the promise of wider organisations. The structural transformation of the once purely socialistic castes into individualistic bodies is parallel with an analogous movement in the structure of the Joint Family. Though nominally a purely Hindu organisation, its chief features are curiously reproduced in Muhammadan and even the humbler class of Anglo-Indian circles in India. Its ideal is efficiency by division of labour in a self-sufficing family. Its degeneration into an agglomeration of drones gathered round a wage earner is sounding its death-knell. It is a mistake to speak of the "nascent" influence, of women. Women have a greater influence on Indian life in the generation that is passing away. But even in India the New Woman will not be denied. The Pardah is the standard under which the Old Guard of social conservatism fights. The fight will be a tough one, but mines are being laid by education, the printing press and the railway, and the issue though remote can scarcely be in doubt. Religion is a much greater

social factor in India than in the West, but its social standards are undergoing remarkable transformations. On the whole, the direction of social forces in India points towards aristocratic radicalism. One of the most potent social forces which will operate after the war, will be due to the experiences which our Indian troops will take back with them from Europe. The infiltration of ideas will then be "en masse" as always happens after a war, and the social leaven will, be both strong and wholesome. The social motto in India should be Shelley's:—

"Gradual paths of an aspiring change."

The Temperance Movement.

The cause of temperance has evidently been advanced by the war. For the Rev. J. Morgan Gibson, who travelled through Germany at the commencement of the war, has declared that drink was not obtainable and that the war was "going to be a teetotal war on Germany's part." England, as in the South African War, is not supplying drink to her soldiers, who are left free to buy wine if they choose, against the strong and sane advice of their head, Lord Kitchener.

In view of the immense benefits derived from the stoppage of the sale of vodka since the outbreak of war, the Russian Temperance Society petitioned the Tsar to forbid for ever the sale of spirits in Russia. The Tsar replied that he had decided long ago to cease the Government sale of alcohol. That means a loss of 93 million sterling annually to his Government.

There is no doubt that these decisions will conduce to the well being of millions of people. For the evils flowing from the partaking of intoxicants not only affect the individual drinker but his family and dependents. Those who have studied the science of heredity have testified to the fact that the morbid taste for intoxicants is transmitted by a drunkard to his descendants,

PERSONAL.

Babu Bhupendranath Basu

Mr. G. Subramania Iyer writes thus of the President Elect of the Indian National Congress:— He has done very valuable and eminent service to the country. He has been connected prominently with the Congress for over a generation and has done yeoman service towards the building up of its reputation and success. Of late years, he has been the most prominent figure among the leading men of the Congress. Though as a leader of the Congress his service to the country is invaluable, still as a member of the Legislative Council, both Imperial and Provincial, and as one whom the Government chooses to consult occasionally, he has spoken frankly and honestly for the good of the country. When he had occasion to preside over the Partition Day demonstration in Calcutta, it was said that he was losing the chance of entering the Executive Council of the Viceroy by so doing. A seat in the Executive Council had not the same attraction to him as the satisfaction of discharging his duty to his country. The task of Bengali leaders was not an easy one in those exceedingly trying times. They had on the one hand to avoid the suspicion, often times unwarranted, of the bureaucracy and of misguided Englishmen, and on the other to keep aloof from the temptation to fall into questionable positions which would expose them to criticism by right-minded men. Babu Bhupendranath, among others, by his sobriety and moderation, steered clear of both, while maintaining the agitation against the partition since October 16, 1905, until it was annulled on December 12, 1911, under the orders of His Imperial Majesty. He has been twice to England on deputation to serve the interests of his motherland. His speeches in England while he was on a deputation to that country to secure the annulment of the Partition of Bengal, received the approbation and applause of some

of the best English critics. There may be difference of opinion about the merits of the Bill which he introduced in the Viceroy's Council to bring about certain reforms in the Hindu marriage system. But that he was moved by a best regard for the social interests of his country there can be no question. Like many other leaders of the Bengal community he is proud of the character and bearing of the younger generation, a generation that have by their brave and patriotic deeds and by their sincere service to their fellow-countrymen, have entirely falsified the prejudiced and untrue estimate of the Bengalis by Anglo-Indians of former days. Thus if there is at the present moment any Bengal Indian whose sincere and devoted service to his country has entitled him to the highest honour which the nation can bestow on its servants, it can be said without hesitation that it is Babu Bhupendranath Basu.

Swami Vivekananda.

It is interesting to notice that Swami Vivekananda, who combined in himself much of that which is noblest in distinctively eastern and western qualities, entirely ignored the Colour Bar in his accepted disciples as well as in his friendships. Sister Nivedita was a far truer Hindu than many a lady with a coloured skin, and the Swami, who really believed in re-incarnation, fully recognised this. He found far more welcome in the West than he did in the East, before the West had acclaimed him, and he returned to India with a little band of western disciples.—*New India*.

The Late Mr. T. P. Mitter.

The death is announced of Babu Tara Prasanna Mitter, Manager of the *Bengalee*.

Babu Tara Prasanna was connected with the management of the *Bengalee* for a very long time. Before he was appointed Manager of the *Bengalee* he held the post of Librarian of the Ripon College. The present success of the *Bengalee* is greatly due to him. The deceased was connected with all local movements, both social and political and he was an ardent Congressman.

ECONOMIC PRODUCTS.

The Use of Milk Curds.

A paragraph in a recent issue of the *Times* calls attention to the uses that may be made of milk in industry. It says that "amongst the articles hitherto termed 'almost useless' is the curd from milk, but now the results of scientific experimentalists, especially those of Dr. F. Mollwo Perkin, have decided that it shall come into its own, and be no more despised. Casein, or curd of milk, is now a worthy substitute for metal and other solids. Articles made directly from skimmed milk include piano keys, imitation marble, non-inflammable combs, cigarette holders, an adhesive stronger than glue, and practically waterproof; a material for stopping up cracks in brickwork; imitation linoleum; a material for the dressing of linen and cotton fabrics; a preparation for conveying metallic lustre to fabrics; a solution to convert paper pulp into a mouldable condition and to make it waterproof; and many other articles of diverse form and use. In most cases the casein is curdled by means of acids when required for technical purposes and by rennet when utilised as a foodstuff."

Kapok.

Mr. M. Saleeby, Chief of the Fibre Division United States Department of Agriculture, Manila, in a bulletin (No. 26) on kapok points out that the annual yield of clean kapok from a tree of normal growth and under seven years of age may be placed at 350 or 400 pods. Trees between 7 and 10 years should average 600 pods or more. Reckoning that 230 pods produce (about 2½ lb.) of clean fibre, (about 2½ acres) containing 280 trees ought to yield 95,000 to 110,000 pods, which, at the rate of 230 pods to (2½ lb.) will yield 410 to 480. (922 lb. to 1,080 lb.) of clean kapok per year. From the 7th to the 10th year, a hectare (2½ acres) should produce about 640 kilos (about 1,440 lb.) The clean kapok averages from 55 to 65 per cent of the weight of the seed.

A tree which yields 3 kilos of clean kapok during the year yields also about 6 kilos of seeds. The value of kapok for the highest grades has gradually risen from 27 centavos (13½ d.) in 1900 to about 80 centavos (3s. 4d.) in 1907; and in 1912 the value continued to advance, reaching its maximum of 90 centavos (3s. 9d.) per kilo of 2½ lb. towards the latter part of the year.

The Reign of Rubber.

A quaint feature of the Press luncheon of the International Rubber Exhibition, was the menu card, printed on rubber, which contained, amongst others, the following dishes:—

Pickled rubber seeds.
Caoutchouc lamb cutlets.
Coagulated horseradish.
Kuala Lumpur ham.
Pressed beef (free from tackiness).
Gum elastic beetroot.
Rubber milk.
Pneumatic jellies.
Dividend dates.
Synthetic fruit

Tested, however, they proved to be old acquaintances in new guise.

The wide field for which rubber can be used is shown by the thousand and one rubber articles of which the most striking are:—

Noses, Hands, Legs, Arms, Ears, Teeth, Buttons, Tables, Wallpaper, Chairs, Picture frames, Carpets, Inkstands, Pens, Table lamps, Curtains.

Waste Sisal Fibre.

The United States Consul in the Bahamas, in a recent report to his Government, states that an excellent substitute for horsehair, which might be more extensively employed in the manufacture of cheap upholstery, has been found there in the waste made in cleaning sisal fibre. This waste, which represents from 15 to 25 per cent. of the material concerned, is twisted into rope, then dyed, and finally untwisted. The fibre retains the twisted character and is springy.

HINTS AND RECIPES.

Water-Proofing Concrete.

The United States Army Engineers have long used the following mixture in water-proofing cement: One part cement, two parts sand, three-quarter pound of dry powdered alum to each cubic foot of sand. Mix, dry and add water in which has been dissolved three-quarter pound of soap to each gallon. This is nearly as strong as ordinary cement, and is quite impervious to water besides preventing efflorescence. For a wash, a mixture of one pound of lye and two pounds alum in two gallons of water is often used.

To Clean Ivory.

The curators of the anatomical museum of the *Jardin des Plantes*, France, have found that spirits of turpentine is very efficacious in removing the disagreeable odour and fatty emanation of bones or ivory, while it leaves them beautifully bleached. The articles should be exposed in the fluid for three or four days in the sun, or a little longer if in the shade. They should rest upon strips of zinc, so as to be a fraction of an inch above the bottom of the glass vessel employed. The turpentine acts as an oxidising agent, and the product of the combustion is an acid liquor, which sinks to the bottom, and strongly attacks the ivory if allowed to touch it. Make a thick paste of common whiting in a saucer. Brush well with a toothbrush into the carved work. Brush well out with plenty of clean water. Dry gently near the fire. Finish with a clean, dry, hard brush, adding one or two drops (not more) of alcohol. Mix about a tablespoonful of oxalic acid in ½ pint of boiling water. Wet the ivory over first with water, then with a toothbrush apply the acid, doing one side at a time, and rinsing, and finally drying it in a cloth before the fire, but not too close.

Khaki Handkerchiefs.

Methods of dyeing handkerchiefs for the

troops on active service, in order to render them less conspicuous, are being sought. A correspondent sends the following:—

"I have noticed lately that people sending handkerchiefs for soldiers are asked to dip them in weak tea to make them khaki colour, white being too conspicuous. May I suggest that dipping them in a solution made by dissolving a pinch (about 16 granules) of permanganate of potash in three quarters of a pint of water would have the desired effect as regards colour, and have the advantage of being thoroughly antiseptic. This process will not stain the hands if they are washed immediately after. If a darker colour is required, leave the handkerchief to soak in the solution for five minutes instead of only dipping in.

"This is a very inexpensive method, as one can buy permanganate of potash for 1½d. per 1oz. packet."

To Banish Rats.

Rats are a constant source of worry to those who inhabit very old houses. Once the place is infested with them it is almost impossible to protect food, flooring, and other things from their attacks. Rats raid the poultry yard, and the noises they make at night are disturbing. Gas-tar, put into their haunts, will drive the pests away, more especially if a prisoner caught in a trap be smeared with tar and let loose into one of the runs; this will leave the odour of the tar in places otherwise impossible to reach. Eucalyptus and some carbon, such as is used for preserving clothes from moths, if put between rafters and flooring will certainly cause the creatures to decamp. Rats have a strong aversion to any pungent odour. The antidote, to be effectual, must be renewed occasionally. Good tabbies are precious, and should be sought for, and also all other means of destroying rats, including a good fox-terrier, who often picks up a rat as he goes round with his master. All new structures of any importance should have rat-proof floors of concrete.

LEGAL.

Some Income-tax Rulings.

"Justinian," in the course of his interesting "law notes" in the *Madras Times* gives a few of the rulings passed by the Madras Government under the Act. In Board's Proceedings, Miscellaneous No. 232-1482 R., dated 7th December, 1913, it is stated that the Government of India have decided that, until further orders, house-rent allowances and the annual rental value of a house occupied free of rent should not be assessed to income-tax. So that the party who lives in the house he owns is not bound to pay any tax on the rental value as assessed by the Municipal authority.

Again, according to Board's Proceedings Miscellaneous No. 201-1293 R., dated 21st October, 1913, and Government Order, No. 2972, Revenue, dated 9th October, 1913, it is laid down that where a landholder owns two buildings in the immediate vicinity of his lands, one of which is used for residential purposes and the other for storing agricultural implements, he is exempt from tax in respect of both these buildings. The exemption conferred by the Act is not restricted to a single building used for one of the purposes referred to in the proviso to section 5 (1) (c). The words "immediate vicinity" in the proviso should be construed as conferring exemption in respect of one dwelling house situated in the same revenue village as the lands are.

Sudras and Brahmin Temples.

The decision by Sadasiva Aiyar and Tyabji, JJ. in *Gopala Mooponar v. Dharamakarta Subramania Iyer* (1914 L. W. 675) is not as revolutionary or subversive of the Brahmin traditions and supremacy as it is supposed to be. The plaintiffs in the suit were members of the Elavaniyar Community and they sued for a declaration of their right to enter a temple in the Tinnevely District as far as the *non-guruhkal*

Brahmins could enter for purposes of worship and for a permanent injunction restraining the defendants from interfering with the exercise of their right. There was abundant evidence on behalf of the plaintiffs that they exercised similar rights in various other important centres of worship in the district, but both the lower Courts dismissed their suit on the ground that they had not sufficiently discharged the burden of proof that lay on them to show that they had a right to go beyond the *dhwajastambam* in this particular temple. Mr. Justice Sadasiva Aiyar holds, Tyabji, J. concurring, that the rule so enunciated throws an impossible burden upon a caste Hindu who wishes to worship in a temple. The burden of proof should be the other way, namely, he who insists that a caste-Hindu is not entitled to enter a Hindu temple for the purpose of worshipping the deity therein, should prove affirmatively the right so to exclude. Mr. Justice Sadasiva Aiyar's judgment in this case deserves careful perusal not so much for its discussion of legal principles as for the interesting observations and reflections it contains upon image worship, some aspects of ethnology, the origin of the caste system, how *class* sentiment has reinforced *caste* sentiment in modern India, the degeneration of *Kshatriyas* and *Vysias* into the position of *Sudras* owing to the repression by the Brahmins in the mediæval ages of Indian history, &c.

Post-Puberty Marriage.

A Bill has been introduced into the Madras Legislative Council by the Hon. Mr. V. S. Srinivasa Sastri to declare that post-puberty marriages are legal. It will be remembered that a question was raised on this point some months ago, and that a number of eminent lawyers were asked their opinion on the matter. A majority considered that such marriages were legal, but some differed. It is thought that the question should be placed beyond all possibility of doubt by passing a short Bill, not to make the marriages legal, but to declare that they are legal.

INSURANCE.

With and Without Profit Policies.

According to an insurance authority, the principle of basing non-profit rates on a formula which in one or more directions cuts matters too fine, relying on making up any deficit with regard to one particular by means of a surplus in respect of another, is a dangerous one. The non-profit policyholder ought to understand his position to be in a way analogous to that of a preference shareholder; he paid a rate which made his position perfectly secure against all contingencies, except those of the insolvency of the office, *i.e.*, he was not to be affected by whatever was done by the office in the way of earning or failing to earn profits. He ought, therefore, to be contented to pay for his position exactly as it was, and not to pay for a non-participating policy whilst asking to be provided with a compromise between a non-participating and a participating assurance.

Periodical Medical Examinations.

Periodical Medical Examinations for Everybody, as a means of detecting and checking disease in its earliest stages, were earnestly advocated by Dr. Victor C. Vaughan in an address on the subject of preventive medicine before the seventh annual meeting of the Association of Presidents of Life Insurance Companies. Looking into the future, the speaker told of the time when "everybody goes to a physician twice a year and undergoes a thorough examination. The result of this examination is stated in a permanent record, and no two consecutive examinations are made by the same physician, in order that a condition overlooked by one may be detected by another. Cases of doubt, or in which there is difference of opinion, are referred to special boards." Dr. Vaughan indorsed the proposal that the insurance companies offer their policy-holders free medical re-examination at stated intervals; a plan that would probably benefit the companies financially through the increased longevity of the insured.

DIARY OF THE WAR.

1st Nov.—Allies advance on the Yser; stubborn German resistance. Russian successes in East Prussia and on the Vistula. Turkish breach of neutrality; attack on Odessa. Statement by H. E. the Viceroy.

2nd Nov.—Fighting in Belgium and North France. German attacks repulsed. President Poincaré visits the Allied Armies. Heavy German losses in East Prussia. Russian advance in Prussia and Galicia. War declared with Turkey. H. H. the Nizam's Manifesto. Turkish raid in the Black Sea. The German forts at Kiaochao silenced. British cruiser *Hermes* sunk by submarine in the Straits of Dover.

3rd Nov.—Stubborn resistance by the Austrians on the River San. Germans retreating. Treacherous Boers accounted for. The Viceroy's second manifesto about Turkish crisis. Muslim holy places to be protected.

4th Nov.—Lille occupied by the Allies. German retreat in Poland. Akaba shelled by H. M. S. *Minerva*. Landing party destroys the fort.

5th Nov.—Fighting on the Yser. Severe German check. Attack on Ypres; its importance to Germany. German mine-laying raid off Yarmouth. Attack on the destroyer *Halcyon*. British submarine sunk. Germans on defensive in East Prussia. Bombardment of the Dardanelles. H. H. the Aga Khan's message. Bombardment of Tsingtao.

6th Nov.—Germans retire from the Yser. German retreat in East Prussia. Russian successes at Kielce against Austrians. Russian Army in the Caucasus crosses the frontier and defeats Khurdish troops. Resignation of Turkish Ministers.

7th Nov.—Heavy German losses round Ypres. Austrians routed in Galicia. Annexation of Cyprus by Great Britain. Russian occupation of Bayazid. Russian battle-ship *Sinope* sunk in the Black Sea. Another Turkish Minister resigns.

8th Nov.—Violent fighting round Ypres. Bombardment of Batoum. Turks repulsed at Alaschkert. Naval engagement off Chili. Sinking of the H. M. S. *Good Hope* and *Monmouth*. Surrender of Tsingtao.

9th Nov.—German concentration round Ypres. President Poincaré at the front, visits the Belgian Sovereign. Kaiser's narrow escape from an aerial bomb. Germans retreat beyond Vistula and Austrians in Galicia. Bombardment of Songulak by Russian Black Sea Fleet.

10th Nov.—Germans foiled at Ypres. The Austro-German line broken. Retirement on Cracow and Posen. British occupation of Fao.

11th Nov.—Russian occupation of Soldau. The Guildhall Banquet: Review of the war. End of the *Emden* and *Koenigsberg*. Attack on Caucasian fort by *Breslau* driven off.

12th Nov.—Fierce fighting between sea and Armentieres. Germans driven back in East Prussia, by a double turning movement. Germans defeated at Lyck. Warta positions abandoned. German preliminary offers of peace rejected by Russia. Turks repulsed in Armenia. Germans in the Congo driven out by French.

13th Nov.—Germans capture Dixmude. German Artillery reinforcement at Ypres. Russians nearing Masurian Lakes. Vigorous offensive in Galicia. Re-opening of British Parliament by H. M. the King. *Niger* sunk off Deal torpedoed by German submarine. Turks repulsed in Armenia. Russians occupy Alaschkert Valley.

14th Nov.—The fight for Ypres. Russians capture Johannisberg. Reinvestment of Przemyśl. General Botha defeats rebel commando. Turks routed in Armenia.

15th Nov.—Struggle for, Masurian Lakes. Germany's new position. Russian investment of Cracow.

16th Nov.—Severe fighting in Argonne. Death of Earl Roberts on field of battle in France. German retreat from Thorn. Turkish contemplated attack on Suez Canal abandoned. Two German submarines sunk in Straits of Dover. Austrian cruiser *Kaiserin Elisabeth* and German gun-boats sunk at Tsingtao.

17th Nov.—Battle developing from Plock to Warta River. Russian advance on the Carpathian Passes. Russian War levies on Prussian towns. British War Bill passed; a War loan of £500 millions. George's statement.

18th Nov.—German attempt to cross the Aisne repulsed. Germans driven from left bank of Meuse. Bombardment of Rheims renewed. Investment of Cracow; German retirement.

19th Nov.—Second Indian Contingent arrives at Marseilles on the 7th instant. Germans using expanding bullets. Capture of Shaik Said and forts in Straits of Bab-el-Mandeb. German mine-laying activity; British retaliation.

20th Nov.—Fighting at Ypres. Severe attacks on British repelled with great loss. Fighting on Vistula Warta line; Russian vanguards retiring. Russian advance in East Prussia on Masurian Lakes. Rupture of relations between Turkey and Japan. Russians bombard Trebizond and capture of Datch. Naval action in Black Sea. *Goeben* badly damaged. German Fleet in Baltic bombards Libau.

21st Nov.—Desperate fighting on Vistula and Warta.

22nd Nov.—Serious situation developing in East Prussia. Russian Fleet in Black Sea bombards Khopa. Turkish defeat near Erzeroum.

23rd Nov.—Persistent German attacks at Woivre hurled back by French. The aerial raid on Frederickshaven Zeppelin shed. The German march on Warsaw foiled; commencement of a retreat. Attack on Black Sea Port by the *Hamidieh*. Conference of Allied Ambassadors in Italy.

24th Nov.—Struggle for Ypres, violent German bombardment. Heavy cannonade in Soissons and Vailly. Sir Arthur Barrett's occupation of Basrah.

25th Nov.—Bombardment of Zeebrugge by British warships. Reported bombardment of Cracow. Russian successes in Armenia.

26th Nov.—The battle of Lodz. Severe defeat of Germans. Portuguese intervention in the war.

27th Nov.—Four warships, bombarding Zeebrugge returned to port. A battle proceeding in Serbia, at Lazerevat. Persia reaffirms her strict neutrality. The Government of India prohibits absolutely all navigation of aircraft over or into British India, including territorial waters.

28th Nov.—Statement in House of Commons by Mr. Churchill about present Naval situation. Dixmude retaken by French Marines. General Joffre receives the French Medal for Valour from President Poincaré. 2,000 Austrians captured near Bochnia; also 10 guns. Montenegrin victory over 8 Austrian battalions in the region of Vichegrad.

29th Nov.—Ameer of Afghanistan has declared neutrality with reference to the war with Turkey and has expressed regret at the Ottoman action.

THE WEALTH OF INDIA

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Current Topics

BY ECONOMICUS.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

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The Finance Member with the Government of India has a hard task to perform in husbanding the resources of the country affected by the disturbance of the war. We see that the revenue under several heads is much below the mark. There is a falling off under customs and the gross railway earnings show a deficit of about two crores of rupees. What the financial position will exactly be at the end of the official year is more than one can say at present, but there is evidence to show that while expenditure is steadily in excess of the budget provisions, there are big gaps on the revenue side. One would like to have a clear statement of the financial condition and outlook from the Government so that the public could judge where the country stands. The course taken by the British Chancellor of the Exchequer in submitting to Parliament a luminous exposition of the position of financial affairs is worthy of imitation in this country, though there is no analogy between England and India and the sacrifices the British public will be called upon to make will be comparatively much heavier. The Finance Department of the Government of India is now engaged in making forecasts for the coming years and in preparing a financial statement to be placed before the Supreme

ding the military and naval authorities—would of course like that the course of the allies should be one of uniform triumph. But war is always a terrible business, full of risks and uncertainties and in the present war, especially, the enemy against whom we are pitted, is a tough adversary who will take an amount of hard and prolonged beating to be finally crushed. The operations again, are going on on an extensive theatre, on land and water and also in the air. The proverbial insularity of the ordinary Britisher accustomed to immunity from hostile attack which his country has enjoyed for over a century and a half, cannot bear the thought of German warships and airships even attempting to approach the coast of his country. Ignorant people would therefore mainly suggest that the powerful British fleet should draw out into the open the enemy's warships hiding in his harbours, smash them to pieces and have done once for all with the whole business. One can only pity the ignorance of these people who presume to teach its duty to the Navy which, however, must be congratulated upon the splendid resolution and calm courage it has displayed in carrying out its well thought out plans, undeterred by the silly impatience of the unintelligent populace. Germany's naval raid upon the British coast was more an indication of its desperate situation than of its real strength. It could have absolutely no effect upon the prospects of the war except to facilitate recruiting and intensify patriotism in Great Britain. In the Western theatre, the allies are steadily advancing. The position of Austria humiliated by the crushing defeat inflicted upon it by Serbia and rendered critical by internal dissensions and discontent, has become almost critical. The Turks have failed, as was expected, to give even a decent account of themselves and have lost the sympathies of those on whose support they must have largely counted. They have been duped by Germany which has made a cat's paw of the military clique at Constantinople led by

Enver Pasha. Valuable lives and resources have been lavishly wasted by the enemy in Poland, but Russia has proved more than a match for Germany. The Khedive of Egypt is another dupe ruined by the intrigues of the enemy and that country has now been declared to be a British Protectorate. Germany's plans have grievously failed on all sides and her collapse is only a question of months. This moral conviction of ultimate success does not, however, mean that the victory will be an easy one and that the path of the Allies is strewn with roses. By no means is the task of crushing a determined and resourceful enemy like Germany so simple as certain optimistic people imagine. Nor, however, is the prospect so gloomy as it is pictured to themselves by pessimists. Without relaxing its efforts and with unassailable resolve, the Empire must go on with calm courage and confidence, and its cause, which is also the cause of liberty and civilization, will be crowned with complete success.

How will the European map be reshaped after the conclusion of the war and what will be its effect upon western civilisation as a whole? These are questions most hotly debated by publicists in England. The present war, we are told, will not have accomplished its purpose until it has put an end to all war. German militarism must be killed outright and an era of peace and progress ushered in. Armaments will be limited, the independence and integrity of small nationalities will be religiously respected and democracy established everywhere as sovereign power. We are not permitted to have a glimpse of the future, and though we do not take a low view of human nature, we are afraid these dreams of well-meaning people are not likely to become accomplished facts. When Germany is crushed however liberally she may be treated, the defeat and the humiliation will rankle in her heart. She will bide her time and prepare for

another struggle. Though the European Powers may decide to maintain peace in Europe, the ambitions of some of them outside that continent, will create animosities and war is bound to come in the future however distant. The Germans have avowedly involved the world in a destructive conflict because she wants more territory, greater power and the position of leadership. According to German philosophers, war is to their people a biological necessity. How to exercise this spirit of militarism and brutal force from Germany's head, that is the problem. And by no means is it an easy problem, and it is to be seen how it will be tackled in practice. So far as India is concerned, it is gratifying to notice that her spontaneous loyalty and sacrifice are now being frankly acknowledged and even the much-abused and misunderstood educated classes are being given their due. In the House of Commons the other day, Mr. Roberts recognized that the loyalty of the educated classes, was based on reason and the recognition of facts and went on to observe:—"It was premature to anticipate the consequences of India's participation in the war, but a partnership in spirit with us on the battle field could not but alter the angle from which henceforth we would regard the problems of the Government of India." These remarks indicate the welcome change which the war has wrought on the General British attitude towards India and are a happy augury of the reforms for which educated Indians have been pressing all these years.

Mr. K. L. Datta and his assistants amply deserve the compliment paid to them by the Government of India for the care and industry which they brought to bear on the arduous task of collecting and collating statistics and views with regard to the question of high prices. We agree with the Government when they observe that "whatever view may be taken of the conclusions reached

in regard to individual issues arising out of the terms of reference—some of which inevitably involve controversial points of economic theory—the report as a whole must be regarded as a very valuable contribution to the recent economic and financial history of India." Eminent economists themselves are at variance with regard to the causes of a rise or fall in price levels and especially as to the influence of currency on their equilibrium. The problem of prices is also one of the most complex with which economists have to deal and it is an extremely difficult task accurately to estimate the influence of the various factors involved in the phenomenon. World causes, the increased output of gold, the extension of the means of communication in India, enormous expansion of trade and credit, changing habits of the people—all these must have co-operated in various degrees to raise prices in this country. Leaving aside the operation of these causes for the present and without entering upon a discussion of the question of the relation of Government's currency policy with prices, we may here observe that we are entirely at one with Mr. Datta when he concludes that the high prices of food-grains in India were caused by the disparity between the supply of food stuffs and the demand for food as measured by the growth of population. The Government of India have taken great pains to controvert this position of Mr. Datta and considerable space in their Resolution has been devoted to a refutation of his argument. We feel that the attempt of Government to show how what they call his generalisations must be qualified by certain circumstances has entirely failed and that Mr. Datta is well supported by facts and figures—even with the qualifications suggested in the Resolution—when he lays down that "the food supply in India, compared with the demand, both internal and external, reached its lowest level in the quinquennium 1905-09, and this shortage of supply has doubtless contributed, in no small measure, to the unusual rise in

prices during that quinquennium." The pressure of population on the food-supply in the country is indisputably a potent cause of the rise in the price of food grains and that pressure is not certainly counterbalanced by extended acreage or increased productivity of the soil.

Russia—slow moving Russia—which was, in the early stages of the war, characterised even in the British Press as the steam roller of the East, has astonished the Allies and the whole world by its wonderful activity and agility. It has proved more than a match for the many army corps the Kaiser sent into Poland and the millions of Austrian troops that essayed to block its path. The Austrian Army was driven like chaff before the wind and its resistance was pulverised. The enemy is now at bay and is doing his utmost to stay the onward march of the Slav. But caught between two mill stones he is bound to be crushed, exhausted as he must be by the prolonged strain of the desperate conflict. The methodical way in which Germany has gone to the business of the war is really wonderful. No detail, however small, has escaped attention. The spy system of Germany has been reduced to a science and England and France were honey-combed with the enemy's spies for years before the outbreak of war. Barbers, cooks, writers, shop-keepers, were in State service, receiving State pay and serving the fatherland in this curious fashion undreamt of by the British and the French. The college professors and publicists are doing their utmost to win public opinion for their nation in neutral countries by means of lying tracts, pamphlets and papers. A regular campaign is being conducted in America whose sympathy Germany badly wants and even in China where Chinese newspapers have been purchased and used as instruments of the German propaganda. This secret of German character may

be a revelation to many, but to those who had studied the people closely it was quite clear. A writer who published an appreciative book about the Germans four years ago, opens his first chapter with these words:—"These people are wonderfully methodical!" is a phrase often uttered by the foreigner visiting Germany for the first time. Without knowing it, he has hit on the principal reason of Germany's prosperity. Signs of method and discipline are visible on every hand. Well ordered progress is apparent everywhere—not that frenzied, demonstrative progress observable in newer countries, but an organized forward movement in which every detail seems to have been well considered and nothing left to chance." The Germans, it will thus be seen, are nothing if not methodical and this German trait is noticeable as much in the work of destruction and wanton cruelty as in construction and science! All accounts of Germany really go to show that Germany has long gone mad over the acquisition of a world-dominion and it feels that all those who censure its cruelties, its immoral violence and its brutality, are the jealous enemies of its progress. There is indeed a method in Germany's madness.

Many discerning people are saying that the present struggle in Europe is not a war of men upon men but a clash of conflicting ideas and ideals. Whether on the conclusion of the war, the world—and especially the European world—will witness any revolution in national ideals and policy, the future alone can show. But one thing that is noticeable in Great Britain at the present moment is that, at any rate under the stress of the war, the free trade principles which England has been so strenuously adhering to have been given the go-bye in certain matters. The doctrine that "natural liberty" and complete freedom of competition, like the eternal verities, admit of no compromise, has long ago been exploded, and the British nation

British Swadeshi and Indian Swadeshi.

has hugged it to its bosom not because it is sacrosanct and absolutely immutable, but because it has proved most suitable to the peculiar conditions of that manufacturing country. England was almost fanatically protectionist while it suited her interests to follow that policy, and we have no doubt, she will return to the old ways if she finds that free trade is no longer any good to her. Every one admits the theoretical advantages of freedom of exchange and competition, but when we descend from the high regions of theory to practice, the doctrines have got to be modified. The "Capture-the-enemy's-trade" campaign now vigorously carried on in England may perhaps be excused as a temporary departure from the principle of freedom of exchange, justified by the exceptional situation created by the war. Apart from the patriotic element, the movement has arisen out of a strong desire to injure and cripple the enemy, though there is in it a distinct intention to promote British trade and industry. Advantage is being taken in England of the present situation to start new industries in which Germany has long excelled and the British Government is cordially co-operating with capitalists and manufacturers to

place them upon a sound footing. The State in Great Britain is assisting the movement, which exactly corresponds to Indian *Swadeshi*, with capital and otherwise—a proceeding which it would be difficult to reconcile with its usual attitude of 'hands off' in such matters. The dye-industry is thus being bolstered up in England against all the canons of free trade presumably on the ground that without some State assistance, the industry which is almost a German monopoly, can never be started in Britain. Well, this is exactly the contention of Indian protectionists who find that what is exceptional in England, is normal in this country. England is all right with free trade tempered occasionally with protection. We want the State in India not to stand aloof and look on, but extend their active help to build up indigenous industries because without a large measure of this assistance the industrial outlook in this country is hopeless. A small measure of protection may be sufficient in England, but a much larger measure is essential in India. The principle is the same; the difference is only of degree. What is good *Swadeshi* in England must also be good *Swadeshi* in India.

Articles.

COLOUR AND HEALTH

BY T. CURRIE, *Member of the Philosophical Institute.*

At last, some genius has awakened to the fact that colour in male evening clothes might be an advantage.

Why stop at evening clothes? Why should not men, collectively, wear all the colours of the rainbow.

Is the human species so much above that of the animal that we can afford to despise Nature's teaching, and permit the women to wear all the brilliant shades, while men are

content with dirty drab greys, and browns, and blues, and sordid black.

We all know the gloomy effect that a series of sunless days has on our temper. The whole outlook on life suffers. What then must it be to our bodies—intended by Nature to be bathed daily in sunshine and fresh air—to be encased eternally in sordid shades, from which all brilliance is excluded.

We know from continental travel, that the

cheerfulness of the peasantry varies, not so much with the comparative climatic conditions, nor with their relative poverty, nor with the bleak, sterile and gloomy or lush countries in which they live, as with the clothes which they wear.

The cheerful peoples are those who wear few clothes, and those few of white material or of brilliant shades. Even where they are driven almost lower than their own beasts by taxes and imposts, their cheerfulness remains when they remain faithful to bright colours in their wearing apparel. We, travellers, pity their barbaric tastes, looking down on them from our highly cultured position which teaches us to wear drab shades. But if we had to attempt to live under the conditions in which they retain their cheerfulness, our culture would not support us as their gaudy garments do.

It is not hard labour, or grinding poverty that makes a people dull, and breaks its spirit, its health, and its stamina; but the dull lugubrious atmosphere in which it lives and breathes and has its being.

In a state of nature, the animal kingdom, man as well as beast, breathes and sees, tastes and hears with the whole body, not merely with lungs and eyes, tongue and ears.

Women are consciously in many cases, though probably unconsciously in most, daily feeding their nerves and all their senses by wearing brilliant shades which are now fashionable, as well as increasing their vitality by the gradually enlarging surfaces of skim, which they bare to the health-giving atmosphere.

Under the circumstances, it is no wonder that the more intellectual modern women—many of whom having found their special shade, for each one of us has a special shade or tone of colour, always wear it—maintain that until men regain the position of mental superiority which their sex had over women, two or three decades ago, it is impossible to expect the best

women to take the inferior place accorded to them in marriage.

Occasionally one comes across a man who, apart from sport and gymnastic clothes, follows out this teaching because of the mental and physical health it brings him. But these men are their own masters and independent of what any one thinks of them. What we want is a larger sanity in clothing. A breast-to-knee costume of suitable shade and texture, perhaps on the lines of the old belted plaid, in order to give the vital parts the warmth they require.

We might require to use a little more soap and water, but so many people take daily tubs, even with fully clothed bodies, that that would be a small matter compared with the increased health, mental, physical and psychical, which the life-giving and thought-awakening atmosphere would bring us.

For men to regain the position of mental superiority held by their grandfathers would be a very simple matter. Only two conditions are necessary. The first is to sacrifice those hideous drab coloured clothes and drape our bodies in bright shades with considerable air-spaces. While the second is to admit the fact that improvement is necessary.

Man has an immense handicap in his mental ability to throw his knowledge on the scrap-heap, as the Americans say, take up the latest development, and make it his own in a way impossible to a woman.

If women had the male capacity of initiative, man would now be a back number whereas he still maintains his position by "use and wont." By using his extra capabilities he should have as great a superiority over modern women as his grandfather had over the women of that day.

There is no black in Nature's colourings. What we call blacks are merely the darkest shades of blue, brown, green and purple. Black is one of man's inventions, and a sorry invention it is, meaning as it does, death to all the finest instincts and noblest thoughts in humanity.

SUNNHEMP FIBRE AND ITS PRODUCTS.

By N. SUBRAMANIAM, B.A., *Weaving Assistant, Department of Industries, Madras.*

The vegetable fibres useful for textile purposes are classified according to the part of the plant from which they are extracted, as seed, stem, leaf and fruit fibres.

Cotton, the most important textile material, is a seed fibre and like others of its class, is supplied by nature in a finished state fit to be readily gathered and spun. Stem fibres on the other hand, are obtained from the basts of plants only by tedious processes. To the class of stem fibres, belong flax, jute, hemp and sunnhemp. Sunnhemp (*Crotalaria juncea*—Tamil *சூலி*) is an annual plant indigenous to the Madras Presidency. It has been known in India from time immemorial. It has been mentioned in the Code of Manu as the material from which Pavitrika (sacred thread) has been extracted. The plant usually grows to a height of between 30 to 40 inches and is cut 3 or 4 months after plantation at the flowering time which is usually the months of October and November. But says Mollison "The finest, strongest and best fibre may possibly be got from plants which are not dead ripe, but very good fibre as well as seed are got from a ripe crop." Tinnevely is among the districts, where sunnhemp is grown for its fibre which is used for the manufacture of gunny, etc., the chief centres of the industry being Gopalamudram, Narasinganallur, Dallakal and Ambur in Ambasamudram taluk. The Tinnevely variety of sunnhemp is said to be superior to the variety grown in other parts of the Presidency.

The fibre is extracted in the following way:—After the plants are cut, the stalks are dried in the sun in bundles, for 2 or 3 weeks and stored, the withered leaves forming a very good manure. When the fibre is required for use, the stalks are retted in small bundles in water for from 5 to 7 days, the duration depending on the season. Slow running water

is preferable to stagnant water. Tinnevely fibres are considered better than fibres of other places and their better quality is due not only to the superior variety of the seed but also, it is said, to the superiority of the Tambraparni water in which the stalks are retted. The stalks are beaten and lashed in water several times and the basts are then recovered by hackling or stripping by hand and exposed to dry. The bast is afterwards beaten by means of a wooden mallet and broken, and the fibre which is usually 20 inches long is then extracted from it by hand. Fibre pieces are cleaned by women first treading on them—then they are beaten on some stone with a flat piece of wood or stick. The fibre thus cleaned is variously spun by Janappar women with the ordinary spindle so as to suit the particular uses for which the yarn will be wanted. Among the more important uses of the fibre are the following:—Ropes, fishing nets, gunnies, saddles for pack horses, mouth pieces of mhotes, hosepipes, etc.

The warp yarn is better spun than the weft yarn and it is usually used twofold. Warps are prepared in the old country way by means of pegs fixed to the ground in the open space in front of the weavers' house, and are made 10 feet long. The warps when got ready are soaked in water, then taken out and beaten on some flat stone by means of a wooden board in order that the size usually made of ragi flour which will be applied later, may permeate well into the fibres. The warp after sizing is again cleaned and then it is pieced.

The loom which consists of a few rollers, pegs and some rope can be worked anywhere and at the village of Pallakal, I found them all at work under the shades of trees in the open ground in front of weavers' houses. The weaving process is very simple and is the same as in mat manufacture, only one set of healds being used with no treadling. The weft thread

which is always used singly is spun in a reverse direction.

Before proceeding to discuss some of the uses of the gunny, I should like to state that the stalks of the plant after the removal of its fibre, are used by gunny weavers and others for thatching purposes and they are so used in spite of the fact that the material is extremely inflammable. So inflammable indeed is 'சுருந்தி' and that is the Tamil word for stalk, that till a few years ago, it was a favourite article with Hindu children during the festivities of Deepavalli and Karthigai for purposes of bonfire. This material is also largely used for torches. The thatches are said to last for about 4 or 5 years after which time, the stalk may still be used for fuel. Other uses of the plant besides those of its fibre are the following :—Flowers are cooked as curry and seeds are used as manure, sunnhemp being recognized as a valuable manure crop. It is also considered a nutritious fodder and is grown for that purpose.

One of the several important uses of the gunny made of sunnhemp fibre is its use for the trunk of the kavalai. For this purpose, the fabric is woven very close—the woven web usually consisting of 20 double or 40 single ends and 8 picks to the inch. The warp yarn will be 2's counts and the weft yarn will be thrice the thickness of the warp yarn. In the gunny used in refineries for hosepipes, the web is slightly more open being made of 10 double or 20 single ends and 6 picks to the inch. It will be clear from the close construction of the web in the mhote gunny that very little water will escape, especially after the article is wetted, when individual threads swell largely and fill the interstices remarkably well.

Gunny in place of leather for the trunk of the water bucket is, I understand, a comparatively recent introduction, but its use is yearly increasing. The farmers would seem to prefer gunny to leather for the following reasons:—

(1) Gunny is considerably cheaper than leather,

While the gunny required for a trunk would cost between As. 12 to Re. 1, the leather would cost between Rs. 6 to 7.

(2) Any patching up in the gunny that may be found necessary can be done by the ryot himself, while in the case of leather, the chukler's aid is indispensable, but it is not easily available with the result that oftentimes work is considerably delayed.

The use of gunny for the trunk is however restricted to iron buckets. For use in deep wells, and where the bucket is made of leather, the trunk is made of that material too. But ryots have largely taken to using iron buckets in place of the old leather kavalais on account of the tremendous rise in the value of hides which during the past 10 years has been about 40 per cent. For the very same reason trunks made of gunny are displacing rapidly those of leather. Gunny made of sunnhemp fibre has been found from experience to be a fairly good substitute, the only defect however being that gunny wears out much too soon as the result of its constant rubbing against the wooden roller, whilst leather stands the friction better and is generally more durable. But the extra cost involved in leather is not justified, as it is out of proportion to the advantages resulting from its use.

Sunnhemp fibre seems to be eminently suited for the purpose in question, as it has considerable tensile strength and like European hemp, its tendency to rot under water seems to be slight. This peculiar property renders it much more useful than jute and perhaps leather too to a certain extent.

Originally, the manufacture of gunny was confined to the class of Telugu Chetties called Janappars but of late years, the Paraiyahs realizing the profitable nature of the business have begun to grow the sunnhemp plant and manufacture gunnies chiefly for use as trunks of water buckets. It would appear that the comparatively small number now engaged in this manufacture are never without work. That

this industry is capable of considerable expansion, there is little doubt. The number of wells in the district during 1912 were 36,100. Allowing a large margin for deep wells, unused wells and wells provided with leather buckets, there will still be a good number for which buckets with trunks of gunny will be useful. There is already an indication of the growing popularity of this material, and in course of time it is not unlikely that the business in it will have expanded many times over. When the advantages of using gunny trunks have come to be sufficiently known throughout the Presidency, the industry may become a thriving one and it is then possible that the small numbers of Janappar families that are still pursuing the occupation may have so much extra work thrown on them that without outside assistance, they may not be able to cope with the increased demand. The gunny weaver of the present day (Janappa chetti) is above wants, at any rate he is in a far better position than the less fortunate cotton weaver. If the conditions of this small industry be carefully studied, it will be found that besides requiring no special intelligence or skill, it entails no harder work than many of the other industrial occupations. Under the circumstances, it will be worth the while of the cotton weaver to consider if he cannot change his work for the more paying gunny manufacture, at least for the time being. But it is

more than doubtful if with his strong sentiments and caste prejudice so peculiarly characteristic of the Indian industrial classes, the caste-weaver will ever deviate from the trodden path.

I have already stated that the use of gunny for buckets is only one of its many uses. I happened to visit the sugar refinery at Alwarthirunagari and there I found the gunny used largely in place of the hitherto imported canvas. It is no doubt true that hand-made gunny bags of sunnhemp fibre have been almost completely replaced by millmade bags made of jute fibre, but the extreme durability of the former is fully realized and handmade bags are sought after, even now by a few. Just as in cotton cloths, so in fabrics made of stem fibres, certain classes of goods when made by hand have a peculiar value on account of their superior wearing qualities and such goods will hold their own against similar mill-made goods.

So long as the manufacture of sunnhemp goods continues to be a cottage industry and so long as women continue to do the major portion of the work, they having no better business to do, the cost of the finished article will not rise to any fearful extent and no anxiety need be felt for sometime at least that mill goods of a similar class made of the inferior jute yarn will drive the sunnhemp industry out of existence.

TECHNICAL TRAINING IN FRANCE AND GERMANY.

It is well-known that France and Germany are very much advanced in point of industries and technical training. A brief account of the different systems and methods of organization adopted in those countries is sure to be instructive. Mr. W. Garrett, Inspector, Technical Instruction Branch (Ireland), visited several institutions in France and Germany to make a personal study of the systems in operation there. He gives in his reports an interesting

comparison between the industrial education in the two empires.

The one striking feature that Mr. Garrett observed in Paris—the only place he visited in France,—is that every effort is made there to train well only those who are to be industrial experts or those who are to take the lead among its workmen. Thus, the city "as a city" does not make any honest effort to improve the status of the ordinary workmen. While there

are, of course, many philanthropic private efforts to accomplish this end, it is perchance deplorable to note the indifference of the Government to raise the conditions and knowledge of the workers in the common scale. On the other hand, the system that prevails in Germany is just the opposite of this. The German system is "much more thorough and comprehensive." The object of Government there is to build up a very strong industrial nation and every intelligent attempt is made there to reach this laudable goal. All persons—be they men or women, young or old, rich or poor—are provided with facilities for suitable training in their own pursuits. Thus, the leaders in industries are given "highly specialized training," all school-going children after a certain age are given a thorough instruction in some walk of industrial life they choose to pursue and even the most poor and helpless are not left uncared for; there is a strong tendency "to uplift the masses of skilled and unskilled workers in what are called Continuation Schools."

There are in Paris seven schools for highly skilled boy workers and eight for girls—*Ecoles Professionnelles*. All of them are day-schools and specially designed and built for Trade School work. In England, such Technical Schools are merely evening schools, "grafted on day work." Being a regular school, the buildings are as a rule less ostentatious and built in accordance with workshop conditions. Pupils have to pass an examination after leaving their Primary Schools to enter the *Ecoles Professionnelles* and the competition is rather very keen. The period of instruction is three or four years as the case may be and an examination is held at the end of the course by outsiders. Most of them enter their profession directly after this at about 30 francs a week and become good journeymen in a few years. Students are made to work very hard and 51 hours work per week is not uncommon. Such long hours spent in the workshop, of

course, leave the pupils acquainted with all practical difficulties and trade conditions. Much emphasis is laid on the practical side of the work, but, no doubt, the theory portions are not neglected. "The chief lessons to be learned" says the writer, "from these Parisian Schools are that Trade Schools succeed best when they are separate institutions, entirely disconnected from Evening Technical Schools; and when they are so organized as to replace apprenticeship."

As has been noted at the outset of this article, in Germany the aim of the Government is to promote the conditions of high class workers, those of the middle class as well as people of the low and suffering grade. That this is its object is clearly evident from the three sections of the German system of technical education.

(i) First and the most perfect is the Technical University or *Technische Hochschule*, the best of the type being in Charlottenburg and in Munich. This is intended for those destined to become the leaders of industrial and constructive enterprise.

(ii) Then there is the Commercial University or *Handelshochschule* "which does for the distributive side of industry what its sister institution does for the constructive side." They form the training ground for men who are to become captains of industry and commerce and teachers of higher commercial classes. The recruits for these are made from the Secondary Schools but a large number of businessmen too are freely admitted.

(iii) Below in rank to the above two, come the Middle Schools. The best example of it is the Leipzig Commercial School. Students from the Primary School are directly admitted into these institutions and the instruction given extends to three years after which they are apprenticed for two years to business firms. The object of these schools is to train up ordinary workers in different technical professions—master builders, builder's clerks, draughts-

men, and municipal employees, in other words to produce men who will have "to work out other people's ideas."

Still, the education of the great general mass of the population remains and this is so efficiently and admirably worked out by means of the continuation schools or *Fortbildungsschulen*. This is perhaps the important portion of the problem of technical education everywhere, not in Germany alone, and a perusal of the system existing in Germany will at once convince all that it is one really worthy of imitation.

In Germany attendance in schools till the age of 14 is compulsory and the majority of the students enter some professional career after the course in the Primary School. The important point of difference—and perhaps one that forms the chief cause for the industrial expansion of Germany—between the systems prevailing in Germany and England is that in the former country the responsibility and supervision of the State over the boys does not cease with this primary education. The State continues to supervise the education of its boys till the age of 18—the period at which the apprentice course ends and pupils begin to enter their professions. Every boy who does not attend a higher school, whether he is at work of any kind or not, is forced to attend the Technical School from 8 to 9 hours a week. The aim of this "magnificent piece of organisation" is, as Mr. Garrett observes, to produce useful citizens. "A useful citizen," according to an eminent German doctor, "is one who contributes directly or indirectly through his work towards making the State a better and more cultured community." We had better quote Mr. Garrett in connection with this, *viz.*, what problems the Technical School has to solve to make their boys good citizens.—

"(1) It must cultivate capacity and craftsmanship, together with a delight in the exercise of skill.

(2) It must accustom pupils in their youth to place their skill at the service of their school-fellows and companions.

(3) It must, as far as possible, connect the preparation for service, respectfulness towards superiors, and public spirit thus acquired, with an insight into the aims of the community."

In fine, what the schools aim at is to cultivate their "skill, intelligence and public spirit." Evidently, these are the three essentials to form good citizens, and to this end have the Germans directed all their efforts and no doubt, the success they have achieved is in direct proportion to their work.

As soon as the boys enter the technical or continuation schools after their primary course, they are all classed according to the subjects they have chosen for study. Even what we may call the meanest professions here are not neglected in Germany. The course includes classes for the barber, the chimney sweep, the butcher and of course, the higher technical studies. Just as everywhere else, those who take up the same course attend the classes together and at the same time and the instruction imparted is one that has been previously settled and prescribed by the Education Board in conjunction with the expert workers on the field. Thus, both the theoretical and the practical sides are given their due importance. Further, the secondary subjects taught are also such as to suit the needs of the pupils. Special care is taken to train up pupils in subjects closely allied to the ones they have elected and which will likely improve their knowledge and give a touch of originality. Machine makers are also instructed in Physics and wherever a knowledge of mathematics is essential, that too is imparted. People who take up unskilled work are very few and the numbers are decreasing year by year. There are excellent and well equipped workshops in every *schulen* and only 16 students are permitted to work in a workshop. The workshop is the place to improve the craft and workman-

ship of the boys and Mr. Garrett says that in almost all the schools, a very high standard of efficiency is maintained.

Any means by which the intelligence of the candidate can be developed is at once resorted to and all encouragement is given to carry on the literary and general education. This is probably another important phase of German education, for by means of such a system, not only is the pupil given a comprehensive knowledge of everything pertaining to his trade, but ample facilities are also provided to cultivate one's own taste and the faculty of originality. What wonder then, that with all this, Germans have thrown themselves far ahead in matters of discovery and industrial expansion? Add to this, the special emphasis laid upon the practical skill and knowledge in every trade and then we have the full explanation of Germany's wonderful expansion. No knowledge acquired can be deemed complete until its application has been known. In Germany, in the book-binder class book-cover design is the prime aim; in a drawing class, its application to craft work is the chief object; and so the mechanic knows well how to apply his knowledge for the improvements and repairs of his own machines. When, besides, there are expert teachers to give their pupils what they consider best and "soundly educational," the classes will be very attentive, an interest in the subject is created and the old order changes yielding place to new.

The significance of the study of civics is to a great extent realized in Germany and all the school boys are given instruction in this subject. They are first taught the duties of an apprentice and the right use of time in preparation for their work. Personal hygiene and also the structure of the body are taught. The teaching includes further the history of their trade, its relation to other industries, an account of the Gilds, Federations and chambers of commerce and trade regulations connected therewith. The finishing touch is given to the

subject by acquainting the pupil with a knowledge of the public, social and industrial organization of his own district and then of the State and his own position as member of the State. All this is taught with the help of current topics, knowledge and statistics.

A little remains to be said of the apprenticeship system in Germany. It is regulated by law. Usually it extends to three or at the most four years. During the time of apprenticeship, every student is forced to attend the continuation school a few hours per week. At the end of the period, he passes an examination and he becomes an improver. There the State supervision ends. Thereafter, his future prosperity lies in his own ability. If he is persevering and able, he may become a master-worker by passing another higher test. Only these master-workers can have apprentices under them. "If an employer is not himself a master-workman he must employ a fully qualified foreman, so that the State thereby secures that the apprentice shall have the advantage of thoroughly skilled supervision. It will thus be seen that in Germany the educational system is an integral part of the apprentice system and that the State watches over the interests of the youth until he becomes a man. Further, the youth is made aware that he has a definite career before him, and that he has the means at hand to become thoroughly expert."

A high standard of efficiency in the teaching staff is also maintained. In the elementary grades, ordinary teachers give lessons in arithmetic and German from the trade point of view and later on, the academic method of instruction is eliminated and experienced workers and traders give lessons in a school to the boys, of course, under the management of a Principal.

The attitude of the employers is also satisfactory. This is evidenced by the fact that they do really appreciate the assistance rendered by the schools. Schools generally provide them with good workmen in any field and "save their expense by eliminating the waste caused

by want of skill." Most of the employers voluntarily contribute large amounts for the better equipment of the schools. And when the State compels their apprentices to attend the continuation schools, special regard is always shown to suit the convenience of the employers.

This, in brief, is the kind of technical training that is given in Germany. The complete State supervision over the boy till he enters a profession, the compulsory attendance in the continuation schools, the full utilisation of the workshops, and the study of civics and the cultivation of public spirit in Germany—these are the

essential points of difference between the German and English systems of technical education. We cannot better end this subject than in Mr. Garrett's own words:—

"Any one who sees the German system in operation must be forcibly struck with the enormous value of it to the nation. The great impression made on my mind was that a generation of this training, which began in Munich about ten years ago, will have the effect of making that nation the most skilful in the world, and will, as things stand, enable them to overwhelm all competitors, ourselves among the number."

THE LIFE AND LIFE WORK OF J. N. TATA.

It is most opportune that, just at this time when the whole of India is awakening to the consciousness of the vastness of the economic resources of the country, a short sketch of that great Captain of Industry, Mr. J. N. Tata, should be published by Messrs. Ganesh & Co., Madras, (As. 8). This interesting biography is written by D. E. Wacha, one of the intimate friends of Tata.

India is no more a land of dreams. She has vast and untold resources which, if developed by shrewd and sagacious people, will surely bring her into prominence among the enterprising nations of the world. India cannot boast of a more illustrious son than the late Mr. J. N. Tata who by silent and determined action was able to do more good to the country than any other patriot. Born of humble parents, with no great academical qualifications, Mr. Tata rose to the highest position that a man in his field could ever aspire to; and, most certainly, his honest and prosperous life must ever be a source of inspiration and guidance to all of us.

From the first, Mr. Tata specialised in the cotton industry and its vastness and prosperity at the present day is due largely to him. It is evident from his acts that he was never actuated

by the mean, interested motives of profit to oneself. From the very first, Mr. Tata had high hopes in the industrial future of his country and it was this spirit of genuine patriotism that inspired him throughout to undertake colossal enterprises and fight for their success. Mr. Tata well knew the futility of mere speeches. The days of platform oratory were long past even then. The advance of the country lay in silent, energetic action. This Mr. Tata realized. In his biographer's words, "no academic person, his motto was action, action, action. Action was the key to all his enterprises. They were not to be mere paper ones. The abstract had to be translated in the terms of the concrete. A practical man, he showed the way to his countrymen how wealth acquired may be put to the best productive uses which might benefit the country and advance the people a stage forward in their struggle for material prosperity."

"Nothing venture, nothing have" is the motto of all industrial men and Tata was no exception to this. He knew well the backward state of the cotton industry in his own country. He went to the manufacturing centres of the world and learned how to improve the industry in India. Returning home, the

first bold step that he took was to start a mill of his own. The site was chosen at Nagpur, the centre of the cotton growing districts. The "Empress Mill" was started on a grand scale and it was a grand success. Some time later, another "Swadeshi" mill was started in Bombay and that too proved a success. Fortunately for Tata, there were few reverses in his fortune. The splendid organisation, the method of work adopted, the encouragement given to good and honest workers, the sound financial system on which his undertakings were based and the excellent apprentice system introduced—all these show the brilliant organising and managing capacity of Mr. Tata. But what is most noticeable in Tata's character is that he was not like other common merchants a man recklessly squandering his money in all sorts of enterprises without forethought, clear deliberation or a proper study of the subject. His mind was as wide as the country in which he was living. He never spared any pains to get the best advice on any of his proposed undertakings.

Mr. Tata wanted to introduce the Ring Spindle System in his country. At that time, the greatest scepticism prevailed among the older makers of the machinery. "But undaunted, he fearlessly introduced that new spindle which replaced the throstle and proved to those very manufacturers what a revolution that spindle would make. His prophecy, based on his personal experience, derived at great cost, has been amply verified."

His next great enterprise was also in the cotton line. It was the serious question of freight of yarn bales exported to China. There was a combine of the principal navigation companies, detrimental to the large exporters of yarn to Hongkong and Shanghai due to absence of competition. This monopoly in freight Mr. Tata strenuously strove to break down. Alone he did it. He interested some of the more important Japanese liners to bring silks and coal from Japan and carry in return cotton and yarn. Thus it suited the Japanese liners to carry

freight to and fro. The enterprise was full of risk and exceedingly bold. But boldness, in trade was one of the principal traits of Tata's character. Though the enterprise afterwards broke down owing to the failure of the promised support by the selfish mill-owners, "he took this faithlessness with stout composure, comforting himself with the thought that at any rate he had shown the way as to what Indians could accomplish when intent on doing so with unity of aim and purpose."

Another patriotic work that he did, though of secondary importance, may be mentioned here. It is in connection with the excise duty on cloths manufactured in Indian Cotton Factories. There is no need to describe the amount of discontent which this duty has created in the country. So keenly did Tata feel the injustice of the measure that he saw the Secretary of State in England and removed the false idea under which he was labouring that Indian manufacturers were getting a large percentage of profit even with the duty. Mr. Tata caused minute statistics to be collected and analysed on a scientific basis showing that the profit amounted to only 6 per cent. whereas Lord George Hamilton was thinking it to be 10 to 12 per cent.

The crowning acts of Tata's broadminded charity and patriotism to his country were three in number. They are the establishment of the Research Institute of Science at Bangalore, the manufacture of pig iron and steel from Indian iron ores and the utilization of water power by means of electricity. All these are herculean in nature which might have appalled even the most venturesome intellect.

It is a pity that Mr. Tata did not live to see the fruition of his ideas. But we are glad that his sons have almost brought to perfection the grand schemes launched by their father.

Mr. Tata's educational scholarships are too well known to need any mention.

To all Indians, the life of the late Mr. Tata must always be an inspiring and ennobling example to follow.

Notable Speeches and Writings.

Address to the Industrial Conference.

The following are extracts from the address of the Hon'ble Mr. Manmohandas Ramji, as President of the Indian Industrial Conference held at Madras.

ASPECTS OF THE INDUSTRIAL PROBLEM.

The present-day industrial problem presents to a student three aspects. The first is the rise and development of the Swadeshi movement, the second is the action and interaction of war and trade and industry, and the third is the various interesting questions regarding the special branches of commerce and industry. I have tried to deal with each of these and evolve some solution to the different pressing queries which command our attention.

HISTORICAL.

The words industrial revival awake in us memories of the past when this country was, like the modern United States of America, self-sufficing, in the sense that she was both a manufacturing and agricultural country and could supply her people with all their wants and requirements. This chapter of our history which describes the gradual downfall of all our indigenous industries and the slow but steady turning of the country into a purely agricultural one is a doleful reading, which has been portrayed by abler hands than mine several times. Time was, as Mr. Dutt observed in his Presidential speech at Benares, when India could supply the markets not only of the near East but of the far off Western countries. Not only this but the export trade was carried in Indian bottoms, as India was well-known for its shipping industry in the past and for the large number of its vessels which plied to foreign and distant shores. The current of exports however set in in another direction from about seventeen hundred when a series of legislative enactments of the British Government prohibited the use or sale of Indian cali-

coes in England. The penalty for wearing Indian calicoes was five pounds and any person found selling any of the prohibited goods was liable to a fine of £20. The drastic nature of this measure, which had for its object the development of Home industries will be realized from the fact that not only could the British weaver of the day turn out merely the very coarsest of cloths but no more than a pound of such stuff could be produced by a single weaver in a working day, until Hargrave invented the Jenny in 1767, capable of spinning 100 hanks a day. Another reason which operated in crushing the Indian handloom industry was the system of trade monopolies all but known under the Mogul Emperors but introduced by the East India Company on a vast scale and with scientific precision immediately after the assumption of the *Dewanee* in 1765. Just as in that remote past a blow was struck by these measures at indigenous industries, an attempt was made to deprive the cotton manufacturing industry of its natural advantage, when an excise duty of 3½ per cent. was levied on cotton goods of Indian manufacture, in deference to the wishes of Manchester.

The current, as I have mentioned before, set in in quite a reverse direction and instead of our exporting largely our manufactured products to foreign countries we began to rest content with exporting merely raw products of the soil and importing a major part of our requirements from foreign countries. The story is vividly told by the import and export statistics which albeit show a marvellous expansion in our external trade, but which at the same time point to our exports being mainly of raw material and our imports being of manufactured articles. No country can ever wish to be in this position of industrial dependency on foreign countries and it was one of the chief objectives of the Swadeshi movement to do away with this dependence, to initiate once more indus-

markets, cotton has heavily gone down and that our ryots will suffer much in consequence. The proposed schemes, however, about cotton storage and Banking facilities to cotton trade specially are apt to be taken advantage of by only middlemen, the ryots being left in the same position. If these pitfalls are avoided and if a scheme is evolved for giving financial facilities not to one trade only but to trade in general it will be welcomed by the public. How different are the positions and demands of different trades may be seen from the fact that while the middlemen in cotton demanded that the new crop of cotton should as far as possible be delayed from coming on the market, jute manufacturers wished the ryots to bring their stocks at once as the large orders they had received from Russia and the United States would otherwise not be fulfilled.

Looking to these diverse interests, the Government cannot, as I have mentioned above, interfere for a particular trade. If middlemen in the cotton trade require financial help no less do the seeds merchants require it specially as export staples like linseed have gone down by 80 per cent. since the outbreak of the hostilities. In this connection it is interesting to note that the cry, with which we are so familiar, urging the Government to stop the export of food stuffs in order to reduce its high level of prices, has met with a crushing rejoinder in the conditions which have supervened upon the stagnation of our export trade. The cessation of exports may lead to a lowering of the price level but at what sacrifices on the part of agriculturists is seen only now. India has once for all taken her place in the International markets of the world and must pay the price for this in a raising up of the index of prices for all the commodities. Any attempt at tampering with this will only lead to inflict hardships upon the agriculturists and thereby to inflict harm on the whole of trade and commerce. Another effect of war has been the loss of credit, and stopping of all legitimate banking

business. This is best seen by the downward tendency of the amount of bills discounted by the Bombay Presidency Bank. I am given to understand that the other Presidency Banks also manifest the same tendency. Loss of credit has led to the stopping of all the hundi transactions giving thereby a great blow to the Inter-Provincial trade, which itself has led to accumulations of huge stocks of imported articles at Presidency towns and ports and to similar accumulations of raw products in the mofussil, leading to depreciation in price and thus at a stroke reducing the working capital of merchants and agriculturists. I referred above to the unfortunate revival of the hoarding tendency consequent on the financial crash of the last year. This tendency is further engendered by this war which at its outset led people here as well as even in the civilized countries of the West to hoard precious metals and to fight shy of all investments in trade and industry, even in the gold-edged securities, causing an unprecedented fall in quotations for all the well-known International stocks and securities. So much was this hoarding tendency manifested in England that the Chancellor of the Exchequer had to give a solemn and serious warning against it. The stagnation and depression in trade led naturally to a scarcity of buyers and the international exchanges having also suffered, manufacturers had to close down their factories leading to a great deal of unemployment and a severe check to industrial progress.

GOVERNMENT'S HELP.

These are some of the principal evil effects which have resulted from the titanic struggle that is going on in the West. At such a crisis it is with feelings of gratitude that we acknowledge the various measures adopted by the Government to minimise commercial and industrial distress and to keep trade as usual going on. The War Insurance Scheme offering a Government guarantee for the risks undertaken

by insurance companies prevented the collapse of Sea-Borne Trade and well supplemented the work of the British fleet which has kept the seas practically clear of enemy vessels. The marvellous spectacle is presented of the trade of the United Kingdom going on with neutral states and its colonies even while war is going on at its hottest only a few miles from the British shores. It restored confidence to the commercial public and though trade might have suffered through other causes, there was at least no diminution because of any fear of loss at sea. London is rightly regarded as the clearing house of the world but just because of this position perhaps there was a danger that the exporters in Colonies with enormous dealings with foreign banks making their payments in London would suffer considerably. Huge quantities of exports were either afloat or just reached their foreign destinations, when war broke out and no drafts could be honoured by consignees. Exchange Banks naturally came down upon their constituents asking them to pay back the money they had taken on the drafts. It was a most serious position and it required a masterly statemanship to grapple with it. Such a bold stroke came from the ever intrepid Chancellor of the Exchequer who guaranteed the Bank of England against any losses that might accrue owing to its accepting the bills of certain recognised foreign Banks. It saved exporters of this country as well as of other Colonies a tremendous loss and consequently a trade disaster was averted. The British Government is also considering and has to a certain extent decided the question of fostering industries which were hitherto purely German and Austrian. The Patents Act is modified so as to suspend Patents being held by alien subjects, and to thus encourage starting of new industries. A guarantee of over a million pounds sterling is given against loss if there be any from the working of a dyes and colours syndicate started recently. Various banks there are also advised to lend freely to prospective industries, and to

help trade and commerce in general. We have naturally shared to some extent in the benefits of the measures adopted in Great Britain. Over and above these the Commercial Intelligence Department is busy organising exhibitions of German, Austrian and Indian goods and publishing pamphlets for new industries.

CAPTURE OF ENEMY'S TRADE.

This leads me to the important question of our trade with Germany and Austria and its probable capture by Great Britain and India. There are in some quarters exaggerated ideas about our trade with these two countries. As a matter of fact our import trade with Germany forms but 6.9 percent. of our total imports and our export trade with her is but 10.3 percent of our total exports. Similarly our import and export trade with Austria is 2.3 and 3.9 respectively of our total export and import trade. There is a great cry in Great Britain for taking up industries which are hitherto the monopoly of the two enemy countries and the faddists are busy promulgating their old and well-worn nostrum of preferential tariffs. Several manufacturers are urging that aniline dyes industry should be started and developed in England even by clapping a 40 percent. impost on the imports from Germany. There are men fortunately who have still retained their level-headedness and these rightly reply that not 40 percent. but 100 percent duty will be required if the English dyers want to compete with the German industry. This will mean merely a burden to the cotton manufacturing industry which would hardly be able to bear it in these days of a strong trade competition. This is but one instance of many where I think it is impossible to capture foreign trade by any artificial means. Germany has built this industry after years of hard and strenuous work and of diligent, careful, scientific research, spending millions of pounds on experiments only. In fact where the industry of a nation is built up in this wise it is next to impossible to hope to compete with it.

Commission on Finance and Currency. The conclusions arrived at by the Commission affect the financial and commercial world intimately and deserve the most careful consideration at the hands of all our publicists. I should like, however, to postpone speaking on that subject for the present like all the Chambers of Commerce which have rightly informed the Government that the present is the best time for getting a practical experience of our currency system and that they would like to give their opinion after the war is over and normal conditions have been restored. The Government have acceded to this suggestion.

CONFERENCE WORK.

With regard to the Conference itself it should extend its scope of work and not remain satisfied with holding this Annual Session. As far as I know there are already committees for different Presidency towns. What should be done is that these committees may be entrusted with the work of a Presidency or a District Office, as the case may be, for answering all inquiries on industrial matters considering all industrial problems and for generally discharging the duties of an Industrial Bureau throughout the year. Then we shall have the Conference working from one end of the year to the other and keeping alive the spirit of Industrialism throughout the country. The Exhibitions which were once held under the auspices of this Conference have stopped since the last four years and the authorities of the next Conference may well see the advisability of reviving that welcome feature.

The Late Lord Ripon.

On December 29th His Excellency Lord Pentland unveiled the Ripon Statue in the triangular piece of ground at the junction of the Mount Road and the Wallajah Road.

In the course of his speech requesting His Excellency to unveil the statue, Sir C. Sankaran Nair said:—

Everybody realises that in India's interests, not only must Englishmen remain in India, but

there must be co-operation between the two races for India's progress. Everybody before him had said so, and every one after him had said so. But what was scarcely realised before Lord Ripon's time was that such co-operation to be friendly and enduring, must be on terms of equality. When he spoke of co-operation we know that is what he meant and not the co-operation of master and servant. His sympathy did not evaporate in expressions of good will, but found expression in his conduct. The result is his Government marks an era and there is a gulf between the India of to-day and India as he found it. It is enough to say that the people of India now think in the language of Self-Government. He attained his popularity by his adherence to principles which he has himself explained in the Legislative Council in words which have been often quoted in the Indian Press, but which, with your leave, I shall read once more. He said: "I have read in a book, the authority of which the Hon. Mr. Thomas will admit, that righteousness exalteth a nation, and my study of history has led me to the conclusion that it is not by the force of her armies or by the might of her soldiery that a great Empire is permanently maintained, but it is by the righteousness of her laws and by her respect for the principles of justice. To believe otherwise appears to me to assume that there is not a God in Heaven who rules over the affairs of men and who can punish injustice and iniquity in nations as surely as in the individuals of whom they are composed." It is the consciousness that the English nation stand for this principle which has led the recent manifestations of India's good-will which has surprised Europe and deepened England's faith in India.

There are hundreds, perhaps, thousands who leave their foot prints in India's sands. Thousands of these foot prints have been obliterated by time. There are many which India would willingly obliterate. But Ripon's will last for centuries, so long as India cherishes her ideals, she will preserve them with affection.

Official Pronouncements.

The High Prices Question.

(Continued from p. 768.)

17. As applied to a country like India, which has the world's supplies to draw upon, the conception of an absolute shortage, which appears to underlie Mr. Datta's whole treatment of the subject, can have no valid significance. The real problem as regards a country so situated is obviously to determine whether the purchasing power of the people generally has increased. If that has been demonstrated in the case of India, as Mr. Datta affirms, it may be confidently inferred that the Indian community has continued to provide itself, to an at least equal extent, with the necessities of life, which constitute its first requirement. In this connection a very relevant consideration is that brought out by Mr. Datta on page 189 (paragraph 455), viz., that "India has now to part with much less of her produce to meet her foreign obligations for the simple reason that her produce has risen in value in European markets." In virtue of this rise India has been in an exceptionally favourable position for procuring from outside sources such additional supplies of food as she may have needed; though the statistics of imports of food grains on page 97 of the report do not indicate that in fact the internal supply has required to be supplemented in any markedly increased degree. The statistical study of food production, in short, while it has a certain value as suggesting a test by which to qualify conclusions independently obtained, cannot stand alone. In so far, however, as they admit of separate formulation, the following appear to the Government of India to be the principal inferences which can fairly be drawn from this branch of Mr. Datta's enquiries.

18. In the first place, strictly speaking, there has been no substitution of non-food for food crops in the country as a whole. The food cultivation area has grown, though the area under commercial crops has increased in a higher proportion; and the more rapid expansion of the cultivation of jute and cotton in certain areas cannot, in view of the very small proportion of the total area which these crops occupy, have exercised any appreciable influence on the general level of food prices.

Secondly, so far as trustworthy statistical evidence is available, it would appear that the area under food crops has increased in almost exact correspondence with the growth of population,—a fact which must be held to imply the production on the average of a relatively larger and more efficient food supply, in view of the large extension of irrigation and transport facilities. The statistical data relating to acreage under food crops do not, however, cover the whole ground, as information is admittedly wanting for large areas; and, partly for this reason, and partly owing to the defective character of the information available regarding the other factors involved, no really reliable estimate of the outturn during the period under review can be framed.

Thirdly, as regards export of food grains, Mr. Datta has clearly brought out (pages 96-97, paragraph 240) the relative insignificance of the proportion between food exports and food production.

Finally, analysis of the general statistics in regard to the increase of prices elicits the very significant point that there was no sustained upward movement of food prices till after 1904. Even in 1899, very shortly after a large temporary increase definitely attributable to failure of

the rains, food prices had reverted to practically the level of the basic period 1890-1894; and in 1904 they fell below it. The causes of the rapid and sustained rise subsequent to this year, which is even more conspicuous in the case of a number of other commodities, must be sought for in a different and independent group of circumstances.

19. The point last mentioned leads up to a distinction, the fundamental importance of which, though not entirely unrecognised in the report, has been overshadowed in the attempt to deal with the question of food prices as a self-contained problem. The essential fact which emerges from Mr. Datta's enquiry, is the division of the history of Indian prices since 1890 into two well marked periods dominated on the whole by widely different conditions. From 1890 to 1904 internal conditions were the principal factors in the determination of the price level. Prices rose and fell in the main in accordance with changes in the agricultural conditions from year to year. The only articles which show a continued rise during this period are hides and skins, the prices of which are governed by those prevailing in the world markets; building materials; and after 1897, metals. With these exceptions, the only indication of a permanent upward tendency in prices is the increase in the prices of exports from 1900-1901, which affected to some extent the general level in that and the four following years. Whilst the volume of export trade expanded slowly between 1890-1891 and 1899-1900, the average prices of Indian exports, as shown on pages 187, 188 (paragraph 384) of the report, were lower in the quinquennium 1895-1896 to 1899-1900 than in the preceding five years. There are signs in the general foreign price level, the statistics regarding which are exhibited in the table on page 48, of an upward movement after 1896, but the advance shown, apart from the exceptional year 1900, was not very marked in most countries, nor does it appear to have exercised any considerable

influence on Indian prices till some years after the opening of the new century.

20. With the year 1905 Indian prices entered upon a new phase. Prices rose rapidly to unprecedented heights, and so far there is nothing to suggest the probability of a reversion to the levels of former years. The explanation of this remarkable phenomenon cannot be found in changes of an internal nature; and examination of the statistics of prices in other countries indicates clearly that the increase in Indian prices has been broadly synchronous with a general upward movement in price levels throughout the world, and that its origin must accordingly be sought in cases more or less common to the whole civilised world. In the United Kingdom prices, taking the average of the *Economist's* and Sauerbeck's index numbers, rose between 1903 and 1912, 25 points; in Germany between 1902 and 1911, 35 points; in Italy between 1902 and 1911, 21 points; in Belgium between 1897 and 1911, 27 points; and in the United States between 1899 and 1912, 33 points. As to the precise causes responsible for this phenomenon economic authorities are not as yet completely agreed but the worldwide character of the rise, and the broad parallelism between this and the upward movement of Indian prices since 1904, are indisputable.

21. The influence on the Indian price level of this notable change in world prices can be traced clearly in the statistics of foreign trade. As indicated above, the average price of exports rose to some extent between 1900-1901 and 1904-1905. But from 1905-1906 onwards the increase has been altogether unprecedented. As shown in the table on page 188 of the report, during the quinquennium 1905-1906 to 1909-1910, the value of Indian exports* ex-

* As explained by Mr. Datta on page 189 of the report, the table on page 188 represents the values declared and calculated, of about 99 per cent. of the exports because it was not possible to ascertain the quantities of exports in the case of the remainder.

ceeded by rather more than 116.6 crores, or an annual average of $23\frac{1}{2}$ crores, the value which would have been represented by the same quantities dealt with at the average rates prevailing during the basic period. In 1910-1911 and 1911-1912 the difference in value was even greater, being 42.12 and 48.58 crores respectively. Of these increases, cotton contributed* about 22 per cent., jute about 28 per cent., hides and skins about 9 per cent., seeds about 13 per cent., and grains and pulses about 9 per cent. It is to this immensely enhanced demand for Indian commodities of export that the relatively larger rise in the Indian price level as compared with that of other countries is probably to be attributed. While the rise since 1904 in the prices of imports, which reflect more accurately than exports the general course of world prices, has been considerable and has assisted materially to raise the Indian level, it has been proportionately much smaller than in the case of exports.

ECONOMIC EFFECTS.

The social effects of the rise in prices during recent years have been the theme of much discussion in every country. As regards India Mr. Datta's conclusion, as already stated, is that on the whole they have been beneficial. His views on this aspect of the enquiry are summarised in the following extracts from pages 184-186 and 189 of the report.

"There has undoubtedly been a real progress, an increase of wealth and a general diffusion of it, in consequence of an increase in the profits of agriculture, and a remarkable increase in wages greater than the cost of living in almost all parts of India during the period of rising prices. There has indeed been a very great increase in the annual income of India. Dr. Marshall defines a country's income as 'the net aggregate of commodities and capital,

* For the reason given in the preceding note, the percentages cannot be calculated with absolute accuracy. The margin of error, however, is insignificant.

material and immaterial, including services, produced annually by the labour of the country acting upon its natural resources.' It is beyond all doubt that in recent years there has taken place with the development of the resources of the country and the growth of enterprise on the part of the community as a whole, a very considerable increase in this annual income." (Page 184, paragraph 439.)

"The standard of living amongst all classes of the population, especially among landholders, traders and ryots, has increased very considerably in recent years, and extravagance on occasions of marriage and other social ceremonies has seriously increased. The average villager lives in a better house and eats better food than did his father; brass and other metal vessels have taken the place of coarse earthenware, and the clothing of his family in quality and quantity has improved. We may also say that the increase in passenger miles travelled predicates the existence of spare money to pay for railway fares." (Page 185 paragraph 443.)

"The wage-earners of all classes and in all circles have secured an increase in wages commensurate with the rise in the cost of living. The only exceptions are domestic servants in cities and other urban areas in a few circles, and wage-earners employed in some industries." (Page 186, paragraph 445.)

"Landlords have, except in some special areas, received increased cash rents, cultivators increased profits from agriculture, and wage-earners generally have gained in consequence of their wages having increased more than prices. It is only persons on fixed salaries or dependent on income from securities and shares, and professional men who live upon customary fees, who have suffered from the rise in prices, as their income, not being at all elastic, has not risen sufficiently to meet the increased cost of living. The effects on the different sections of the community in different areas have been

in the same direction and differ only in degree." (Page 189, paragraph 455.)

23. That there has been during the last 20 years a remarkable growth in the general prosperity of India is a fact recognised by all impartial observers, and testified to by all the available statistical evidence. The volume of foreign trade has grown enormously. The quantities of goods carried by rail rose from 23 million tons in 1890 to 48 million in 1903, and 71 million in 1911. The number of passengers by rail increased from 114 million in 1890 to 210 million in 1903, and 390 million in 1911. The value of money orders issued rose from 16.4 crores in 1890-91 to 32.1 in 1903-04, and 48.7 in 1911-12; and the fresh deposits in Saving Banks from 2.68 crores in 1890-91 to 4.66 in 1903-04, and 8.28 in 1911-12. The absorption of gold has been of late on an unparalleled scale, amounting between 1900 and 1911 to no less than 116 million sterling, as against 27 million sterling in the preceding 12 years. Great strides have been made in the manufacturing and mining industries. The number of looms and spindles rose, between 1903-04 and 1911-12, in cotton mills from 41,977 and 4,900,106 respectively, to 81,899, and 6,040,760; in jute mills from 18,400 and 376,718 to 32,927 and 677,519; and in woollen mills from 633 and 23,806 to 772 and 29,369; whilst the production of coal has about doubled since 1901. But the most striking evidence perhaps of the improving condition of the people is to be found in the statistics of the import of articles of luxury and convenience such as kerosine oil, apparel, boots and shoes, matches and soap, which increased by 26 per cent. between the basic period 1890-94 and 1903-04; and by 74 per cent. between the latter year and 1911-12. On all sides there are indications of a higher standard of living.

24. That the rise in prices has contributed to this result is indicated both by the comparatively more rapid expansion under the heads above mentioned since 1904, and by

analysis of the statistics of foreign trade. A country necessarily benefits by any special demand for its exports, and as has been shown, the demand for Indian exports has expanded immensely since 1904-1905. Against the gain in this direction has to be set the increased cost which India has had to pay for her imports; but Mr. Datta estimates (pages 138, 139, paragraphs 335 and 336 of the report) that, allowing for the increase in the cost of imports, the annual gain to India through the enhanced prices obtained for her exports amounted during 1900-1901 to 1904-1905 to 3.1 crores, during 1905-06 to 1909-10 to 14.7 crores, and during 1910-11 and 1911-12 to no less than 34.2 crores. It is impossible in the face of these figures to doubt that India as a whole has benefited by the rise in the price level since 1904. It is a matter of greater difficulty to measure the resulting gain or loss to different sections of the community. Adequate data do not in fact exist for any precise and minute measurement of changes in real income or real earnings. Comparison between the prices of goods produced or wages earned, and the prices of goods most commonly consumed, furnishes, however a rough index of the effects of the rise in prices on the various classes.

25. The most important section of the community are the cultivators, who comprise, according to the census of 1911 (Volume I, Part II, Table XV) more than half the total population. As a rule cultivators grow their own food, and to ascertain therefore the changes in their real income resulting from the rise in prices, comparison has to be made between their expenditure as measured by their payments for rents or land revenue, wages and commodities purchased, and their income as measured by the prices secured for produce sold. The general conclusion to be drawn from this comparison is unmistakeable. On the income side, in the quinquennium 1908-1912, the wholesale price of raw jute was 43 per cent. above the level of the basic period

1890-1894, that of raw cotton 45 per cent., of hides and skins 59 per cent., of oil seeds 45 per cent., of food grains (cereals) 42 per cent., and of food grains (pulses) 43 per cent. On the expenditure side, cotton manufactures, the largest item in the normal expenditure of the cultivator, rose only 25 points, the cost price of salt fell by 3 per cent. apart from the reduction of the general rate of duty from Rs. 2-8-0 to Re. 1-0-0 a maund, metals rose 20 per cent., and sugar 9 per cent., while kerosine oil shows no great increase. The movements of rents have varied greatly in different areas, and as regards the different classes of tenants. Grain rents, as measured by their cash value, have no doubt risen proportionately to the rise in prices, but cash rent in general have lagged behind prices; whilst the enhancements of land revenue in ryotwari areas, so far as attributable to the rise in prices, have been comparatively small. Wages have risen more rapidly even than prices. But, on the balance, the gain in real income is manifest.

26. The valuable wage tables prepared by Mr. Datta point to a great improvement in the condition of the wage earning population. The collection of reliable statistics of wages has always been a matter of great difficulty in India; and Mr. Datta's figures do not in all respects agree with those of the wage census carried out in the years 1911-1912. There is no reason to doubt, however, that they represent with sufficient accuracy the broad trend of wages. In many countries wages have only slowly adapted themselves to the rise in prices; and the necessary readjustment has been attended with much social friction. But in India circumstances have favoured the wage earner. The increasing profits of agriculture, which, as shown in Mr. Gait's report on the census of 1911 (Volume I, paragraph 530) have enhanced the demand for labour on the land, the demand for labour on public works, the expansion of

the factory industry already referred to, and in parts the mortality from plague* have combined to promote a great and rapid increase in wages during recent years.

27. Agricultural labourers still constitute the largest section of the labouring population. For many reasons changes in the real income of this class are peculiarly hard to measure. Payment in kind is still common; there are great variations in the continuity of employment; and in parts hereditary or customary obligations affect the rate of remuneration. But the statistics compiled by Mr. Datta, of cash wages paid to independent labourers indicate roughly the general movement of earnings since the basic period. As compared with this period, cash wages, by 1912, had nearly doubled. When every allowance has been made for the disturbing factors above alluded to and the rise in prices, Mr. Datta's estimate (Volume III Statistics, page 203) of an increase of 38 per cent. in real income in 1912, as compared with the basic period 1890-1894, seems fully justified.

* It is important not to over estimate the economic effects of plague which, though a grave calamity accounted only for a small proportion of the total deaths in the period under review, and left large tracts of India practically unaffected. Out of 132½ million deaths reported in British India between 1896 and 1913 rather less than 7 million deaths were attributed to plague.

This opportunity may be taken of correcting some statements on this subject in paragraph 71, page 26, of the report:

(1) The report states that between the first official intimation of plague and the census of 1901, 4 million have died of the disease. The correct figure is about 424,000.

(2) The report states that the mortality in the town of Dinga in 1907 was 119.20 per mile. It should have been added that the population of this town was only 5,412, so that it cannot be taken as general index in regard to the Province.

(3) The report states that "since the Black Death of the 14th century, there has never been such mortality from plague as in India between 1896 and 1912." The Government of India are not aware that authority exists for this categorical statement.

28. Equally or little less remarkable has been the rise in the real earnings of general labourers and artisans in villages, urban areas and cities. The statistics show advances in money wages ranging from 77 to 98 per cent. since the basic period. The case of factory hands, however, is more complicated. Wages in factories were in the earlier years above the general level; the rate of increase has accordingly been smaller, and has varied much, both as between different industries, and has between factories of the same kind in different provinces. In the absence of detailed family budgets, which Mr. Datta found it impossible to prepare, and of information as to periods of unemployment and overtime, no exact comparison of nominal and real wages can be made. Wages, however, have been rising rapidly in all factory industries since 1908, and it seems fairly certain that in the jute, wool, leather and mining industries, in the paper industry as a whole, and in the cotton mills of Calcutta, the United Provinces and the Central Provinces, they have risen faster than the cost of living. In the cotton mills of the Bombay Presidency, however, where wages in the basic period were higher than in other parts, and are still relatively high, and in those of Madras, it is doubtful whether the rise in money wages, considerable though it has been of late, has fully kept pace with the rise in prices.

29. Wages on railways exhibit similar variations. In Sind, Gujarat, and in the Bombay Deccan, where in the basic period they ruled high, wages have possibly lagged behind prices of late. But on the whole the wage-earners on railways seem to have secured increases in pay more than proportionate to the increase in the cost of living. The same is true for the most part of domestic servants.

30. In the case of the upper and middle classes, material is lacking for any but the most general estimate. The considerable expansion in the income-tax receipts suggests, what indeed would seem to be obvious, that

for the trading community the period has been one of growing prosperity. Cultivating proprietors have undoubtedly benefited, while in the case of landlords it has to be remembered that, if rents have risen less rapidly than prices, on the other hand, as indicated by Mr. Datta on page 145 (paragraph 345) of the report, "the share of the increased profits taken by Government as the supreme landlord is a comparatively small part of the total increase which has accrued from the rise in prices." Persons on fixed incomes have certainly suffered, and it is Mr. Datta's opinion that the professional classes too have been adversely affected, but the circumstances of this section of the community do not appear to have been made the subject of detailed statistical investigation. It may be observed, however, that in the case of the lower paid Government servants, civil and military, various measures in the direction of increased pay have been taken of recent years.

FUTURE COURSE OF PRICES.

31. It has been shown that the prolonged rise in Indian prices dates from the year 1905, and that its ultimate origin must be sought in causes which have been operative throughout the civilised world. As the growth of communications within India has tended to equalise prices throughout the country, so the parallel development of communications with foreign countries has tended more and more to bring Indian prices into line with those of the world in general. The prices of Indian exports are governed by those prevailing in the world's markets, and through the growing influence of foreign trade Indian prices, apart from temporary fluctuations resulting from the character of the seasons, tend to follow the same course as world prices. The problem of the future course of prices in India is one therefore to which no solution can be found in the analysis of Indian conditions only. It is essentially bound up with the question of the movement of prices throughout the

world. Prices have so far shown no sign of reverting to former levels. As regards the future, the factors involved, even under normal conditions of evolution, are too numerous, too complex, and too incalculable in their operation to warrant any definite and confident prediction: and the normal course has now been interrupted by the catastrophe of general war, the total effect of which upon the highly organised western systems of production trade and finance it is quite impossible to forecast.

Agricultural and Trade Conference.

The following is an extract from the speech of His Excellency Lord Pentland to the Agricultural and Trade Conference which met in Madras on the 14th December:—

In the first place let me thank you heartily for the ready response which you have made to my invitation to meet here together in Conference with some of the officers of this Government who are engaged in the development of Agriculture and Industries. It would perhaps be well for me to explain at the outset the idea underlying the summoning of this meeting which is the first one of its kind ever held in this Presidency, and in that sense an experiment. Yet it does I hope mark a stage in an ordered scheme of development and progress. During the last eight years substantial grants and much attention have been given by Government to the development of agriculture and the improvement of agricultural practice, and although the Department has, by no means, yet reached its full strength and scope, considerable success has resulted from its efforts. As far as this can be ascribed to any one cause it is due to the policy of sending trained men into the districts to get into direct touch with the cultivators, to study their conditions and work their indigenous crops. It is claimed with good reason that under normal conditions the improvements already introduced and adopted by the ryots in the districts are worth to them more than a crore of rupees a year and this,

although hitherto work of this description has only been possible in some portions of the Presidency. On the other hand, the growing of crops and the methods of cultivation are only a portion of the economic development of a country. It is through you and the firms you represent that our commercial crops are brought upon the world's market. None know so well as you the clash of interests between different branches of trade and commerce, yet few are in a better position to realise the benefits which flow from an established market for a recognised commodity, the need for products to be up to the sample, the advantages and difficulties of trading in bulk, and the openings and best markets for different products. Hence to advance the economic condition of our country, to develop its material resources, to retain and establish its markets, in a word to increase its general productivity, require the co-operation of both the growers and the purchasers. Both the producers and the purchasers are interested. Now better farming is better business; and the first and immediate test to be applied to all departments directly designed to work for the agricultural development of a country is not philanthropic but material, namely, are they promoting better farming and better business? Thus if the Agricultural and Industrial Departments are to be full of service to the ryots it is essential that they shall be in close touch on the other hand with the trading interests.

OBJECTS OF THE CONFERENCE.

While they do not claim or pretend to be in any sense a complete intermediary between the ryot and the purchaser, they are already in direct touch with many of the ryots in many places. They most readily acknowledge the help they have received from many of you gentlemen, who are here to-day, both in advice and in active assistance in the districts. And now that there are grounds for believing that they are steadily gaining more and more influence with the ryots, this

meeting has been summoned with the object of bringing them into closer touch with commercial interests, in the hope that by your advice and criticism their work and energies may be directed towards objects immediately profitable and useful, and that as a result of the discussions, which I hope will take place, mutual knowledge of objects and difficulties, of conditions and limitations may be increased. They do not ask for your general commendation or tolerant sympathy; they would, I am certain, prefer criticism and discussion, and to encourage this it is proposed that separate meetings shall be held (according to the time table which has been given to you) of those chiefly interested in the different staples of the Presidency. It is not intended to indulge in set speeches nor will the discussions of the various committees be open to the press, but a *Resume* will be prepared each evening and circulated among the members concerned. Statements on the various subjects for discussion from the point of view of the Department of Agriculture have already been distributed among you; and I do not propose to discuss them. As is inevitable with a department which is feeling its way these statements show that different stages of development have been reached in the work on different crops. I trust that the discussions which will ensue may lead in some cases to better organisation in dealing with improved varieties so that the advantages of quality and uniformity may be brought home to the ryot; that in others, e.g., in manures and implements further openings for trade up country may appear to the mutual benefit of yourself and the ryot; and in the case of others on which it is contemplated to commence work, e.g., cocoanuts, that these discussions may ensure work being commenced on useful and sound lines.

In all business, organization plays a dominant part, and many interests are interwoven, accordingly representatives of the Bank of Madras, of the Railways and of the Co-operative Department have been invited to be present. Also I have asked to meet you a few gentlemen

who have personally taken an active interest in agricultural and industrial improvement, and who by following or assisting the discussions may possibly derive or contribute ideas which again may ultimately be put into practice in their own villages or on their own land or in tracts where they possess influence or elsewhere. Without increasing the size of these meetings and so checking free and informal discussion it was obviously impossible from such a large and diverse Presidency as ours to invite more than a very few such representatives.

THE EFFECT OF WAR.

The idea of holding this meeting took shape before the outbreak of the war and before any of those difficulties which have arisen therefrom were dreamt of. But although a period of financial and economic difficulty may not seem a fitting opportunity to discuss schemes of development at such a time, it behoves all interests to work together as far as possible and it is more than ever the duty of Government to endeavour to secure that whatever funds can be made available for this important work are wisely and usefully expended. Moreover, whatever the temporary economic effects of this war may be we do not believe that it can permanently arrest the economic development and improvement of our Presidency.

For the events of the last 15 years show that our feet are firmly set in the path of material progress and that Madras is destined to come into still closer contact with the world's markets. In that period the value of exports from our parts has doubled, the earnings of the railways have increased very largely, a spirit of co-operation is now abroad, the standard of living has risen and so far as this morning's field of observation is concerned, you, gentlemen have increased very largely the number of your agencies up country.

It thus seems wise to endeavour to foster mutual knowledge among those directly engaged in this work.

CONCLUSION.

I trust that you may have no cause to grudge the time you have so readily consented to give and that from your help, advice and criticism during these discussions, these young Departments of Co-operation, Industries and Agriculture with which the Forest and Fisheries Departments are more particularly charged with the duty of conserving and developing the wealth and natural resources of the country, may derive strength and knowledge for further progress.

The Literary World.

WAR POETRY.

The Indian Army.

Into the West they are marching! This is
their longed for day.
When that which England gave them they
may at last repay;
When for the faith she dealt them, peasants
and priests and lords,
When for the love they bear her, they shall
unsheathe their swords!
Men of the plains and hill-men, men born
to warrior roles,
Tall men of matchless ardour, small men
with mighty souls,
Rulers alike and subjects: splendid the
roll-call rings:
Rajahs and Maharajahs, Kings and the
sons of Kings,
Bikanir, Patiala, Ratlam and Kishangarh,
Jodhpur, who rides the leopard down,
Sachin and Cooch-Bihar,
From lands where skies are molten and
suns strike down and parch,
Out of the East they're-marching, into the
West they march.....
Oh little nimble Gurkhas, who've won a
hundred fights,
Oh Sikhs—the Sikhs who failed not upon
the Dargai heights,
Rajputs, against whose valour once in a
younger world
Ruthless, unceasing, vainly, the Mogul's
hosts were hurled.
Grey are our Western daybreaks and grey
our Western skies
And very cold the night-watch unbroke by
jackals' cries;
Hard too will be the waiting—you do not
love to wait?
Aye, but the charge with bayonets—they'll
sound it soon or late!

And when that charge is sounded, who'll
heed grey skies and cold?
Not you, Sikhs, Rajputs, Gurkhas, if to one
thought you hold,
If as you cross the open, if as the foe you
near,
If as you leap the trenches, this thought is
very clear:
These foes, they are not sahibs: they break
the word they plight,
On babes their blades are whetted, dead
women know their might,
Their Princess are as sweepers whom
none may touch or trust,
Their gods they have forgotten; their
honour trails the dust;
All that they had of izzat is trodden under
heel—
Into their hearts, my brothers, drive home,
drive home the steel
—R. E. VERNEDE in the *Times*.

The Belgian National Anthem.

Since the outbreak of war patriotic feeling in Belgium generally has been stirred to a fierce blaze, says the Brussels correspondent of the *Times*. On every hand one hears the National Anthem of the country, the famous Braban Conne. As this stirring chant is very little known and as its tone is, in the light of recent events, strangely prophetic, he has given a somewhat free translation which is as follows:—

Fled the years of servile shame!
Belgium, 'tis thine hour at last.
Wear again thy glorious name,
Spread thy banner on the blast.
Sovereign people in thy might,
Steadfast yet and valiant be,
On thine ancient standard write:
King, and Law, and Liberty.
Strive, nor seek discharge at length,
Hold thy courage as thy crown.

God, Who keeps thee in His strength,
On thy labours smileth down.
Over all thy fruitful land
Labour's prize is full and free,
On thine arts enthroned stand,
King, and Law, and Liberty.
Foes, that were our friends of old,
Are returned to love at last.
All the free we prize as gold,
Praying that our strife be past.
Belgians and Batavians, friends,
Knit in brotherhood shall be ;
With one voice the shout ascends :
King, and Law, and Liberty.
Belgium, Mother, thus we vow.
Never shall our love abate.
Thou our hope, our safety thou.
Hearts and blood are consecrate,
Grave, we pray, upon thy shield.
This device eternally,
Weal or woe, at home, afield,
King, and Law, and Liberty.

Master Minds on War.

War is a game in which Princes seldom win ;
the people never.—COLTON.

A trade of barbarians, the whole art of which
consists in being the strongest on a given
point.—NAPOLEON I.

Take my word for it, if you had seen but one
day of war, you would pray to Almighty God
that you might never see such a thing again.—
WELLINGTON.

What a fine-looking thing is war ! Yet,
dress it as we may, dress feather it, daub it
with gold, huzza it, and sing songs about it—
what is it, nine times out of ten, but murder in
uniform ?—JERROLD.

While fields are laid waste and cities depopu-
lated, the persons by whose command such
miseries take place, are often wantoning in
luxurious excess, or slumbering in a state of
unfeeling and lazy repose.—PARR.

So costly is war that if the money which has
been spent in carrying it on had been sacredly
employed, it might, with the blessing of, the

God of Peace upon it have transformed our sin-
stricken world into the garden of the Lord.—
DAVIES.

War is that miserable desolation that finds a
land before it like Eden, and leaves it behind
like Sodom and Gomorrah, a desolate and for-
saken wilderness. Let it be sowed with the
seed of a man and beast, as a field with wheat,
war will eat it up.—ADAMS.

Wherever there is war, there must be injus-
tice on one side or the other, or on both. There
have been wars which were little more than
trials of strength between friendly nations, and
in which the injustice was not to each other,
but to the God who gave them life. But in a
malignant war there is injustice of ignobler kind
at once to God and man, which *must* be
stunned for both their sakes.—RUSKIN.

War, though it may be undertaken, accord-
ing to popular opinions and popular language,
with justice, and prosecuted with success, is a
most awful calamity ; it generally finds men
sinners, or makes them such ; for, so great is
usually the disproportion between the provoca-
tion and the punishment, between the evil
inflicted or suffered, and the good obtained, or
even proposed, that a serious man cannot re-
concile the very frequent rise, and very long
continuance of hostilities, to reason or to
humanity.—PARR.

We have abolished slavery from civilized
countries, the owning of man by man. The
next great step that the world can take is to
abolish war, the killing of man by man.—
ANDREW CARNEGIE.

My first wish is to see the whole world at
peace, and the inhabitants of it as one band of
brothers, striving which should most contribute
to the happiness of mankind.—GEORGE WASH-
INGTON.

With malice toward none, with charity for all,
with firmness in the right as God gives us to
see the right, let us strive . . . to do all
which may achieve and cherish a just and last-
ing peace among ourselves and with all nations,
—ABRAHAM LINCOLN.

The method by which States prosecute their
rights cannot under present conditions be a pro-
cess of law, since no Court exists having juris-
diction over them, but only war. But through
war, even if it result in victory, the question of
right is not decided.—EMANUEL KANT.

The doctrine that violence, oppression, inhu-
manity, is an essential element of society, is so
revolting that, did I believe it, I would say, let
society perish, let man and his works be swept
away, and the earth be abandoned to the brutes.
Better that the globe should be tenanted by
brutes than by brutalized men.—WILLIAM
ELLERY CHANNING.

But what a cruel thing is war, to separate and
destroy families and friends, and mar the purest
joy and happiness God has granted us in this
world ; to fill our hearts with hatred instead of
love for our neighbours and to devastate the fair
face of the beautiful world.—ROBERT E. LEE.

India and Germany.

It was a German, Max Muller, who did more
than any other occidental to restore their lost
self-respect to Indians.

He it was who wrote :—" If I were asked
under what sky the human mind has most fully
developed some of its choicest gifts, has most
deeply pondered on the greatest problems of
life, and has found solutions of some of them
which well deserve the attention of those who
have studied Plato and Kant, I should point
to India. And if I were to ask myself from
what literature we, here in Europe, we who
have been nurtured almost exclusively on the
thoughts of Greeks and Romans, and one
Semitic race, the Jewish, may draw that correc-
tive which is most wanted in order to make
our inner life more perfect, more compre-
hensive, more universal, in fact more truly human,
a life not for this life only,—but a transfigured
and eternal life—again I should point to India."

It was a German, Goethe, who pronounced
the highest eulogium and the one most full of
insight on Kalidasa's *Sakuntala* when he said :—
" Wouldst thou the young year's blossom and

the fruits of its decline, and all by which the
soul is charmed, enraptured, feasted, fed
wouldst thou the earth and heaven itself in
one sole name combine ? I name thee, O
Sakuntala ! and all at once is said."

It was a German philosopher, Schopenhauer,
who has confessed :—" In the whole world
there is no study so beneficial and so elevating
as that of the Upanishads. It has been the
solace of my life, it will be the solace of my
death."

It was a German again, Frederic von Schle-
gel, who declared :—" Even the loftiest philo-
sophy of the Europeans appears in comparison
with the abundant light and vigor of oriental
idealism like a feeble Promethean spark in the
full flood of heavenly glory of the noon-day
sun."

So while unreservedly condemning the
aggressiveness and savagery of the Kaiser and
the German jingoes, while earnestly wishing
for their ultimate defeat, " we " says the
Modern Review, " do not and cannot entertain
any feeling of animosity against the whole
German race. We are convinced that the
better minds of Great Britain are with us in
this attitude."

No More St. Petersburg.

St. Peter the Great laid the foundation of a
" European capital for his country. " In spite
of geographical and other difficulties, the city
has become one of the most important in the
world. The Russians have known it hitherto
as Petersburg, not *Saint* Petersburg ; they have
now approved of the change of name now de-
cided upon, *i.e.*, Petrograd, as it eliminates the
Teutonic " burg " and substitutes the Slavonic
" grad " (or *gorod*) as an affix to the Russian
proper name " Petro."

Free Libraries in Mysore.

The Mysore Government has sanctioned the
opening of a public library in Bangalore and
another in Mysore. The Government ob-
serves that the question of starting smaller
free libraries in two or more localities in the
two cities may be developed during the year
with the aid of the Municipalities concerned.

REVIEWS AND NOTICES.

Good and Bad Trade, by R. G. Hawtrey, Constable, London.

In this book, Mr. Hawtrey examines certain elements in the modern economic organisation of the world which are intimately connected with the fluctuations of trade.

Trade as a whole is subject to a well-marked though not quite regular wave-motion, with a period from crest to crest, or from trough to trough, which varies from four or five to about ten years. In the trough of the wave, business is subject to a kind of paralysis. It becomes abnormally difficult to sell goods, and manufacturers find themselves compelled to reduce their output and consequently to turn adrift some of their workmen. At such times all the various causes of unemployment appear to be working with mere severity than usual. On the other hand, on the crest of the wave, everything seems to prosper. Business is profitable; manufacturers are overwhelmed with orders; practically every competent workman can get work. These fluctuations of trade are important on many grounds, but it is on account of their bearing upon the unemployed problem that an explanation of their causes and true character is most urgently called for.

The general result is that fluctuations are due to disturbances in the available stock of money—'money' being taken to cover every species of purchasing power available for immediate use. Mr. Hawtrey's conclusion is that "a depression in trade is in essence a general slackening of the money demand for commodities, and an expansion of trade is a general augmentation of the money demand for commodities. All the rest merely traces the causes and consequences of these variations in demand."

The Co-operative Credit Movement in India—By Panchanandas Mukhopadhyaya, M.A., F.R.E.S., Rai Bahadur Sirdar & Sons, 75 '1-1, Harrison Road, Calcutta.

This handy volume of 156 pages is the first of the "Indian Citizen series," written by an eminent economist, Prof. Panchanandas Mukhopadhyaya, M.A., F.R.E.S., of the Calcutta University.

The advantages of Co-operation are indeed manifold and to us, Indians, nothing can be more encouraging and pregnant with possibilities than the ever-memorable words of His Gracious Majesty, the King-Emperor, who, on the 13th December, 1911, said, "If the system of Co-operation can be introduced and utilised to the full, I foresee a great and glorious future for the agricultural interests of this country."

In this little volume Prof. Mukhopadhyaya deals with the various topics connected with Co-operation—Rural indebtedness in India, Progress of the credit movement in India, the effect of that movement, etc. What must commend the book to the readers is the excellent discussion of some outstanding questions, such as "Finance and Control, the proposed AH-India Agricultural bank, State aid to Co-operative Societies, Attitude of the Government towards the co-operative credit movement, its future relations to it and the utilisation of reserve funds." It may not be out of place to mention that the book has a good appendix containing statistics giving a general view of the progress of the movement in India, and distribution of societies by provinces. There is also another appendix containing some model bylaws and the recent Resolution of the Government of India on the co-operative movement. The book will commend itself to educated Indians who wish to know the progress of Co-operation in India.

The Prices Committee Report.—We acknowledge with thanks the receipt of the first volume of "the Enquiry into the Rise of Prices in India," Mr. by K.L. Datta, M.A., with the Government of India Resolution thereon. Price Rs. 2-8-0.

The Educational World.

Educational Research.

This is essentially an age of science and reason. Nothing that is done by experts is done without scientific analysis and thought. But it is a pity that research in the system of education to be imparted to our youths, is after all, just beginning to be made in earnest and even in the scientific study of the underlying theory and principles of education, the progress made has been disappointingly small. A certain amount of knowledge of the ideals, aims and methods of education has been collected, but the method of arriving at educational principles has never been carefully studied. Mr. Alexander Morgan of Edinburgh points out that for want of scientific procedure, we have substituted a process of trial and error, often on a national scale, a method both wasteful and slow and unworthy of an age of science. It is little wonder that we find in the history of education the same problems recurring again and again, each solution in turn having failed to stand the test of experience because of the unscientific method, or total want of method, by which it was arrived at. Let us take, for example, the curriculum of the Primary or Secondary School, or even of the Secondary School leaving system. How many vicissitudes has it undergone in recent years, and how far are we from a satisfactory solution of it yet! Again, how many specific methods within our own memory have been advocated one after the other, or sometimes together, for teaching a subject and experience has proved them erroneous? So long as the discussion remains in the region of mere opinion or is based on a re-statement of obsolete data, we cannot hope for the settlement of old controversies. Nothing but first hand observation and the study of well ascertained facts can lead to their solution. Mr. Morgan, in his interesting article on

"Research in Education" points out clearly the deductive and inductive methods of procedure in the scientific study of the subject; and in his opinion, it is no wonder that the deductive method proved a failure.

But now education is departing from the old *a priori* methods of deduction so loosely applied, and is adopting the surer and more scientific methods of observation, induction, and experimental testing under school conditions of the conclusions reached. Education has at length fairly entered upon the stage of scientific method. As Prof. John Adams very aptly said in his Presidential Address to the Education Section of the British Association in 1912, "we are passing from an appeal to experience to an appeal to experiment." It is safe to say that in the near future every up-to-date University will have established full courses in experimental psychology and experimental pedagogy, with laboratory equipment on thoroughly scientific lines.

Already a large amount of work has been done and many facts in connexion with education and teaching have been established and are being correlated and organized into a science of education. Important investigations, for instance, have been made regarding memory and attention of boys with a view to obtaining tests by which to determine readily the degree of intelligence of children. "These are little more than beginnings," says the writer.

But more knowledge and more organized investigation of educational problems are imperatively required to give a more exact basis for the educational treatment of childhood. We want, for example, exhaustive qualitative and quantitative observations of each of the general mental powers—of perception and discrimination, of apperception.

and the range of ideas, of attention and memory, of thinking and imagery, of emotion and volition ; we want exact determinations of the different types of children with respect to these powers, the psychological differences in children, the differences between the normal and subnormal child, sex differences. We want to know to what extent the intellectual and moral differences revealed are dependent upon the original endowment of the child, and to what extent upon his physical, intellectual, and social environment. We still require exact knowledge of the specific psychological processes involved in reading, writing, spelling, arithmetic, etc. We are finding out that these processes are not nearly so simple as we used to imagine in our theory, and still erroneously assume in our practice. Again, a good deal of experimentation is still necessary to ascertain how best to teach children to study for themselves. While they are yet at school we must start them in the right way of learning things for themselves, and so render them, as far as possible, capable of self-direction in study during and after school life. We require investigations to find out what are the most effective means of study for children of various types and ages.

One of the crying needs of present day education is a scientific theory of the Curriculum.

To establish it, we require (1) investigations regarding the mental, moral and physical nature of the being to be educated. The educator, as Prof. Adams calls him, is the indispensable factor in education, and one of the prime objects of a scientific curriculum should be to present the right ideas just at the time when his mind and nature are ready for them. (2) Next we must clear up our ideas regarding the effect we are seeking to produce by the curriculum. Is it knowledge or utility or mental discipline or complete living, or is it the more mundane object of enabling a pupil to win a prize or to pass in some competitive examination? A scientific curriculum must have a defi-

nite purpose in view. The educator must know what he is aiming at. Vague general ideas regarding this have done much harm in the past. (3) To complete the scientific theory of the curriculum we must determine the subject-matter to be utilized. Supposing the nature of the child and the aims of education determined, the vital question is. What is the best form of intellectual food, and the quantity and quality of it to be administered at the different stages of growth so that it may be assimilated and successfully introduced into the intellectual circulation with the minimum of effort and waste? In the present condition of pedagogic science it is wise not to commit ourselves to abstract theories regarding the what, the when and the how of the different branches of the curriculum. We require yet much patient investigation of the relative values and relative functions of the various subjects for the purposes of education. Until this is done we must regard much of our present belief and practice only as provisional, and as open to revision when we have been able to draw safe conclusions from a wide range of carefully planned educational experiments.

The field of education opens a wide vista for research and if it is fully realized that a University is not a place where instruction is given, but an institution for the training of experts in the art of making knowledge, and that this end is best attained by the association of the student with his professor in the inquiries which the latter initiates and pursues, every effort must be made to make a scientific study of the subject.

Current Periodicals in Schools.

William E. Grady, Principal of the Public School, New York City, feels that pupils are not trained to read intelligently the various types of publications, such as newspapers and magazines, from which in later life they will have to glean the bulk of their knowledge. According to his plan, the different classes will discuss

current magazines under the guidance of a teacher, which discussion will take the place of the ordinary formal lesson dealing with so-called "masterpiece of literature." Mr. Grady's scheme is outlined as follows :—

(1) Material shall be stamped with school stamp and shall be filed and catalogued in a special room.

(2) On request countersigned by principal or assistant, teachers may borrow such material for purpose of actual instruction in their several subjects. Such material shall be returned to its room on the same day.

(3) Teachers using such material are requested to form judgments as to its value and to discuss results with the principal.

(4) General topics and controlling ideas suggested for consideration in connection with said material are the following :—

(i) Pupils should be led to appreciate that the reading of such material is a real test of mental ability in general and of reading ability in particular ; that many of the facts in after life, whether such facts be cultural or technical, must be gleaned from such sources.

(ii) The teacher's instruction shall subordinate mere facts to methods of sound thinking. To the extent that pupils display individual taste and judgment in the selection of articles for discussion, to the extent that they distinguish the relative importance not only of articles, but also of paragraphs and statements within the limits of said article, and to the extent that they can epitomize an article in a series of concise, well-knit sentences, the work will be distinctly educational, rather than the mere employment of a leisure moment.

(iii) The organization of the magazine or periodical should be discussed in terms of the following :—

(a) Title, company, cost.

(b) Aim and value in terms of range of topics, reputation of contributors, point of view of editorial articles, relationship of articles in monthly or weekly publications to the current

events of each month as reported in the daily papers. For example, note the different aims of such magazines as the *Literary Digest*, *Scientific American*, *Review of Reviews*, the *Indian Review*, the *Wealth of India*, etc.

(c) Illustrations and cartoons.

(d) Quality and range of advertisements.

(iv) Test value of work with pupils in terms of particular lesson units and also more generally in terms of :—

(a) Reading habit as indicated by knowledge of current events.

(b) Desire to include good current topics as basis of oral or written composition.

(c) Critical judgments as to what magazines, weeklies, etc., and article therein, interest them most.

(d) Increased appreciation of design, drawing, and lettering.

(e) Occasional purchase of or subscription for material used in classroom discussions.

(f) Increased use of facilities offered by reading rooms.

(g) Organization of pupil groups on club plan to purchase publications to be circulated within the limits of the group.

(5) If the literary material obtained through the courtesy of the various publishers be used by the departmental teachers of literature in every 3-minute or 4-minute lesson to supplement the study of the master-piece designated in the course of study, the work will be distinctly more practical and cultural.

Moreover, the teachers of special subjects like geography ought to find it possible really to vitalize the subject matter of the text-books by the study of current happenings.

The Industrial Education Committee.

At a meeting of the above Committee which was held at the Office of the Director of Industries, Madras, on the 27th November last, the following resolutions were passed :—

That the Committee recommends that facilities should be provided for such General Educa-

tion (by means of a weaving class) as may be necessary to enable the people to take advantage of the class course.

This Committee recommends that scholarships be awarded to students for the study of technological subjects outside Madras Presidency for which provision is not made in this Presidency.

The Committee further recommends that General Evening Education classes up to the Standard IV Form should be provided, as well as classes for instruction in mechanical and free hand drawing; it being a condition for admission however that pupils should be *bona fide* industrial workers, or apprentices.

The Committee considers the proposed Washermanpet site to be the most suitable centre for the teaching of Engineering Trade subjects, but it is of the opinion that for general subjects another site would probably be more central, and recommends that provision should be made in the Poonamallee High Road adjoining the Director's Office for another branch of the Trade School.

The Committee consider a system of stipends to apprentices to be objectionable. It is however recognised that financial assistance may in some cases be necessary, but instead of fixed stipends it recommends the grant of scholarships to individual cases.

The Committee is not in favour of the provision of hostel accommodation.

It is considered essential that for teaching purpose every effort should be made to secure the partial services of individuals possessing practical experience of the subjects they teach, and is of opinion that, provided suitable remuneration be given, in most cases it will be possible to arrange for the part time services of individuals actually practising the trade to be taught. The Committee regards it as desirable to reduce the permanent staff of the Trades School to the minimum possible limit. With the exception of general literary and scientific subjects, it will in their opinion be unnecessary to employ any regular teachers.

The Committee anticipates that a considerable time may elapse before a building scheme in connection with these proposals matures, and it recommends that, if possible, work be started in a rented building. There appears, however, some doubt as to whether a suitable building will be available near either of the sites proposed for these Trades School, and the Committee accordingly recommends that permanent arrangements should be made as expeditiously as possible.

Mr. Tressler has been requested to draw up a scheme upon certain specific points *re* cost, curriculum, etc.

Vocational Guidance.

How vocational guidance was given last year at Abilene, Kansas, may be gathered from a short letter to the *School Review*. It was thought that, instead of having teachers who had vague ideas of the several vocations, it would be better to employ possessing men having each a direct and intimate knowledge of one. Seven trades were chosen by the authorities of the high school for presentment to the boys, namely, law, banking, medicine, insurance, mercantile business, newspaper work, and school mastering, and to present each, a man of character and successful experience was selected. The boys jumped at the chance of instruction by real "business men." The "business men" took an interest in talking to the young. Each for his own trade explained what disposition, habits and training were required by it, what prospects of advancement and remuneration it afforded, and in what ways it served the community. The meetings at which this was done took place on a Friday evening in the school chapel, and when for forty minutes the speaker had addressed the boys, they probed him with their penetrative questions. A similar plan was adopted with the girls, and proved acceptable to them. This is vocational education of the right type.

The Scientific World.

The Reclaiming of Waste Rubber.

In this country, as well as abroad, factories for the reclaiming of rubber are increasing in number, in part because of the greater demand for reclaimed rubber, in part because new processes are being invented. The growing requirements of these factories in the way of waste rubber must in time render the trade in this more important, and encourage dealers in improving their organization for the searching out and collection of such material. And as it is to be expected that improvements in reclaiming processes must come, and will lead to improvements in quality of the rubber obtained, one is prepared to believe that the trade will receive gradually increasing impetus, for a bettering of quality must rest in a greater demand.

One new method after another for the reclaiming of rubber has been patented, but as yet the ideal has not been attained, that of a rubber that may be used in place of virgin rubber, the whole of the sulphur of vulcanization having been removed. The typical reclaimed rubber, while it may have all or almost all of the sulphur removed that is not chemically combined with the rubber, still contains the combined sulphur. Its uses are therefore limited. But it is a difficult problem to find out how this combined sulphur may be withdrawn without injuring too greatly the quality of the rubber. Bary, who enters into the question in the pages of the *Revue du Chemie Generale*, draws attention to the view held that during vulcanization the essential constituent of the rubber becomes partly broken down, so that reclaiming processes start with a handicap against them. In reclaiming there is a race between the desulphuration of the rubber and its chemical disintegration, and the hope is to

have the former complete before the latter has got a proper start. This hope has so far not been realized, and it is to give an impulse to the solution of the problem that Bary has written his review of the subject.

He has in view the complete removal of the sulphur from vulcanized rubber when in solution. In many of the patented reclaiming processes solvents alone are used, such as turpentine, naphtha, benzene, carbon disulphide and chloroform. By heating a solution of vulcanized rubber, then precipitating the rubber, say, with alcohol, redissolving it, heating this solution, then precipitating the rubber, and so on, the amount of sulphur combined with the rubber is gradually reduced. But for complete or anything like complete removal from combination with the rubber there must be used in addition some chemical substances that will absorb the sulphur as it is liberated by the heating.

Of the substances that have been proposed for this purpose, Bary has drawn up a list, dividing them into three groups. In the first he places soda, lime, barytes, alkaline carbonates and sulphides and soaps. But alkaline substances have an injurious effect upon rubber, and the process of desulphuration must be stopped before it is complete, because the rubber, when extracted, is found to be tacky and weak. In the second group he places aniline and its relative which not only absorb the sulphur, but also are themselves solvents of rubber. Two objections to their use are that a coloring matter forms, the reclaimed rubber being black, and that they are expensive. In the third group are the metals, their oxides, and their salts. The insolubility of these substances, or the sulphides formed, allows of their easy separation from the solution by decantation or centrifugal force.

But as absorption of sulphur takes place only over the surfaces of their particles, these must be very finely divided. The substances thought the best are the peroxides of lead, manganese, iron, etc. It will be remembered that Hinrichsen, and Kindscher are experimenting with metallic copper, a little metallic zinc being added.

The stages in this method of reclaiming are as follow :

(1) The grinding of the waste rubber ; (2) its solution, xylol apparently being the solvent recommended ; (3) the heating for liberation of the sulphur ; (4) the separation from the solution of the mineral and other insoluble matters ; (5) the separation of the rubber by precipitation with alcohol, or more economical, filtering through animal or other specially-adapted membrane that will allow sulphur, resins, solvent, etc., to pass and will retain the rubber.

Though the present price of rubber allows fairly wide margin for the cost of producing reclaimed rubber, it is necessary none the less to make careful estimates. Bary puts the cost of solvent (xylol) that is lost during the process, if the rubber is separated by filtration, at about one penny per pound of reclaimed rubber. And, as far as the total cost of production is concerned, he goes no further than to say that it must exceed 2.2 pence per pound. Precipitation of the rubber by use of alcohol and the employment of other solvents than xylol may be expected to increase the total cost. A consideration of the above account of the stages through which the rubber must pass, and it may be said that it does not give anything like a complete picture of the treatment necessary, would show that Bary, when he puts the figure that must be exceeded as low as 2.2 pence per pound, has taken a modest view of the probable total cost.

He has experimented only under laboratory conditions with the metallic peroxides, but he expresses his confidence in the future of reclaiming with such substances. The demand

for reclaimed rubber, in its present form, has already led to the development of a large trade in waste rubber, and no doubt dealers will wait with interest for news that successful production of an improved product is possible on an industrial scale, there being no doubt that an expanse in the trade will follow.—*Scientific American*.

Man as a Geographical Agency.

An interesting address on this subject was recently delivered before the Geographical Section of the Australian Meeting of the British Association by its President, Sir Charles P. Lucas. He first discussed the question,

IS MAN A DESTRUCTIVE BEING ?

G. P. Marsh wrote many years ago that every plant, every animal, is a geographical agency, but man is a destructive one. Vegetables and in some cases, even wild beasts, have restorative powers, but the more civilised man has become the more he has destroyed. He took this gloomy view mainly on account of the mischief done by cutting down forests. Trees are, indeed, very useful in the moderation of climate, in preserving and enriching the soil, and in a variety of ways. The destruction has been wrought directly rather by the unscientific than by the man of science, Governments and Associations have taken the necessary measure to protect woodlands and to re-forest tracts which have been laid bare. Science has transformed the world by new processes and by developing old ones. Sir Lucas therefore asked the audience to consider man as the lord of Creation, as transforming geography, more as a creative than as a destructive agency. Sir Lucas next considered

CONVERSION OF WATER INTO LAND.

Land has been reclaimed from water in many parts of the world. The Netherlands are the most striking example. They are the result of reclamation, of dykes and polders. The kingdom has a constantly changing area of 12,000

to 13,000 sq. miles. In Holland about 40 sq. miles are annually reclaimed from water. It is said that the Dutch Government has in contemplation a great scheme for draining the Zuyderzee to be carried out in 33 years and to cost about 16 million pounds. This will add 815 sq. miles to the kingdom of which 150 will be fertile land, besides a fresh water lake of 557 sq. miles.

OBJECTS FOR WHICH LAND IS RECLAIMED.

(a) *Agriculture* is the most important. Norway and China are striking examples. In the former, agriculturists are reclaiming every year 40 sq. miles of marshes and fiords. In the latter, the dyke system of the Hohangho has won for cultivation an area equal to that of England. (b) For *town sites*. Examples are many. (c) *mineral wealth*. In order to work the hematite iron mines in Cumberland about 170 acres were reclaimed from the sea in 1900—04.

CONVERSION OF LAND INTO WATER.

(a) For the necessities of town life, new lakes, reservoirs and even rivers have been created. (b) Irrigation is responsible for many artificial lakes in Egypt, India and other countries. (c) For purposes of transport land has been drowned, e.g., Suez and Panama Canals.

WATER TRANSPORT AND LAND TRANSPORT.

In many cases water transport has encroached upon land transport. Many canals have been constructed. Waterways have been created where there was dry land and the existing inland waterways have been converted into sea-going ways. Manchester and Glasgow are the best examples. The former has become a seaport through its ship canal. The Clyde was converted from an insignificant stream into a deep navigable river, capable of giving to ocean going vessels access to Glasgow. "It is because Engineers have artificially improved Nature's work on the Clyde and the Tyne, that these rivers have become homes of ship-building for the world."

In the matter of transport, land has also encroached upon the sea, e.g., in the bridging of India to Ceylon to carry goods and passengers as far as possible by land, and in the proposed scheme for the channel tunnel connecting England and France at the Straits of Dover.

NATURAL BOUNDARIES AND HUMAN AGENCY.

The natural boundaries are mountains, forests, deserts and, to a certain extent, rivers. Man cannot remove mountains, but he can and he has saved the difficulty and trouble of going over them by piercing them by railways, e.g., in the Rocky mountains and in the Alps. Forests were in old days very real natural dividing lines. Kent was cut off from Central England by a forest which, in Alfred's time, was 120 miles long and 30 broad. Many forests have now been cleared in many parts of the world. Deserts have been pierced. Railways are introduced. By dry farming and afforestation moisture is preserved and the deserts become habitable. Irrigation from underground and overground water has changed the face of the deserts. Underground irrigation is seen in the Libyan and Kalahari deserts. By 1902, nearly 22,000 sq. miles in the Algerian Sahara had been reclaimed with water from artesian wells. India, Egypt and Australia stand foremost in overground irrigation. "With the advancement of science and the growth in population," says Sir Lucas, "we can reasonably expect that human agency will greatly obliterate the deserts which now appear on our maps." With the modern scientific appliances, rivers are becoming boundaries which may be shifted at the will of man.

HUMAN AGENCY ON CLIMATE AND PRODUCTS.

"Man is a geographical agency and in no respect more than in the effect of his handiwork on climate, for climate determines products, human and others." That the human agency has transformed the climate of a province is proved by many instances, of which the following are important. The intervention of man

for agricultural purposes has made the climate of N. W. Canada more favourable than what it was. Near Assouan dam in Egypt there is at present a small annual rainfall, whereas in past years the locality was rainless. As regards products, man has introduced many plants which were not found in the province. Darwin visited St. Helena in 1836 and he wrote that the number of plants then found was 746 and that out of these 52 alone were indigenous species.

"The greatest revolution that is being worked in human life is the elimination of distance." By this Sir Lucas thinks that steadily and surely the world is becoming one continent.

A Novel Billiards Recording Device.

It is generally acknowledged by billiard players that the true estimate of a player's play is to be made, not by an occasional break of 30, 40, or 50 he might have made in the course of a game, but by the ratio of the total number of points scored in the game to the total number of turns the player has played. For example, if a player had come to the table 50 different times for scoring 200 points, his ratio would be 4. This number, which serves as a numerical measure of a player's skill, may therefore be termed the co-efficient of skill, or simply the "co-efficient" of the player. In the case of matches between famous players, a special record of this is made: but no arrangement has heretofore been devised by means of which this co-efficient can be automatically determined for every game of a player.

Mr. Kurishingal, K. Bernard, M.A., Professor at the Government College, Jubbulpore, has, however, recently devised simple but ingenious means for automatically recording the number of turns played, on the cue itself, so that at the end of the game, by dividing his score by this number, the player can ascertain with ease his co-efficient for that game.

For this purpose, there is provided within the butt end of each cue a counting device actuated by a push-button projecting from the cue, and

having its mechanism arranged within the cue so as in no way to interfere with the play.

The push button, which is situated at about four inches from the butt end of the cue, and is the only part that projects beyond its surface, actuates a lever arranged within the cue and connected with the counting discs, which are arranged within the butt of the cue, and whose reading is visible on a dial arranged at the end of the cue and fitted with a watch glass carried by a metal ferrule on the cue.

To enable players to fit up existing cues with an attachment according to this invention, it is practicable to make a six-inch length of butt end containing the counting device that might be screwed on to an old cue after an equal length had been cut off from it.

It will be apparent that Professor Bernard's device is calculated both to promote efficiency and considerably to increase the interest of the game. The patent is for sale.

Trees Digest Food Before Eating It.

If proper nourishment be placed about its roots a tree will absorb this food and grow rapidly and strongly. But how the tree feeds is somewhat more difficult to explain. In all probability the tree digests its food first and consumes it afterwards. Certain it is that the average tree has no means of consuming food as a whole, as members of the animal kingdom absorb it. It is well known that the larvæ of certain insects digest their food first and consume it afterwards. Observation would indicate that this is exactly what the tree does. The tiny rootlets act on the substances in the earth, dissolving and breaking them up so that they can be absorbed through the root pores. In order so to be taken up, the chemicals must be in liquid form and devoid of all waste. The end of each root is armed with a horny substance with which it can burrow through the hard soil in search of food. When food is found it is dissolved into a liquid and absorbed by the root fibres. From the root the food is carried by the sap to all parts of the tree.

The Sanitary World.

Public Health and Garden City Movement.

Mr. Francis E. Fremantle writing on the above subject in the *Garden Cities and Town-Planning* points out that the vast development of machinery and industrial life in the last century has resulted in the vast growth of towns without regard to the health, to the shutting out of the country from the lives of the industrial workers and to the hideous growth of slums. The garden city scheme is the only complete, well-reasoned, well-ordered effort to prevent and do away with slums and to minimize the unhealthy conditions both of rural labour and of urban industrial life. It is one of the greatest and fullest measures devised for improving the national health.

"The slum is the embodiment of evils to be attacked. But how is it to be done? At present, the sanitary inspectors and health visitors find out the horrible conditions in which the people live and the future generation is bred; the medical officers of health report them: the sanitary authorities take action against owners and occupants. This is all good; but it is mere tinkering with the problem. We must wipe out the slum, demolish the old houses, and build in their stead new houses that can never be in-sanitary, arranged so that no quarter can ever develop into a slum. This is slowly being done. But slum areas are in the most crowded and most central parts of cities; their site is most valuable; to demolish and rehouse the residents on the spot is a most expensive procedure. And yet, many workers must be housed close to their work; and the alternative is travelling an hour or two on work days, mostly on foot or in crowded trains, to and from the suburbs, where the land is comparatively cheap. This has been the main line of development during the last quarter of

a century and the result has been certainly the vast growth of residential suburbs. Meanwhile, however, manufacturers have come gradually to realize the economy of either removing their business or of establishing new factories, especially new industries from the first, in the country, where land is cheap and plentiful and the health of the workers good, but, in the main, without any common plan. And so we return to the root-principle of the garden city idea, the combination by forethought of the advantages of both town and country.

The first point to note in the health conditions, aimed at by the Garden City movement, is that it deals with the whole life of a complete community. In a great city, the housing problem is confined to the house in which the children and their father spend little more than their nights. The schools and factories in which they spend their days are under different authorities; they and the places of public assembly are considered as problems quite distinct from that of housing. Yet it is of even greater importance to the health of the children and workers that they should pass their days than their nights in healthy surroundings. And so the garden city scheme aims at the health of all buildings.

The four outstanding health-factors in this movement are air, light, cleanliness and good spirits.—

(1) *Air*.—(a) The first essential is that the houses shall be built so as to allow at least the minimum of ventilation without undue expense. New houses must, therefore, conform to by-laws forbidding the erection of back-to-back houses, and insisting on a certain window-area for each room and on the provision of fireplaces or other means of through-ventilation to each room. Of greater importance, however, is the

extent to which these means of ventilation are used.

(b) What has been said of the house applies equally to the schools and factories, halls and churches.

(c) But even the open window is of little use, if the air outside it, is stagnant. The essence of the slum is congestion—the crowding of too many houses on the land. Mr. Culpin, in his *Garden Cities Movement up-to-date*, gives the figures for thirty-three estates that have been developed on garden city lines; with only three small exceptions the maximum number of houses allowed to the acre is twelve. This is, indeed, a contrast with the fifty-six houses to the acre allowed by the "Model By-laws." Here is the health value of town planning. In a garden city we find no narrow streets, and no courts or alleys. The main thoroughfares avoid both the extravagant grandeur of a foreign boulevard, with its excessive cost for construction and maintenance, and the foul reality of the stifling courts—mere cesspools of air—concealed behind its splendid frontage. Every house is well open to the air fore and aft; most houses are open also on one side; there are no unbroken rows of houses; and so the air circulates freely and the house is kept dry and ventilated through the pores of the walls as well as through the open windows.

(d) This free movement of air, too, is facilitated by proper planning. There are no sudden angles in the streets; no obstructive buildings. But the streets are straight or gently curved and the low height of the buildings—mostly two and at most three floors high—is a further encouragement to the flow of air. In an ordinary town, straight streets are a disfigurement; here the individuality and low height of the houses, apart from grass borders and trees, prevent any sense of monotony. Nor does free movement of air imply draughts. The flow is smoother, less variable, than in the streets of an ordinary town; the frontage of the houses is set back from the footpath; and even in

storms, sudden gusts are less common in a garden city or suburb.

(e) But in a garden city, so close is the factory to the worker's house, so close is the school, that the time spent by the town worker in the train morning and evening can be spent in the open air. This is encouraged by the disposition of the estate. A large proportion is set permanently aside for open spaces; the agricultural belt provides small holdings, allotments and golf course; most houses have their own gardens, and those that have not are for the most part ranged round a common garden or rough lawn on which the children can play.

Opportunities, both of time and space, are thus afforded in the properly planned town of the future for full indulgence in the open air.

(2.) *Light* is of importance for several reasons.—

(a) Light is a direct antiseptic, a fatal foe to the germs of disease.

(b) Light shows up uncleanness and untidiness, facilitating, urging the removal of all "matter out of place," in other words, of all dirt.

(c) Light, in several ways, raises the spirits; sends the worker cheerful to his work and the children to their schools; heartens the mother in her care of the house; attracts them all to their home, at mid-day, at end of day, and at all times.

All the factors set out above at length, which make for the free play of air in and through the home make also for the free admission of light. It is for this purpose that a minimum window area is prescribed, even where much of it is not made to open. It is because of the health value of light as well as air that recreation and occupation out of duty hours in the open air is to be encouraged; it is for this reason, too, that the garden city scheme is a movement in favour of the public health.

(3) *Cleanliness* is of more obvious sanitary importance.—

(a) Dirt harbours both the germs of disease and also vermin, which are probably no small factor in the transmission of disease in this, as certainly in tropical countries, apart from their discomfort. It was in the filth of the old-time jails and camps that typhus, otherwise known as jail—or camp—fever, flourished.

(b) But dirt also smears over and blurs out the natural lines and colours of every object. It is associated with discomfort and blackness. It is, therefore, depressing to the spirits and is instinctively felt to be a foe to human happiness.

For both reasons, cleanliness is essential to health. The well-planned town provides for the orderly growth of streets and a properly devised sewerage system; for the orderly development of a sound water supply; for the systematic removal of refuse; while the proper building of houses with open space before and aft throws in a flood of light to every corner of every home and prohibits dirt, except when open.

(4) *Good Spirits*.—Finally we must touch on the factor of good spirits, which is perhaps more than any other of greatest importance to health. Light, air, and cleanliness, both in and out of the house, all alike conduce to good spirits. Recreation out of doors—exercise to those who have strength for it, rest for those who need it—is a necessary corrective to the hours and conditions of forced labour to which civilization has brought us in spite of our natural bodily inclinations. Such moderate recreation revives all the natural forces of the body and gives strength to resist disease and actively to forward the business and desires of life. Such recreation is impossible to 99 per cent. of our town-dwellers; it is possible, it is handy, to every resident of the garden city.

Fire Prevention in Cities.

In the October issue of the "*American City*" there is a very instructive article by W. A.

Starret on "how to plan for fire protection in congested districts."

The first thing to be done in every large city is to educate the public with regard to the precautions and necessary steps that ought to be taken in case fire breaks out in the town itself, or in any private building. But this is a work of many years; still it is a matter not to be neglected, though it is not achievable all at once. Further, the city authorities or the corporation can do much to prevent such dangers and to plan for fire protection in congested areas. In plans like this, regard must be had to the nature of the city, its size, its activities and last, but not least, its form of Government. While the physical aspect of a city will, no doubt, determine its fire-resisting qualities, the part played by Government is so important that it is fair to say that the first great requisite toward the goal of complete prevention is proper and unified authority intelligently conferred by law upon those who shoulder the great responsibility of preventing fires. Experts are agreed that those cities which have a definite department of public safety, which includes policing, public health, public works, fire-prevention, the supervision of buildings and the care of highways, are best equipped to cope with the problem.

The streets should be wide and the buildings not high. A good rule would be that the streets should be 25 per cent. wider than the maximum height allowed for the buildings, with minimum and maximum limits, for the streets, of between 90 and 150 feet between building lines. The blocks should not be long, not more than 350 feet maximum, and there should be no alleys. The streets should, of course, not all be parallel, nor all intersections at right angles, and parks and open spaces should be frequently interspersed. Adequate watchfulness must be exercised by the Government in the constant shaping and changing neighbourhoods. With the change in the character of the neighbourhood comes the change in its activities and then the director

of public safety must be empowered to dictate the kind of building and its equipment, even to the condemnation of already built structures that have outlived their original usages. Laws should be made stringent in the congested and manufacturing districts.

Every building in a congested district should be required to have a full equipment of automatic sprinklers. Instead of each building having its own reservoir of water to supply the sprinklers with, an ideal plan would be to have special community reserve tanks and pumps in each block, supplying on a wholesale scale the reserve water that is now carried in various and variable units.

Further, any building intended to house more than two families should be made fire proof.

In tenements other than apartment houses and hotels, the stairway hall should open directly to the street and on the ground-floor to the back-yards without door-ways, also directly to the roofs.

These stair halls should be adequately lighted—naturally by day, artificially by night—and all night-lighting should be by the municipality, to insure its effectiveness. Such stairways and hallways should be regarded by the city as public lanes, so far as the police are concerned, and the policing and supervision of them should be even more vigorous and thorough than that of the public highways. The light courts and airways would, of course, be ample and protected by wire glass, and the doorways from apartments to corridors should be protected by fire proof doors.

Parks and open spaces are important as places of safe congregation of people in the event of a great fire; they are also most important in forming a gap over which great conflagrations could not jump. Perhaps a good rule to enforce upon the city planner would be that open spaces of, say, ten million cubic feet, be provided for every possible hundred million cubic feet of building, the factor for cubing to

be assumed from the legal height limit. Such spaces would, of course, be located advantageously with respect to isolating the parts of the city section by section.

Cleaning the Mouth.

The best way of cleaning the mouth and the teeth, is by prolonged mastication which induces a copious flow of saliva. A crust of bread or an apple well chewed is much better than the modern tooth-brush for cleansing the teeth. This requires to be used with great caution as it is liable to injure the edge of the gum and necks of the teeth and thus to set up the condition known as *erosion*. If employed at all, a soft brush should be chosen. . . . Better than a tooth-brush is a twig of wood teased out at one end so as to form a sort of brush by means of which the teeth can be burnished and the food dislodged from them. Antiseptic powders and pastes should be scrupulously avoided, for it is neither desirable nor possible to render the buccal cavity aseptic. To guard against a possible misinterpretation, it may be pointed out that nothing is stated here against the daily practice of cleaning the mouth and the teeth on the value of which the same writer dwells at great length.

Sugar as an Oxytocic.

Keim is stated to have found sugar markedly efficient as a tonic to the uterus where its contractions flag in protracted labour. Its effect is exerted likewise on all other muscles of the body, for which, as a matter of fact, it is actually a pabulum. Its action is rapid and safe and its administration easy, and Keim considers it the best physiologic oxytocic agent.

The Origin of Headache.

Recent investigations show that indol and skatol, two very poisonous substances which result from putrefaction in the colon, produce migraine or sick headache and other unpleasant symptoms.

The Economic World.

The Economic Position of India.

The main facts relating to the economic position of India are very neatly summarised in the inaugural issue of *Kelly's Monthly Trade Review*.

India is a continent. It covers an area of 1,802,657 square miles, contains 315,156,396 inhabitants, and fosters one hundred and thirty dialects belonging to six distinct families of speech.

The greater part of India is under direct British administration, but more than a third is ruled by Indian Chiefs.

British India is divided into provinces and subdivided into districts. There are 14 provinces and 275 districts. The average area of a district is 4,000 square miles, and the average population very little short of a million. As a rule, each district is further subdivided for revenue purposes into a varying number (usually from five to fifteen) of tahsils, taluks, or townships.

Native States are 593 in number, and vary enormously in size, status and development. The 342 Minor States of the Bombay Presidency have an average area of 85 square miles and a population of less than 10,000; while Hyderabad is nearly as large as Great Britain, and has more than thirteen million inhabitants.

In India there are 2,153 places classed as towns, but only 574 of them are so classed because their population is more than 5,000. There are only thirty places containing more than 100,000 inhabitants and entitled to be called cities; and the aggregate population of these thirty cities is only 7,075,782, or 2·2 per cent. of the total population. Here is an extraordinary difference between the Indian conditions and those of Western countries. In England the cities contain 45 per cent. of the

total population, in Germany 21 and in France 14 per cent.

Country.	Number of cities.	Population in millions.
England - - -	44	16·4
Germany - - -	47	18·7
France - - -	15	5·8
United States - -	50	20·3
India - - - -	30	7·0

India is pre-eminently an agricultural country. Of its total population, 72 per cent. are engaged in pastoral or agricultural pursuits, viz., 69 per cent. in ordinary cultivation and 3 per cent. in market gardening, the growing of special products, forestry, and the raising of farm stock and small animals. The 217 million persons supported by ordinary cultivation comprise nearly 8 million landlords, 167 million cultivators of their own or rented land, over 41 million farm servants and farm labourers, and less than a million estate agents and managers and their employees. In cities, however, only about six out of every hundred inhabitants depend for their living on agricultural pursuits, 30 being supported by industrial pursuits, 17 by trade and 14 by the Public Services and the Liberal Arts.

Occupations connected with the preparation and supply of material substances support 58·2 millions of persons, or over 18 per cent. of the population. This class may be divided into three sub classes, viz., (1) industry, (2) transport, and (3) trade.

Industrial occupations support a little over 11 per cent. of the total population; those connected with transport 1·6 per cent., and trading occupations 5·7 per cent. Of the 35·8 million persons dependent on indus-

trial occupations, nearly one-fourth are engaged in the textile industries. Of these the most important are those connected with cotton. The number of persons dependent on industries connected with hides is 2·8 millions, but very few of them are workers in tanneries. Wood-cutting and working and basket-making support 2·5 and 1·8 million persons respectively. The workers in metals are only about half as numerous as those in wood and cane. About three-quarters of the persons so employed are general workers in iron, and one-seventh are workers in brass, copper and bell-metal. The manufactures of glass, bricks and earthenware support in all 2·2 million persons. Seven-eighths of these are the ordinary village potters, who make the various earthenware utensils for cooking and storing water required by the poorer classes, as well as tiles, rings for wells, and the like. The total number of persons supported by industries connected with chemical products exceeds a million, but it shrinks to less than 100,000 if we exclude the manufacture and refining of vegetable oils. Food industries support 8·7 million persons; industries of dress and the toilet, 7·8 million persons; industries of luxury, etc., 2·1 million persons, and industries connected with refuse matter, 1·4 million persons.

Transport supports 5 million persons, *viz.*, transport by water, one million; transport by road, 2·8 millions; transport by rail, one million; the post, telegraph and telephone services, 0·2 million.

The number of persons dependent on trade for their livelihood is 17·8 millions, or 6 per cent. of the population. Of these more than half are supported by the trade in foodstuffs, that in textiles being the next most important.

The Public Administration and the Liberal Arts support 10·9 million persons. Of these 5·8 million persons are supported by the Professions and Liberal Arts; Religion accounting for more than half, Letters and the Arts and Sciences for more than a sixth, Instruction and

Medicine for one-eighth, and Law for one-eighteenth.

These are the salient points regarding the condition of the country and its inhabitants in general, and affecting commercial enterprises generally. But there is one other point of supreme importance. And that is the state of education in the land. There are in India about nineteen million persons who are literate in the sense of being able to write a letter to a friend and to read his reply. Of these, 1·7 million persons only are literate in English. *This is a factor often overlooked by the publicity departments of British firms; but, all the same, it is a factor which no one desirous of developing his trade in India can really afford to ignore.*

Cotton Excise Duties.

REVENUE FROM EXCISE DUTIES ON INDIAN COTTON CLOTH.

			Rs.
1897—98	...	...	11,61,000
1898—99	...	...	23,72,000
1899—1900	...	...	13,36,000
1900—01	...	...	12,12,000
1901—02	...	...	17,67,000
1902—03	...	...	18,66,000
1903—04	...	...	20,77,000
1904—05	...	...	23,81,000
1905—06	...	...	27,06,000
1906—07	...	...	29,00,000
1907—08	...	...	34,00,000
1908—09	...	...	35,75,000
1909—10	...	...	40,06,000
1910—11	...	...	42,80,000
1911—12	...	...	48,80,000
1912—13	...	...	52,38,000

These figures have been commented upon by the *Praja Bandhu*. It will be seen that the cotton excise revenue has advanced from 11 lakhs to 52 lakhs of rupees, mainly because our mills now manufacture cloth worth more than 15 crores instead of 3 crores worth which they did in 1897.

The fact, remarks the journal, has a deep significance. It demonstrates that our staple

industry is, on the whole, sound, and that it has successfully resisted so far all unique economic expedients, such as extraordinary factory laws and excise duties, which British Statesmen and the Government of India have deemed fit to apply to our only industry at the dictation of Lancashire.

The journal is certain that judging the future by the experience of the past, we shall be able ultimately to oust Lancashire fabrics from our markets, all the adverse factory legislation notwithstanding.

The object of the latter is to suppress the cotton industry of India. They have the effect of increasing the cost of production of the Indian mill cloth, and thereby of reducing the profits of the mill-owners. But the growth of the industry is a plain indication that the mill-owners are able to shift the burden of the duties in whole or part, on to the shoulders of the consumers, *i.e.*, the poor masses of the Indian population. The Indian factories are able to continue the industry somehow. The legislation has failed, therefore, of its ultimate aim.

The Government, unfortunately, is not a free agent in the matter. They are not likely to repeal the duty, so long as Lancashire's interests are allowed to dictate Indian policy. The journal says that other legitimate courses of action must be resorted to.

The success that has been so far achieved, might have been more conspicuous, but for certain drawbacks under which the industry has hitherto laboured. The management of a majority of the mills is inefficient or corrupt, mainly on account of the fact, that the Managing Agents are rewarded on the plan of paying them a pice per pound of cloth or yarn produced irrespectively of the fact whether the mill is working at a profit or loss. Some alleviations of this practice have been lately introduced, but it is the principle that requires to be pulled out root and branch. In the next place, almost all the concerns are financed in

a wrong way, and depend for the floating capital on the casual deposits of individuals. Now experience has shown that this system makes the position of the industry very insecure, especially in bad times. The best way of meeting this drawback would seem to be the foundation of one or more Industrial Banks, strongly capitalized and efficiently managed. An Industrial Bank can make long-term and adequate loans on good security. Lastly the improvement of our labourers in physique, character and intelligence, would certainly, result in a material gain to our factories. There is one more point that needs to be dwelt upon.

It will be noticed that the cotton industry made the largest strides in the years 1905-07, when the *Swadeshi* zeal was at its height. It is the mere A. B. C. of economic science that large populations can only be sustained in old countries like India by industrial occupations alone, that such occupations require to be multiplied and fostered by the community at large, that in the ordinary course the State ought to undertake the task by means of a policy of protection, that the British Government of India cannot undertake it, in fact such a policy is considered to be detrimental to its own interests, and that as a necessary corollary it follows that it is the duty of every patriotic Indian to afford the industrial products of India all the protection, which the State gives in Germany, France and America. This is the argument for the *Swadeshi* spirit in a nutshell. The journal spiritedly concludes that we live or perish, according as we adopt self-protection or apathetically allow matters to drift.

Material Progress in the Punjab.

An official report thus summarises the economic progress of the Punjab during the last decade.

Ten years is a short span in the history of the development of a country, and progress that cannot be gauged by scale and measure is sometimes hardly perceptible in the brief years

of a decade. Of lack of statistics, however, India cannot complain, and across each page is written large the record of progress in the Punjab. Though for a time the ravages of disease have caused a set-back in the figures recorded at the recent census, vital statistics show us that the leeway made in the previous ten years has almost been regained in the one that has since passed. Of material progress indeed there are on every hand abundant signs. All sections of the community are from year to year better housed, better clothed, better fed. In the less tangible domain of moral progress, there is much cause for satisfaction. A growth of self-respect in the labouring classes is clearly observable. The labourer has been able to share to the full the general rise in material wealth, owing to the demand having far outrun a supply attenuated by the ravages of plague. This independence of attitude has to some extent dislocated rural society, but the process is gradual and the rural employer has time to adapt himself to the altered circumstances. Among all classes the increased means have not been accompanied by a proportionate development of the rational enjoyment of leisure. The Jat, if his religion does not forbid him, spends more time with the bottle, and too many find in the excitement of the law courts their only recreation. To the educated, politics have an unfailing attraction. A distinct problem confronts society here. Enthusiasm for sports and pastimes, and a taste for literature and the arts are plants of slow growth, but are essential to the moral development of a people. Of the former, there are distinct signs of progress; except among the few there is at present little or no promise of the latter.

The Last Hundred Millions.

The factor of wealth in relation to the probable result of the war is discussed in the columns of the *New York Sun* by a correspondent, who gives some interesting figures of the wealth of the belligerents. It is pointed out that according to a brochure issued by the Dresdner Bank in January 1913, the relative

wealth of the United Kingdom, France and Germany was as follows:—

France	...	£8,500,000,000
United Kingdom	...	£14,000,000,000
Germany	...	£13,500,000,000

From this it will be seen that the united wealth of Great Britain and France exceeds that of Germany by some £9,000,000,000. Quoting from a further German publication, the correspondent gives estimated figures of the three nations' annual income. They are as follows:—

France	...	£1,000,000,000
England	...	£1,750,000,000
Total	...	£2,750,000,000

Germany	...	£2,250,000,000
Anglo-French excess	...	£500,000,000

These statistics are only given as approximate, and it is pointed out that they do not entirely agree with those derived from other sources, but they are assumed to be sufficiently accurate to show the respective financial strengths of three of the nations at war and to emphasise the advantageous position of the Allies, who, if it came to that, should find themselves, especially with the formidable wealth of Russia not here taken into account, in happy possession of Mr. Lloyd George's "last hundred millions."

Merchants as Wealth Producers.

Not very long ago, merchants were roundly criticised even by economic writers for not being able to create wealth, but for living like parasites on the products of agriculture and manufacture, merely by 'buying things for less and selling them for more.' But since the eminent economist, Professor H. R. Seager, pointed out that man cannot create wealth in the sense that nature can, and that "all he can do is to re-arrange particles of matter so as to create *form* utilities, or move goods from one part of the world to another so as to create *place* utilities, or preserve goods from one period to another so as to create *time* utilities, or finally transfer goods from the ownership of one individual to that of another so as to create *possession* utilities," it has come to be realised that while agriculture and manufacture create *form* utilities, commerce creates *time, place* and *possession* utilities, and that human welfare depends as much on these as on the other.

The Financial World.

The Gold Standard Reserve.

Professor Keynes writes in the latest number of the *Economic Journal*:—

THE Gold-Exchange Standard, based on a reserve in London, has enabled the Indian currency system to meet the crisis better than that of almost any other country. No Moratorium has been declared, and the exchange value of the rupee has been maintained throughout between the gold points. Of no other important country can this be said. Even in Egypt, which some authorities would take as a model because normally the sovereign is the principal medium of exchange, it was found necessary at once to introduce an emergency currency of inconvertible paper, and to declare a Moratorium.

At the outbreak of war the Secretary of State held in London £10,700,000 actually in gold, apart from large quantities of securities. As soon as a serious demand for remittance on London sprang up in India, and the exchange-value of the rupee showed signs of falling below gold-export point, it was decided to offer £1,000,000 weekly of what are called "reverse" Councils (i.e., remittance sold in Calcutta on London). In the first week of August the full £1,000,000 were sold, but in subsequent weeks the offer proved more than sufficient to meet the demand, £8,13,000, £632,000, £538,000, £474,000 and £310,000 being taken on August 12th, 19th, 26th, September 2nd and 9th. "Reverse" bills were sold at the usual rate of 1s. 3 $\frac{3}{4}$ d. But facilities, which have not been granted on former occasions, were given for the purchase of telegraphic transfers as well as bills, at the rate in the first week of 1s. 3 $\frac{1}{8}$ d., and subsequently of 1s. 3 $\frac{3}{4}$ d. The effect of this was to steady exchange at once within the gold points. The Government have been offering and to a certain extent actually selling telegra-

phic transfers in both directions simultaneously. The course of events has been such as to bear out on the whole the views of those who maintained the importance of holding actual gold as a reserve in London. If the gold had been in India, it could not have been safely shipped to London in the early days of August (whether the Bank of England would have been prepared, if necessary, to make advances against gold held in India has not yet been tested), and the portion held in securities was temporarily unrealisable, except such part as consisted of Treasury Bills falling due. (The first-rate value of the latter as a liquid security, even when this country is at war, was strikingly demonstrated.) Although the Secretary of State was found in a relatively weak position on account of the small amount of Council Bills he had sold in London since the beginning of the financial year, the release of £2,000,000 of gold previously "ear-marked" sufficed to see him through August.

It is to be observed with interest that the Government of India pursued the judicious policy of stopping the further issue for internal use of gold from the Paper Currency Department, as soon as the sale of "reverse" bills began; and also that they have taken the opportunity to carry out the recommendation of the recent Royal Commission for the abolition of the silver branch of the Gold Standard Reserve and have transferred (in India) £4,000,000 of gold in exchange for rupees from the Paper Currency Reserve to the Gold Standard Reserve.

War and Local Finance.

The Chancellor of the Exchequer and the President of the Local Government Board received at the Treasury a deputation from the Association of Municipal Corporations, in reply to which the Chancellor of the Exchequer said

that it was obvious that it was to the interests of the Municipalities and of the State that they should not be competing in the same market in what must be difficult borrowing times.

He had no hesitation in saying that it was desirable that they should accede to the deputation's first request that whatever money they borrowed for the purpose of responding to the invitation of the Local Government Board to make provision for distress in their districts should be advanced out of the War Loan that the Government put on the market. With regard to terms he thought they must be subject to the same time obligations as the Government, who were quite prepared to lend at the rate of interest they paid themselves, with an allowance for the actual expenses to the State.

Proceeding Mr. Lloyd George said: "We think it is absolutely necessary that the money should be spent for the relief of distress."

We do not want to find any money for you unless there is really actual insistent distress in the districts.

"Nor, I do want municipalities in districts which are not hard hit, to spend money, because we want that money for fighting. It is much better used for fighting than in spending it in municipalities that do not need it."

"After all, we want every penny we can raise to fight the common enemy, and our first consideration ought to be to win."

Mortgage Bank of Hungary.

The *Financial Times* says:—"We have on previous occasions referred to the great national benefit derived by certain countries on the Continent, and more particularly Hungary, from the admirable land registration system in vogue, which makes it possible for banks to advance money on the security of land at the shortest notice, with absolute certainty that the borrower's title to the holding is indefeasible, that its valuation is reliable, and the security offered is not previously pledged. These points are assured by the existence of a Govern-

ment Land Registration Department, which contains particulars of every parcel of land in the country, even the smallest, and makes itself responsible for their correctness. The report of the Land Mortgage Bank of Hungary is a striking vindication of the excellence of this credit system on the security of land, for the year was a particularly unfavourable one, and yet highly satisfactory results were attained. The abnormal dearth of money naturally made it unusually difficult for the Bank to place out its mortgage bonds as there were so many easily obtainable investments yielding a much higher rate of interest, and yet the Bank was able to maintain its dividend, and increase its net profit. And it must be noted that no portion of these profits were earned by any more lucrative business, as the Bank is excluded by law from employing its funds in any other business than land mortgages and city loans, upon which interest is fixed at a low rate. The result is striking evidence of the high reputation for security enjoyed by these mortgage bonds among the investing public."

Railways and Irrigation.

The Hon'ble Mr. Manmohandas Ramji referring to the subject in his Presidential address at the Indian Industrial Conference said:—

The question of Railways and Irrigation is one of the most interesting in this country. As a matter of fact these two should never stand in terms of antithesis to each other. It is only because of the peculiar conditions of this country that a sort of unnatural and fictitious opposition is set up between them and it is felt that their interests are not identical. The reason is to be found in the fact that the organisation and development of the Railways was and is still to a large extent carried on with a view to export trade, while the internal trade is not paid as much attention as it deserves. My statement is borne out by the following observations in the "*Indian Trade Journal*" of the 10th June, 1913:—

"... The result is that most of the per-

sons engaged in trade never form any conception of the magnitude of the country's aggregate of commerce or of the relative insignificance of that part which the world commonly speaks of comprehensively as the country's trade."

This obsession, if I may so call it, by the export trade has turned attention from some of the most pressing requirements of the country, the chief of them being irrigation. This is illustrated by the large difference between the capital outlays for both. Thus the capital expenditure of the Railways upto 1900 was Rs. 3,29,61,03,000 which increased to Rs. 4,39,04,73,000. There was thus an increase of 33 percent. in 10 years. For irrigation there was an outlay of Rs. 42,36,85,381 up to the end of the year 1900-01, which increased to Rs. 59,18,48,000 at the end of the year 1910-11 showing an increase of 40 per cent. As compared with the Railways, the percentage of increase for irrigation is a little higher, but looking to the enormous capital outlay for the former it is nothing. The average annual expenditure for Irrigation is about 2 crores of rupees while that for Railways is about 18 crores. One is surprised at the comparative neglect of irrigation, specially because the profits on this are more than those of Railways. The average percentage on the total capital outlay from 1900 to 1910 for irrigation was about 7.6 while that for Railways was 5.38. There is thus a difference of about 1.50 between the earning capacities of Railways and irrigation. To an agricultural country like India irrigation is the only panacea for averting the ever haunting dread of famines and, as shown above, it is also capable of yielding a good income to the Government. We recognise the recently growing interest of the Government in irrigation as manifested in the construction of several important canals but much more still remains to be done. There is an agitation going on since some time past for the creation of a separate portfolio for Railways. I would suggest that it should be for Railways

and Irrigation, thus giving an independent character to the latter which is now merely a sub-head of the Public Works Department.

While I plead for irrigation, I must not be understood to mean that the work of developing the present railways and construction of new ones should cease. Railways also are an indispensable factor in the commercial life of the nation. I would specially urge the construction of feeder Railways which would tap the interior of the country and give an impetus to the Inter Provincial trade. For this latter purpose, motor traction may also be suggested as being in some respects a more economical and convenient mode of carrying the goods. It has already been adopted in the United Kingdom and has sometimes proved in the inland districts to be a rival even to the Railway companies.

Banking in India.

The question of Banking has attracted a good deal of attention during the last few years. Banking is not a foreign exotic but is indigenous to this land since very ancient times. We have got several communities among whom I may rank the Chetties of Madras, who are by instinct bankers. It was extremely deplorable that notwithstanding this there were no purely Indian banking concerns a decade back. The rise and growth of the new banks was therefore hailed with welcome everywhere. Unfortunately the people who were entrusted with the responsibility by their countrymen failed to rise to the occasion and to discharge their trust, as it was. Looking to the recent sad experience, it may be a bold statement to make, but I think as I have stated elsewhere there is no reason why any banking institution should fail if it is properly managed with due regard to the sound banking principles which should govern the conduct of all such institutions. The failure is in many cases due to the inability of the institutions concerned to set free the advances they have made forgetting that a large

portion of these should be in as liquid a form as possible. There is also a great necessity for caution on the part of the board with regard to advances made to concerns in which any of the Directors is interested. I do not deal in detail with all the suggestions from different quarters, as they were dealt with at the last session of the Conference, but I must say that shareholders and depositors, should leave of their indifference and begin to take more active interest in the progress of the companies with which they have dealings. There is a great necessity for banks with small capital to be started in different districts for financing local trade, industries and agriculture. The Co-operative movement has not yet gathered that strength which is required to meet the claims of agriculture and trade. In the meanwhile due to the operation of several causes, the local sowcars are either discredited or have transferred their activities to new spheres of life. However much you may find fault with these people, you must acknowledge the great services they have rendered to the cause of trade and agriculture in the past. It was they who financed the agriculturist even while the latter had no securities to offer and carried him through adverse periods when any agency automatically working and with legal powers would come down upon him and make him forfeit his lands in payment of his debts. The Swadeshi banks were expected to do a great deal in this direction and to take the place of old time sowcars but they were disappointed in this respect as they had done in others. They established their branches in the mofussil but these were intended to receive deposits and not to advance any loans, the result being that the mofussil was drained of its spare capital to feed the Presidency towns. Small banks started for different districts and even for different villages can thus do an immense amount of good. We have got splendid precedents of this in the Credit Lyonnais of France and similar Banks

in Japan, which discount Bills even of two shillings, thus coming into intimate contact with humble traders and agriculturists. The last banking crash has taken away almost all our Indian Banks and it behoves the leaders of commerce and finance to help forward the growth of Indian banks which would be able to finance Indian trade and industries. We acknowledge the work being done by the Presidency Banks but they have got certain limitations. For coming into close relations with the commercial life of the country they must have more branches and, if I may say so without disrespect to their existing boards, more of an Indian element on their directorates. From the Hon'ble Mr. Manmohandas Ramji's address as President of the Indian Industrial Conference.

The Principles of the British Budget.

The main object of the last British budget is to provide for the welfare of the coming generations. It has five broad purposes in view. As explained by Viscount Haldane, the first is that everything that can be done must be done to enable the child to be born healthy. That means that the mother, too, will have to be looked after. The second is that the child when it comes to school must be cared for in its body as well as in its mind. The third is that, towards the end of its school life, it must be encouraged, and its parents must be assisted in guiding it, to choose a definite career. Fourthly, "we know that the great bulk of boys and girls must earn a livelihood in trade, but you can make of the preparation for that trade a great deal that is very fine. It is a means of education which they know abroad but which we have not adequately known in the country." Fifthly, the abler and more competent children must have their chance at the end of their school time of going on to the secondary and technical schools, and the best of them to the universities.

The Industrial World.

The Development of Indian Industries.

The Indian and Eastern Engineer of Calcutta has some very sensible remarks on the subject in its latest issue. The "War on German Trade" is a favourite heading of the Press of Britain and India just now, a war-cry coined indeed by the Chancellor of the Exchequer, a past-master naturally in the art. That there are plenty of openings for British trade which have been for some time past increasingly filled by German competitors is undoubtedly the case, but it is well that there should be a clear understanding of the factors of competition which will again enter into the question when the gates of the Temple of Janus are once more closed.

HOW GERMANY BECAME A COMPETITOR.

The trade of Germany—like the army of Germany—has been thoroughly well organised to make the most of its advantages. These latter included lower labour cost per unit of production than that enforced by Trade Unionism in the United Kingdom; cheaper freights to and from many over-seas centres of trade; good and cheap internal transport arrangements by rail, river and canal; local supplies of many raw materials; effective State assistance in the scientific investigation of metallurgical and chemical problems in particular; but above all, the barrier of a tariff which conserves the growth of industries during the initial stages—when an industry, like an infant, must be shielded if it is to reach to vigour and survive the commercial warfare of fully established competitors—while at a later stage it helps to ensure the home market for the local product and thus assists German manufacturers in the well-known process of "dumping."

REFORM OF BUSINESS METHODS WANTED.

Such being the position, it does not need the

eye of a prophet to foretell that if the "War on German Trade" is to be anything more than a mere raid by mercantile Emdens, the conditions of marketing must be radically changed.

LABOUR COSTS.

"Labour costs" are not likely to be reduced in Britain, indeed, the action of Government "fair wages" clauses in contracts tends to increase costs, and is in effect, "protection" of a peculiarly ineffective character.

PROTECTION WANTED.

The Free Trade fetish may be defined as the production of supplies in those areas best suited to such production, that is, where most economically produced, with freedom of exchange. The last condition has however been practically absent. The opportunities of testing the pay-basis of this proposition have been before the Governments of the world for many decades, and with one exception only—that of the United Kingdom—they have unanimously rejected it. India, of course, is merely an appanage of the United Kingdom in matters of policy, but the self-governing Colonies have unanimously rejected it. Japan, which has tested occidental theories with oriental acumen, refuses it absolutely, and the economical situation in India is not very greatly different from that of Japan before the renaissance of industry laid the foundations of the phenomenal rise of the Island Empire in the council of the nations.

The fiscal system of the Commonwealth of Australia offers India a proved method for effective action, that is, by the imposition of a tariff with preferential rates for the products of the British Empire.

The Department of Commerce and Industries has arranged a display of German and Austrian articles which it is suggested could be locally manufactured. Doubtless the Department is

moving in a useful direction, but this only touches the fringe of the subject and what is wanted is really a reasonable guarantee of local preference for local products to protect new industries.

Madras Industries and the Government.

Four resolutions connected with industrial development were moved at the last session of the Madras Legislative Council. The Hon. Mr. K. R. V. Krishna Rao moved—

(1) (a) This Council recommends that His Excellency the Governor in Council may be pleased to move the Secretary of State for India, owing to the dislocation of trade and disturbance of markets created by the present war in Europe, to re-consider the orders passed by him precluding the Local Government from themselves embarking on commercial undertakings in this Presidency calculated to develop its internal industrial resources and make it less dependent on foreign countries.

(b) This Council recommends that in the incipient stage of the industries of the Presidency the actual development of our industries, in the case of those which have to be worked on European methods to enable them successfully to compete with foreign articles, should not be left entirely to private enterprise, but that the Government should embark on industrial undertakings of all kinds on a commercial scale to serve as object lessons and incentives to private enterprise.

(c) This Council recommends that a beginning may be made by starting on a commercial scale, employing European experts if necessary, industries connected with oil seeds, namely, crushing seeds, refining oils and manufacture of soap, stearine, glycerine, candles, tallow, lard and other products.

(2) This Council recommends that His Excellency the Governor in Council may be pleased to direct that the bureau of industrial information which has been sanctioned in connection with the Department of Industries be

ordered to be organized at once on the lines of the Boards of Trade in other countries, to obtain samples of finished articles manufactured from all kinds of raw materials exported from India and to issue bulletins explaining the process of their manufacture and the markets for such manufactures.

The Hon. Mr. Chidambaranatha Mudaliar moved:—

(8) This Council recommends to His Excellency the Governor in Council the constitution at an early date of an Advisory Board of qualified persons, not less than one-half of whom should be non-official Indians, to co-operate with the Director of Industries in promoting the improvement of existing industries and the introduction of new industries.

And lastly the Hon. Mr. B. N. Sarma moved—

4. This Council recommends that His Excellency the Governor in Council may be pleased to take steps for the protection of the groundnut and leather trade, industries of this Presidency during the period when the Empire is engaged in war.

The Hon. Mr. Cardew on behalf of the Government said, referring to the first resolution, that it was established that the attitude of the Home Government on the subject of State assistance to industries had altered, the Madras Government would certainly take steps to obtain the sanction of the Secretary of State to undertake similar action in this country. He added that without that information, it would be very difficult for the Local Government to move in the matter.

With reference to the third resolution, he said that if the time came when Government thought it necessary to have a permanent Advisory Board they would perhaps move in the matter on their own account. Both these Resolutions were withdrawn by the movers in view of what the Hon. Mr. Cardew said on behalf of Government. The Hon. Mr. B. N. Sarma also withdrew his resolution on His

Excellency the Governor giving the assurance that the Government would keep an eye on the matter. The principle of the second resolution was, however, approved of by the Government and the resolution was accordingly accepted.

Criticising the Government's reply, the *Hindu* of 26th November last, remarks:—

Mr. Cardew stated that there was no definite information as to how far what was stated in the Press about the assistance given to industries by the British Government at Home was well-founded. We cannot gather exactly what the information is as to which he feels a doubt, but we trust he does not dispute the accuracy of the news of official announcements made in England as to Governmental action in this behalf. We do not wish to go to the earlier telegrams and the news contained in the English papers on the subject, but would cite the latest *Rèuter's* news received yesterday. Speaking in the House of Commons on Tuesday last, Mr. Runciman, the President of the Board of Trade, said he believed "that steps would be taken to enable the English manufacturers to hold their own with German competitors in the dye industry after the war." This, therefore, entirely bears out the statement wired by *Reuter* some days ago, that "in view of the deficiency of dye-stuffs and colours owing to the cessation of supplies from Germany, it is proposed to form a large supply company" and that "Government has indicated its willingness to subscribe a portion of the share capital and guarantee interest of a large debenture issue."

Cottage Industry.

Mr. K. T. B. Tressler, Director of Industries, Madras, delivered an interesting lecture on "Cottage Industries" recently before the South Indian Association.

All cottage industries are necessarily hand industries, and with such, the cost of production is usually much higher than with machine work. A century ago, before the development

of transport facilities, India, like most other countries, was self-contained and met most of her wants locally. At that time hand work was the sole mode of manufacture and competition was limited to a group of (local) producers whose cost of production did not vary in any way; and consequently competition did not lower the selling price below a remunerative point. The selling price in those days was thus determined in the first instance by the local cost of production. And the sole source of supply being the local producer, the consumer paid the price demanded, and the producer thus commanded the whole of the local market at his own price.

The rise and spread of industrialism in Europe, however, altered the conditions of supply. The development of transport facilities made it possible for large central factories to distribute their goods all over the world, and the result was that the cottage industries had gone to the wall. Cottage industry of the type universally prevalent one hundred years ago is to-day an anachronism and in the form in which it is found in India is doomed to extinction, unless it is modified. And how to bring about the modification? On account of the cheapness of labour in India and certain other local advantages, there is a possibility of production costs being lowered to a figure at which indigenous goods can compete with imported goods in the Indian market.

At the same time, the inherent defects of the present system of production has been recognised in a dim sort of way in India, and it is generally considered that the introduction of a factory system would bring about a change for the better. But the introduction of a factory system can only be of benefit if it leads to an increase of efficiency, otherwise, it is not only devoid of value but might be regarded as positively disadvantageous. Indeed, unless intelligently applied, the factory system is more likely to retard than advance the cause of industrial development. A few practical attempts have

been made to introduce the system, but have failed.

It would be interesting to turn for a moment to see how the cottage industry problem is dealt with in other countries, as for instance, Switzerland. There fully one-third of the industrial population is engaged in cottage industry—chiefly watch and ribbon-making—and if not exactly amassing wealth is at least maintaining itself in comfort. And all cottage workers are “linked” with a manufacturer. The manufacturer turns out a very large quantity of finished material in his own mills, but a large quantity also is sent out. The yarn is warped and prepared ready for use and the cottage worker has thus only to perform those operations in the process of manufacture that experience has shown to be most remunerative to him; the manufacturer’s expensive labour—saving machinery does the rest, the worker thus obtains all the advantages of a division of labour, of expert assistance and of a market as large and constant as a modern sales organisation can make it.

The “linked” system is in every way preferable to the factory system, but its successful working presupposes a degree of intelligence which the Indian workers as a class have not as yet attained.

The keynote of the Swiss system is expert control and a constant market. Compare that with a factory run in accordance with the popularly accepted idea of factory systems. The management usually consists of a layman generally a philanthropic lawyer. He knows nothing about designs; he could introduce no division of labour; he has probably been cheated in the purchase of his raw material; he issues it on broad averages. The outstanding characteristics of the Indian cottage worker are a weakness for uncommercial practices—be they dishonest or merely stupid. So long as work is done on such principles, it is clear that no amount of assistance, in the way of organisation or management, can result in any

permanent amelioration of the condition of cottage industries.

Lustring Cotton.

This is a process patented by H. Dutschke for imparting a silk like gloss to cotton which will withstand washing. It consists in impregnating the cotton with a crystallisable salt solution and passing it several times through a calendar heated to from 100° to 200° C. The surface gloss given by the steam is obliterated by any well-known method, after which the fabric is passed between finely-fluted rollers. The glossy appearance is due to the presence of minutely crushed crystals, which are intimately distributed over all the fibres. The process should be carried out after the goods are dyed, but it is immaterial whether it precedes or succeeds mercerising.

Leaflets on Industries.

The *Indian Trade Journal* gives publicity to the proposed steps to be taken by the Commercial Intelligence Department to help the Indian manufacturers towards the production of articles which had hitherto been imported from Germany and Austria.

The Department is issuing leaflets on different industries, explaining the statistics of imports and local production, if any, and giving a sketch of what has been done in India hitherto.

These are being supplemented by exhibitions in Bombay, Madras and Calcutta, showing the samples of goods imported and those manufactured in India. Samples include glassware, enamelled iron and other hardware, cutlery, textiles, pencils, matches and toys.

Removing Dirt and Grease.

The *Ironmonger* gives the following formula for a solution to remove dirt and grease from brasswork which has to be plated:—Crude potash, $\frac{1}{2}$ lb.; rosin, $\frac{1}{4}$ oz.; cyanide of potassium, $\frac{1}{4}$ oz.; water, 1 gal. Use the solution boiling hot, and after the goods have been immersed for a few minutes, remove and rinse in clean cold water. Some work will require swabbing with a cotton brush after removal from the cleaning solution and after being rinsed.

The Commercial World.

War and Madras Trade.

The Hon'ble Rao Bahadur Mr. Ramachandra Rao elicited the following answer from the Government in reply to his interpellation at the last meeting of the Madras Legislative Council.

The extent to which the commerce and trade of this Presidency have been affected by the war will be apparent from the following figures which show (i) the tonnage of vessels entering the Port of Madras in the month of August, September and October 1914 compared with the same months in 1913, and (ii) the total value of the imports and exports passing through the ports of the Madras Presidency in the months of September and October 1913 and 1914:—

(a) Tonnage (Madras Port)—		Tons.
1913 August	...	151,520
" September	...	108,386
" October	...	156,418
1914 August	...	92,686
" September	...	42,884
" October	...	83,415
(b) Imports (Madras Presidency)—		Rs.
Foreign trade—		
1913 September	...	1,35,69,363
1914 "	...	69,18,552
1913 October	...	1,34,60,542
1914 "	...	82,04,549
Exports (Madras Presidency)—		
Foreign trade—		
1913 September	...	1,63,41,155
1914 "	...	42,17,927
1913 October	...	2,11,16,693
1914 "	...	1,11,27,421

It will be observed that there has been a great reduction both in the tonnage of ships entering the Port of Madras and in the value of imports and exports passing through the ports of the

Presidency since the commencement of the war. The month of October shows however some improvement upon that of September and now that the seas are apparently free from the hostile cruisers, it may be hoped that further improvement will become manifest.

The check which the war has caused to export has necessarily prejudiced labour conditions in this Presidency and the branches of trade which appear to be most affected thereby are the coir trade, the cotton trade and the groundnut trade. In the coir trade the closure of markets resulted at first in considerable dislocation, but the position is improving and although some unemployment has resulted from the falling off in the demand for coir, copra and cocoanut oil, there is reason to hope that the conditions will soon right themselves. In the meantime the Government have caused the ordinary programme of works in the Public Works Department and those for execution by local bodies to be expanded as much as possible in order to give employment to any persons thrown out of work. In the cotton trade the price of cotton has fallen but cotton can be stored for a considerable time and the next year's crop will not be on the market for some months. In regard to groundnut the war may have a very prejudicial effect upon the prospects of the crop which will be harvested towards the close of the current year. The Government have placed themselves in communication with the Secretary of State in the hope of finding additional markets and the Director of Industries is examining the possibility of finding local sales for the oil.

The stoppage of import of gold lace and of dye stuffs has also had a prejudicial effect on employment amongst weavers. The Government have communicated with the Secretary of State with the hope that it may be possible to provide increased supplies of the dyes re-

quired for the textile industry which have hitherto largely come from Germany. They have also drawn the attention of the India Office to the importance of securing an improvement in the exchange facilities with France without which it is difficult to carry on trade either in exports or imports. They are also receiving reports regarding the general condition of the weaving community. Besides the results due to the stoppage of dyes and gold lace, there appears to have been falling off in the purchases of textile goods which has affected the weaving community to some extent. This falling off is presumably due to general contraction of credit, but with a favourable season the Government anticipate that this will gradually disappear. Certain other industries have also been affected by the war, but the above appear to be the chief directions in which its influence can be distinctly traced.

Capturing German Trade.

A writer in the November issue of *Kelly's Monthly Trade Review* suggests how best Britain can secure new markets for her manufactures in British Colonies where, owing to slackness, Germany has got tight grip on imports. He emphasizes again and again that Britain's trade campaign must be scientific and lasting.

BRITISH BOARD OF COMMERCE.

The first essential is the foundation of a *British Board of Commerce*, backed by the authority of Government which would focus trade information; establish banking credits; promote elasticity in the currency system as affecting trade; organize an *efficient* trade consular system; investigate railway and freight rates; remove inequalities affecting British traders; and arrange trade combinations on co-operative lines for a more systematic attack on German, or any other trade, by reducing prices for overseas markets.

HOW GERMANY SUCCEEDED.

As to how Germany got hold of the markets, we read that Continental shippers consider

their customers, and are willing to execute trial orders of different patterns and cheaper qualities; that quick delivery of goods, and adequate commissions to German agents count for much; that the Germans supply coloured illustration sheets free of cost, and their catalogues are specially prepared in the language of the buyer with the prices he understands; and that the "Wire Verband"—a combination in most German businesses to quote reduced prices for export, each maker being allowed his proportion of foreign trade—has had very great effect by centralized action both in Germany and overseas and on the Continent.

HOW TO CAPTURE THE TRADE.

It is possible to secure the enemy's trade at once by (1) the appointment of good local trade representatives; (2) the extension of the credit and rebate systems; (3) printing catalogues in foreign languages; and (4) the compilation in foreign languages of lists of British traders with their special lines of goods. Such a limited but most important beginning would bring foreign traders and makers quickly into touch with British traders and manufacturers at home.

BANKING AND CREDIT.

British banks hitherto have failed to grasp the foreign point of view and foreign custom. They have been intensely conservative in granting allowances to exporters, while the German banks have shown remarkable elasticity in method, wide accommodation in matters of overdraft, and support and width of vision in affording credit facilities. German banks have even made a practice of advancing money on book-debts, and financing the execution of orders. Every British trader knows how he is crippled by the present banking conditions. Hence the need for early reform or new procedure under a new regime.

The success of the Germans in many, if not

most, directions in invading the world's markets is due to perfectly legitimate business tactics, which we have been all too slow to adopt. One admires his adaptability, courtesy, pertinacity, enterprise, ingenuity and courage; but some of his methods have been unfair.

Roots of Honour.

"Five great intellectual professions, relating to daily necessities of life, have hitherto existed—three exist necessarily—in every civilised nation.

The Soldier's profession is to *defend* it.

The Pastor's to *teach* it.

The Physician's to *keep it in health*.

The Lawyer's to *enforce justice* in it.

The Merchant's to *provide* for it.

And the duty of all these men is, on due occasion, to *die* for it."

So wrote John Ruskin in his incomparable essay "Roots of Honour," which gives us so many polished thoughts and reflections on matters of political economy.

The dignity and honourableness of Commerce as a calling is to be as fully recognised as in the other professions, for each and all have ideals to work to, the culmination of which is unhesitating self-sacrifice on "due occasion."

The object in life to the *true* Merchant is to *provide* for the Nation to the best of his ability. He must understand to the very roots the qualities of the goods he provides; he must know everything of their production; he must strive his very utmost to provide them in perfection and to place and distribute them where they are most needed at the lowest prices possible. In so doing the Merchant gathers profit; but to the man who loves his work and takes a pride in it, to the "true man," as Ruskin calls him, profit is the secondary consideration, and not the first or the end and aim of all. Rather than fail in faithfulness to engagements, or in the perfectness and purity of Merchandise provided, and rather than countenance chicanery in any shape or form, the *true* man of Commerce faces the

utmost penalties of distress or loss or poverty which may meet him through the maintenance of these principles. This is the self-sacrifice required of him on "due occasion," and planted in self-sacrifice it is that the Roots of Honour flourish.

Stocks of Articles of Commerce.

An emergency having arisen, an ordinance is notified by a *Gazette of India Extraordinary*, dated 30th November 1914, empowering the Governor-General in Council generally, also each local government individually, to call for information as to stock of articles of commerce, and to make searches for the same, also to take possession of any stocks unreasonably withheld from the market, also to fix compensation for same, also to notify that any article of commerce is unreasonably withheld from the market. Penalties for withholding information are provided up to the extent of six months' imprisonment with a fine of one thousand rupees. A rule making powers under the ordinance is also made, and no court may call into question any order or award made under this ordinance, and no suit, prosecution, or other legal proceeding shall lie against any person or anything which is in good faith done or intended to be done under this ordinance.

War and Trade Dislocation.

Statistics issued by the Post Office put in summary form the extent of the commercial dislocation caused by the war. In normal times the number of letter mailbags received weekly at Bombay during the autumn is 2,400; it now averages a little over 2,000. The outward mail is normally 900 bags, and has now fallen to 600. Parcels, both outward and inward, show an even greater decline, which barely falls short of 50 per cent. No doubt conditions will improve now that the trade route is clear, and allowance must also be made for big Government contracts which would not have been placed in ordinary times. Still, the figures are not without significance.

HINTS ON ADVERTISING.

Patent Medicine Advertisements.

The report of the Select Committee of the House of Commons on Patent Medicines, which was appointed in 1912 find that the traffic in secret remedies constitutes a grave and widespread public evil; and that these remedies are put on the market by ignorant persons or by cunning swindlers who "exploit for their own profit the apparently invincible credulity of the public."

The Committee sum up the legal position in regard to patent medicines in the following sentence:—"For all practical purposes British law is powerless to prevent any person from procuring any drug, or making any mixture, whether potent or without any therapeutical activity whatever (so long as it does not contain a scheduled poison), advertising it in any decent terms as a cure for any disease or ailment, recommending it by bogus testimonials and the invented opinions and fac-simile signatures of fictitious physicians, and selling it under any name he chooses, on the payment of a small stamp duty, for any price he can persuade a credulous public to pay."

The principal recommendations of the Committee are as follow:—

That the administration of the law governing the advertisement and sale of patent and secret medicines be combined under one department of the State—the Ministry of Public Health, when created, and until then the Local Government Board.

That the manufacturers, proprietors and importers of such medicines be registered.

That an exact and complete analysis of every remedy, including medicated wines, with a full statement of the claims made for them, be furnished to the Department.

That a special Court or Commission be constituted with power to permit or to prohibit in the public interest, or on the ground of non-compliance with the law, the sale and advertise-

ment of any remedy, and that the Commission be a Judicial authority such as a Metropolitan Police Magistrate sitting with two assessors, one appointed by the department and the other by some such body as the London Chamber of Commerce.

That the advertisement and sale (except the sale by a doctor's order) of medicines purporting to cure the following diseases be prohibited:—Cancer, consumption, lupus, deafness, diabetes, paralysis, fits, epilepsy, locomotor ataxy, Bright's disease, rupture (without operation or appliance).

That all advertisements of remedies for venereal diseases and advertisements likely to suggest that a medicine is an abortifacient be prohibited.

That it be a breach of the law to use fictitious testimonials, or to promise to return money paid if a cure is not effected.

The Function of Advertisement.

Well-written advertisement should give the reader a favourable impression, it should awaken his interest, and it should prove—by concise argument and definite statement—the value of the goods offered. It should answer the mental questions that invariably occur to the reader, as to worthiness and value, and in doing so it should present the various strong points of the article in their most formidable light. It should appeal personally and directly to each individual reader; it should assist him when he hesitates, and help him to form a favourable decision, so bringing him to a natural and definite finality in the purchase of the goods.

Advertising in Holidays.

Advertising cannot take a vacation without a loss. The cumulative values of previous months or years immediately begin to shrink or evaporate. It will invariably cost more to make good the shrinkage than to omit the vacation.
—*The New York Times.*

The Agricultural World.

Winning New Lands.

In connection with the Adelaide Session of the British Association for the Advancement of Science, in the course of his interesting address, Mr. A. D. Hall, M. A., F.R.S., President of the Agricultural Section, dealt mainly with the winning of new land for agriculture, the bringing into cultivation such land as has been left to run to waste because it was regarded as unprofitable to farm.

Is it more feasible to increase the production of a given country by enlarging the area under cultivation or by improving the methods of the existing cultivators? There is without doubt plenty of room for the latter process even in the most highly farmed countries.

Improved farming means more enterprise, more knowledge, often more capital, and the man who can bring these to the business is far rarer than the man who, given a piece of land even of the poorest quality, will knock a living out of it by sheer hard work.

While, then, there should be no slackening in our efforts to improve the quality of the management of existing land, there is a case for also using every effort to increase the cultivable area; indeed, it is probable that for some time to come the second process will add most to both the agricultural production and the agricultural population.

Among the factors which determine the fertility of the land that is first brought into cultivation, foremost comes rainfall and the distribution of it is almost as important as the amount.

Given suitable rainfall and temperature, the texture of the soil becomes a factor of importance. If too coarse and sandy, so little of the rainfall is retained that we get all the effects of drought produced.

One last factor of the soil is of the utmost importance to fertility and that is the presence of calcium carbonate in quantities sufficient to maintain the soil in a neutral condition.

Among the various methods by which land suffering from one or other of the disabilities is now-a-days brought into cultivation, the most important, if we consider the area affected is extension of cropping into regions of deficient rainfall by means of dry-farming.

In the first place, the tilth must be made both deep and fine, thus whatever rainfalls will be absorbed and the conditions favoring a deep and full root range will have been established. Next, the soil below the surface, though finely worked, must be compact, because only thus can the water present travel to the roots of the plant. Lastly, a loose layer must be maintained on the surface, which, though dry itself, acts as a screen and a barrier to prevent loss of water from the effective soil below by any other channel than that of the plan.

Closely linked up with the problems of dry-farming are those which arise in arid climates from the use of irrigation water on land which is either impregnated with alkaline salts to begin with or develops such a condition after irrigation has been practised for some time. The history of irrigation farming is full of disappointments due to the rise of salts from the sub-soil and the subsequent sterility of the land. Sterility may arise from (1) over much of water which brings the water-table so close to the surface that the plants' roots may be asphyxiated (2) the over-accumulation by evaporation of the soluble salts in the surface layer until plants refuse to grow.

The annual cutting off of the cotton crop in Egypt as the water-table rises with the advance

of the Nile flood affords a good example of asphyxiation, but in the neighbourhood of irrigation canals we also find many examples of sterility due both to the high water-table and an accompanying rise of salts. The governing principle is that drainage must accompany irrigation. Even if free from salts at the outset the land must accumulate them by the mere evaporation of natural waters, and they will rise to the surface where they exert their worst effect upon vegetation, unless from time to time there is actual washing through the soil and removal of the water charged with salt. Without drainage the greater the quantity of water used the greater the eventual damage to the soil, for thereby the sub-soil water-table carrying the salts is lifted nearer the surface. With a properly designed irrigation system the danger of salting ought not to occur.

Paddy Manures.

Dr. N. Kunjan Pillai, Director of Agriculture, Travancore State, has an interesting article on "Paddy Manures" in a recent number of "the *Indian Agricultural World*." As a result of the experiments conducted by the Travancore Agricultural Department, under his supervision, he gives us two main conclusions which may as well be applied with great benefit in other places where the conditions of cultivation are not far different from those in Travancore.

(1) As far as the paddy crop is concerned, it is not only possible to replace cattle manure by mixtures consisting of oil cakes, bone-meal and a nitrogenous fertilizer but even profitable to do so, for the application of these mixtures has, in all cases, resulted in larger yields and more profits than the application of cattle manure.

(2) Of the different nitrogenous fertilizers tried in combination with oil-cake and bone-meal, nitrolim (calcium cyanamide) has produced the best results; and, next to it, Am. sulphate, nitrate of lime and crude salt-petre, in order. The excellence of nitrolim is

probably due to the presence of a large percentage of lime in its composition, which must naturally be beneficial to the wet lands in Travancore, which are generally deficient in lime and also probably to the existence of nitrogen in a form not readily soluble in water, so that the chances of loss after the application of the manure in the field are considerably reduced.

ARTIFICIAL MANURES.

Mr. Pillai says: "I have no doubt, seen in scientific reports and other publications of some of the Agricultural Departments in India two statements which go against my conclusions. One is that the application of artificial manures to the paddy crop is not, as a rule, profitable, on account of their high cost. My experience in Travancore does not lend support to this statement. I find that nitrogenous fertilizers, when applied in comparatively small quantities in combination with oil-cakes and bone-meal, do produce beneficial results. The negative results obtained elsewhere may be due to the application of too large a quantity of such manures. In my experiments, the total cost of the manures has never exceeded Rs. 25 per acre, which is ordinarily the amount the ryots spend or ought to spend on manures for their paddy crop. The proportions of the constituents of my mixtures have been fixed, with due regard to the above point."

NITRATES.

"A second statement which is often seen in reports and which differs from my conclusions is that nitrogen in the form of nitrates is quite useless for the paddy crop, for the reason that such manures are readily soluble in water and are, therefore, likely to be completely washed away. There is no doubt a certain amount of truth in this statement, for we find, even from the experiments I have described above, that nitrates have not produced as good results as Am. sulphate and nitrolim. These experiments do not, however, show that nitrates are

thoroughly useless. This beneficial result I attribute to the special precautions I have taken in the application of nitrates. In my experiments, I have applied them only as topdressing and never along with other manures, during cultivation time; and the application itself has always been made as follows: When the crop is 6 to 8 weeks old, the water standing in the field is completely drained, the nitrate mixed with ashes is spread in the field and water is let in again; and this water, as far as possible, is not allowed to run out of the field. By the adoption of such precautions in the application of nitrates and by limiting the quantity applied, so as not to swell the total cost of manures per acre much beyond the usual rates of expenditure incurred by the ryots, I have invariably obtained beneficial results."

War and Agriculture.

The Editor of the *Poona Agricultural College Magazine* points out that the disastrous European war must alter in a very large measure the whole direction of agricultural activity. Some of the crops which a few months ago gave promise of the greatest profit, will now barely pay the expenses. The return from others is likely to be largely increased. The purchasing power of most of the countries to which we export our products is enormously lessened. In these and many other ways the war has altered the agricultural outlook completely.

A great war like the present with its enormous destruction of capital and credit and with the great reduction in the purchasing power of most countries on the one hand,—and with the cutting off of the world's supplies from large areas on the other, must have effects of which the following seem to be the most important:—

(1) The demand for articles of luxury or even of comfort will decrease and will not again reach the old limit for a good many years. There is likely to be a long continued reduction in the demand for such things as rubber, tea, coffee, spices and so on.

(2) The demand for things, which though not luxurious, can be done without, will decrease, though in this case the decrease will be temporary. On the other hand, as the industries involved are larger, the effect felt by the people while it lasts may be more intense and widespread than in the former case. Thus cotton and other very large products like oil seeds of various kinds will be affected.

(3) The demand for crops which are of secondary use in moving and bringing other crops to market is likely to decrease, at least temporarily. This involves jute most particularly.

(4) The demand for materials which are absolute necessities for food, and the supply of which is reduced by some of the countries producing them being no longer available as suppliers will increase. This involves green of various kinds, chiefly wheat and rice,—and secondly, sugar.

(5) The difficulty of sending supplies to the foreign market will probably cause a reduction in the value of some materials temporarily, the price of which will ultimately go up, they being absolute necessities.

These principles will apply widely, if not universally, and are those which should determine the action of cultivators at the present moment. In some cases the Government has already brought matters to the notice of the farmers. In every district in Western India where cotton had not been sown at the beginning of the war, the people have been urged not to sow it, but to put in *rabi* wheat instead wherever possible. This is natural, as cotton has already gone down forty per cent. in value, and will probably sink a good deal further, while the price of wheat will rise.

The Pregnant Cow.

It is sometimes of considerable importance to a farmer to know whether or not a cow is pregnant, since her greatest care and value may depend upon this point. There are certain signs evidenced by pregnant animals that may be observed with more or less satisfaction,

One of the earliest of these is the cessation of heat, although some pregnant females may continue to show œstrum at regular periods for months after conception. Most females become tranquil and tend to fatten, the abdomen enlarges, and cows give less milk. In animals pregnant the first time, the udder enlarges soon after conception, loses its wrinkles, becomes firm to the teat, and the teats become more visible. In the last weeks of pregnancy, there forms at the opening of the teat a white opaque substance called wax.

Numerous tests have been invented for determination of pregnancy, but few of them are reliable. After the third month of gestation, pregnancy may be certainly diagnosed by palpitation through the walls of the rectum. This should only be done, however, by some one perfectly familiar with the procedure, since very severe accidents have resulted from manipulations at the hands of untrained persons. Manipulations through the walls of the abdomen to ascertain the presence of the foetus do not yield equally certain results in all domestic animals. In the cow, after the fifth or sixth month, the presence of the foetus can be readily ascertained by pressing the hand into the right side, permitting the foetus to swing and gently strike the hand.

Conservation of Moisture.

Cultivation is one practical means that the farmer has for conserving moisture over any considerable area of land, says a bulletin of the Nebraska experiment station. It is by cultivation that the surface is put in condition to catch and hold the water until it can soak into the soil. Weeds are killed by cultivation and thus prevented from using the water that falls. Cultivation also checks the loss of water from soils by direct evaporations. Stirring the soil loosens the surface, hastens the process of drying the surface layer, and decreases the points of contact between the soil particles, so that the water from below cannot so readily reach the surface by capillary action. In other words,

we purposely sacrifice the moisture in the cultivated layer in order to conserve that in the deeper levels.

The Best Cattle Manure.

The best cattle manure consists of the solid and liquid excreta of cattle mixed with sufficient litter to absorb the liquid from the excreta which have been allowed to slowly rot or decay. The dung of cattle contains the undigested food which has been given to the animals and which has been finely divided both by mastication and by the action of the gastric juices in the stomach of the animal. Much, of course, of what would be valuable as manure has been absorbed by the animal into its system to help it to build up new or replace worn out tissue but in feeding animals, that is, if they are kept in good condition, it is always necessary to give the animals more food than this actual quantity and it is this excess which adds to the manurial value of the manure.

Green Manure.

The *Tropical Agriculturist* points out that an addition to the number of plants suitable for green manuring exists in the *Desmodium hirtum*. This plant which is an oxygen absorber, grows rapidly, forming a dense cover, capable of preventing the development of weeds and of protecting the soil from the effect of too heavy rains and sun. The plant exists largely in tropical Africa. It is herbaceous and climbing, the branches attaining a length of from three to six feet. The production from seed is not very easy, and a nursery is best adapted for its propagation.

Agricultural Training School.

It is understood that Mr. W. M. Schutte, Agricultural Engineer, Bombay Presidency, has submitted a proposal for the establishment in the Agricultural College grounds, Poona, of a Training School wherein prospective power plant owners may be taught how to handle internal combustion engines, pumps and other agricultural machinery.

The Co-operative World.

The Co-operative Committee.

The Committee, appointed by the Government of India to enquire into and report on the progress of the co-operative movement in different parts of India and to suggest reforms, have so far done their duty briskly.

IN BOMBAY.

A number of gentlemen in intimate touch with the movement appeared before the Committee in Bombay and some of them made important suggestions with a view to securing greater efficiency and more rapid spread of the movement. Dr. Stanley Reed, the Director of the Bombay Central Co-operative Bank, who was first examined, confined his evidence to describing the constitution of the Bank and explaining the system under which it worked. Sir Vithaldas Thackersey's evidence mainly dealt with the working of Central Banks. His suggestion was that the Government should spend more liberally in the early stages of the movement for greater supervision and better inspection in order that it might proceed on sound lines. Rao Sahib S. S. Talmaki pointed out that the management of all centralised institutions must largely, if not wholly, lie in the hands of the primary societies, if the whole movement is to progress on co-operative lines. He said, that at present much of the control was exercised by the Registrar and his staff; and though this course must be allowed at the earlier stages of the movement, yet, in their own interest, societies must be taught to take this function upon themselves, and with a view to prepare the ground in this direction, the general body of members must be induced to take as much interest as possible in the affairs of the society. Mr. G. K. Devadhar, Member, Servants of India Society,

suggested that Local Governments should arrange for the training of suitable candidates desirous of working as secretaries of co-operative societies. "If possible," he said, "an annual examination should be held and those who pass these examinations should be awarded prizes. Societies employing trained secretaries should be separately classed. For a period of five years Government should bear the cost of the training of secretaries and should give special encouragement to societies. These facilities will induce many societies to get one or two members trained as secretaries and as they slowly appreciate the benefit of this arrangement, they will not be unwilling to share the burden of such expenses."

IN MADRAS.

The two chief problems which were brought forward by the witnesses in Madras were the levy of audit fees and the constitution of Central Banks.

LEVY OF AUDIT FEES.

There was a division of opinion with regard to both the questions but with the exception of Mr. L. D. Swamikannu Pillai, the Registrar, all others were against the levy of fees for audit and inspection by Government. Dewan Bahadur L. D. Swamikannu Pillai said that he had recommended a fee to be levied at the rate of 5 per cent. on the net profit in the case of ordinary societies with a minimum of Rs. 15 in the case of non-agricultural societies; 1 per cent. on the sales in the case of stores and a maximum of Rs. 750 in the case of any society. He added that, though the proposal, when it was first mooted, was received with widespread disfavour, the opinion was now veering round in favour of it.

Sir V. C. Desikachari, formerly Secretary of the Madras Central Urban Bank, referring to

Cattle Breeding.

The problem of improving the breed of local cattle occurs in every Indian province and some noteworthy particulars have been published of an attempt to solve it by the co-operative credit system in the Central Provinces. A society for this enterprise has been started in the Raipur district. It leased 490 acres from Government, and commenced with a herd of 40 cows and one bull purchased for the society by the Agricultural Department. The share capital of the new society is Rs. 8,000 and the shares are Rs. 100 each. The cows are branded and remain the members' own property, while the bull belongs to the society, and the portion of working expenses debited to each member of the society is proportionate to the number of cows he keeps. The steps taken to establish a second society on the same lines as the first show how much satisfaction the first has given so far as progress has gone.

Training for Public Life.

In the course of an address on educational topics at the Prize Distribution of the Tiruvalur High School, the Hon'ble Mr. V. K. Ramanuja Chariar is reported to have said :—

This is an age in which serious efforts are being made to improve the country by co-operation. Try, by every effort on your part, to extend it in every direction. The principle of competition has been tried and has been found to be a broken reed. It has made rich men richer and poor men poorer. As between landlord and tenant it has benefited the former enormously at the expense of the latter; and the love now is for fair rents and not for competitive rents. Co-operation is bound to change the face of the world. In the field of production, it will enable many to do what each by himself is unable to do. In distribution it will eliminate the middle men and will add his profits to the co-operators. It will help the weak and the poor. There will be less misery and more happiness. Let, therefore, co-operation and disinterested public work be your watch-words.

Raipur Co-operative Conference.

This Conference came off during the last week of November at Raipur. It appears the Registrar was more in evidence throughout the proceedings eclipsing the elected chairman and every other person who had anything to do with the Conference.

According to the *Hilavada*, the proceedings of the Conference were all the more disappointing in view of the fact that within a week of its deliberations the Government of India Committee on Co-operation was sitting in their midst to inquire into the various aspects of the subject. "The speeches of Rai Sahib Thacker of Raipur and the Hon'ble Rai Bahadur Shukul throw some light on important points such as primary education with special reference to co-operation. But other important questions of immediate interest such as the building up of reserve funds and their disposal, union subscriptions, union staff: their appointment and control, and so on, were either altogether obscured or could not be threshed out thoroughly."

Co-operative Dairy Farming.

In the course of a report on the organisation of "Co-operative Dairy Farming." Mr. W. M. Smart I. C. S., Director of Agriculture, Bombay, says that suitable localities for starting co-operative dairy societies should be found by the Agricultural Department and the suitability of each locality for the production of milk and the marketing of milk and milk products should be reported on separately. He recommends that in order to encourage co-operative dairy societies, Government be moved to extend the existing system of loans to weavers, seed societies and dairy societies. The aid given by municipalities should take the form of provision of sanitary accommodation and supercharge and hand over specially selected bulls to the society, which should contribute part of the purchase price and be responsible for their maintenance.

News and Notes.**RELIGIOUS.****The Gods of the Hindus.**

At a meeting of the East Indian Association, Westminster held recently, a lecture on the above subject was delivered by Mr. R. A. Leslie Moore, late of the I. C. S.

Mr. Moore stated, that two-thirds of the inhabitants of India are Hindus. Their religion was one of the oldest known to man. It could be traced back to its original sources in records which still existed, the chief of which were the four Vedas, the most ancient sacred Literature of the Hindus. Of these the Rig Veda was the earliest. Competent research had ascribed its composition to some time about 2,500 B. C., but Mr. Bal Gandadhar Tilak, moved back the date to about 6,000 B.C.—say about two thousand years before the creation of the world, according to the Authorised Version of the Bible. The religion inculcated by the Vedas was polytheistic and non-idolatrous, deifying the primeval forces of nature and natural phenomena. Idolatry was introduced into Hinduism at a later date, and was probably due to the contest between the original Aryans and the less civilised inhabitants of Eastern India, when the former advanced eastwards along the course of the Ganges from Afghanistan to the Punjab, Oudh and Agra. The Rig Veda declared the deity Prajapati to have been the creator, and represented him to have created the universe out of nothing by means of contemplation and the practice of austerities. In later times Prajapati became Brahma, one of the Hindu triad. But the chief Vedic Gods were Indra, Agni, Soma, and Varuna-Mitra, of whom Indra was the principal. In the Rig Veda the Gods were said to be thirty-three in number—a contrast to the numberless deities of Modern Hindus, many of whom had been adopted from

tribes taken into the fold of Hinduism. One more Vedic personage might be noted—Manu, the progenitor of mankind. Brahma, the creative power of Brahm, the Universal Spirit, no longer had temples especially dedicated to his worship, perhaps because no peculiar benefit could be expected by his worshippers, as the work of creation was over and past. It was said in the sacred writings of the Hindus that all material forms existed in Brahma, and that their germs were produced by him. From his mouth sprang the priest (Brahman), from his arm the warrior (Kshatriya), from his thigh the trader or cultivator (Vaisya), and from his foot the labourer (Sudra). The sun sprang from his eye, and the moon from his mind. He was depicted with four faces looking to the four quarters of the universe, and with four arms. In his hands he held the Vedic script, a lustral spoon, a rosary, and a vessel containing water for ablutions preliminary to prayer and sacrifice. His Shakti was the goddess Sarasvati, deity of speech, harmony, and the arts. Brahma's conventional steed was the wild goose, and that of Sarasvati, the peacock. Mr. Moore enumerated other persons of the Hindu triad and their chief orators or incarnations. Gautama Buddha was said by Hindus to have been an avatar of Vishnu. The God apparently took upon himself this incarnation in order to reclaim the Hindus from their early proneness to sacrifices of blood—the slaughter not only of animals but even of men. Even at his birth Buddha was clearly set apart for a high destiny by the marks resembling wheels or the sun on the palms of his infant hands. By numerous projections on the screen Mr. Moore illustrated many of the images of the Hindu deities, and explained their various powers and attributes.

SOCIAL.

Lepers and the Present Crisis.

In Great Britain and Ireland, where the effect of the war is an intensely real one, a national appeal has been made by the Prince of Wales to the people for funds to relieve distress, and has been responded to nobly. One effect of this, however, is that the incomes of foreign charitable societies will suffer. One of these societies is the Mission to Lepers. In its forty homes for lepers in India 3,800 lepers depend upon the Society for daily food and simple alleviation of suffering. Their care requires a daily expenditure of Rs. 1,000. Considerably over three and a half lakhs of rupees are expended yearly in India by the Society in the support and care of destitute lepers. The bulk of the Society's support during the past 40 years has been contributed by the people of Great Britain and Ireland. It would seem to be a plain and a simple act of patriotism for Indian people and all resident in India to take up at this time the care of India's own lepers.

The lepers are Indians and are in our midst, and their need is a dire one. It is unthinkable that, because of the great demands on charity in Great Britain, any of these hundreds of lepers in the Society's homes should have to be turned away to wander from place to place, hungry and uncared for, through want of funds when it is in the power of the Indian people to more than care for them.

The Vice-President of the Society for India is Raja Sir Harnam Singh, K.C.I.E., the Manor, Simla, and the Secretary is Mr. W. H. P. Anderson, 6 Napier Road, Poona to whom all donations in aid may be sent.

Widow Re-marriage.

The following list of authorities in favour of widow re-marriage is taken from a letter from a correspondent to the *New India* :—

- (1) *Rig Veda*, 10, 18-8, 9, 10.
- (2) *Itarai Brahman*, 8, page 68, Bombay Edn.

- (3) *Taittiriya, Arannyaka*, 6-1.
- (4) *Alharva Veda*, page 204.
- (5) *Manu*, 8-226 ; 9-76, 97, -175, 176.
- (6) *Manu* quoted by Madhwa.
- (7) *Manu* quoted by Vydinath Dikschita.
- (8) Vishnu, Chap. 15, 92, 93.
- (9) Yagnavalkya, quoted by Krishnacharya Smriti, P. 5.
- (10) Parasara, Chap. 231. Manuscript : Tel. Edn. Chap. 4-28.
- (11) Vashista, Chap. 17, page 489 (Cal. Edn.)
- (12) Shatatapa, Tanjore Palace manuscript.
- (13) Boudhayana, Cadgan manuscript & 22-3 27 ; 4, 1, 17, Sacred Books of the East.
- (14) Cattyayana, quoted by an adverse witness Nirayasinidhu 3, page 3, (Bombay Edn.)
- (15) Narada, Chaps. 12, 95 to 100.
- (16) *Mahabharat*, Bhishma Parva, Chap. 90.
- (17) *Agni Purana*, Chap. 154.
- (18) *Sri Bhagavat*, 9, 9, 34.
- (19) *Chaturvisnali Smriti*, Commentary, by Bhattojee Dikschita.
- (20) *Srimat Mahabharat*, Tatparya Niraya by Sree Ananda Teerthacharya, Chap. 20.

A woman may be married if she likes more than once in the case of the death of her husband with Vedic marital rites, provided she is a virgin but without them, if she be a non-virgin.

Institution for Defectives.

A school for the defectives in Mysore is doing sustained and useful work. The school was started in 1901, with one deaf mute and two blind pupils, and during the 13 years the strength has risen to 16 deaf mutes and 25 blind. Of these, 7 are from outside the State. 83 defectives, 35 deaf, and 48 blind have left the school after training and are earning their livelihood as music masters and industrial school teachers. The following industries are taught :— Rattan work, weaving, music, trade, tailoring, knitting and drawing.

The institution is being managed economically and costs only Rs. 300 a month, of which, the Government grants Rs. 110.

PERSONAL.

Raja Sir. T. Madhava Rao.

Under the auspices of the Tanjore District Conference Committee, a public meeting was held recently in Pachaippa's Hall, Madras, to commemorate the 86th birthday of the late Raja Sir T. Madhava Rao.

The lecturer Dewan Bahadur V. Nagam Aiyar, also a friend of Sir T. Madhava Rao, in the course of his paper said that Raja Sir T. Madhava Rao was a unique personality in the annals of Indian Statesmanship. All India had reason to be proud of him. He was well known, and his merits were acknowledged by his official chiefs, by the sovereign masters under whom he served, by His Majesty's representative in India and the ministry at home, by members of both Houses of Parliament and even by foreign Governments as represented by Prince Bismarck of Germany. Madhava Rao belonged to an adventurous Mahratta family and was born in 1828 and had the good fortune to be one of the very first set of recruits drilled by Mr. E. B. Powell, in the days of Lord Elphinstone, who gave an impetus to higher English education in Southern India. He was tutor to the Princes, Deputy Peishkar and Dewan Peishkar of Travancore, and finally became its Dewan. He directed his attention to the improvement of the internal affairs of the country and strengthened the relations of Travancore with the Madras Government. After a time, at the request of the Maharaja of Holkar, Madhava Rao, became Dewan of Indore.

From Indore he was appointed by the Government of India as Minister and Dewan-Regent of Baroda, and his achievements there during a period of seven years even surpassed those in Travancore, for there he had to grapple with bigger and weightier problems. From the time he became Dewan of Travancore in 1858 to the day of his retirement from the Baroda State in 1882, as Minister and Dewan-

Regent, during a period of 24 years his career may be said to have been one long triumphal procession. It was a unique success, unparalleled in the annals of Indian history and unapproached by any Indian Minister of recent times. After arduous and incessant labours for a whole life-time, he went into quiet retirement and enjoyed a ten years' repose in his residence at Mylapore and died there in 1891, full of honours, though not perhaps full of years. In his retirement he occupied himself with the congenial study of Herbert Spencer's works or writing short notes to newspapers on all manner of subjects from the German occupation of Africa to the coming of hair in boys or improving the dress of girls. Nothing was too difficult for his comprehensive brain and nothing too delicate for its subtle grasp. He was a man of the highest culture and the loftiest imagination. He was quick-witted, clear-headed and industrious. He was an indefatigable worker and he delighted in his work. He had a remarkable strength of will, uncommon patience, unparalleled perseverance, undaunted courage to face opposition and a capacity to overcome where he could not persuade. Towards brother officials he was considerate, kindly, generous and genuine. With those placed in authority over him he argued persuaded and convinced, but personally was modest, respectful and deferential in his behaviour. To the people at large he was a true friend and benefactor the supporter of the weak against the strong, the champion of the oppressed and the helpless. He was one of Nature's nobles and by universal assent he was the greatest statesman that India has produced in recent times. India is the poorer to-day for his loss—a man in whom the British Government placed absolute trust and one who showed by his conduct and culture and by genuine regard and sympathy for his countrymen that that trust was well placed.

LEGAL.

Oriental Conception of Law.

Recently a largely attended meeting of the Royal Asiatic Society was held in London under the Chairmanship of the Right Hon. Lord Reay, when Mr. Herbert Baynes, M. R. A. S., read a paper entitled "The Oriental Origin of the Conception of Law." The lecturer said that the discovery only twelve years ago of a code of laws dating as far back as 2250 B.C., so elaborate as to mark a great epoch in the history of the world, could not fail to enhance curiosity as to the genesis of that settled order of things called law. This code remained the basis of Babylonian and Assyrian law until the fall of both Empires. It was a thousand years older than the Mosaic age, and older than any system of ancient legislation. The edicts of the code numbered 280, and dealt with slavery, wages, rents, personal injuries, marriage, divorce, inheritance, and the rights of property. The parallels between these laws and the Book of the Covenant were very interesting. Indeed, it had been held that as the two codes were not only conceived in the same literary form but contained a large number of well-nigh identical laws, the enactments of the old Babylonian King passed more than a thousand years later into the Mosaic code, and so became the heritage of Israel and the world. Mr. Baynes showed by a reference to the Rig Veda, the most ancient book of the Aryan Race, that the primitive conception of law arose out of use of the word *Rta*, which played a great part in early Indian philosophy. The word, he said, seemed first of all to have been applied to the settled and orderly movements of the heavenly bodies of the beneficent powers of light, then to the paths which the gods tread in their struggle against evil and the powers of darkness, and lastly to the noble path or right way which it behoved gods and men alike to follow. The lecturer gave other examples from the ancient sacred records of the Hindus to prove that laws as to

righteous dealings between man and man had their conception in these ancient records. The thought of law, he submitted, arose from the contemplation of the ordered movements of nature. It was developed from experience of the necessary interdependence of human relationships. In a very real sense the records of races and of dynasties, of systems and of worlds, depended upon the Zodiac. So sure were the Egyptians that law was established by the heavenly signs that they worshipped one set of gods while particular cycles persisted, and another set as the cycles changed. In the evolution of society, that which became settled and fixed was that by which man lived; custom was consolidated and law was established.

The Chairman, in the course of a brief discussion, pointed out that the conception of law as mentioned by Mr. Baynes could hardly have been traceable to Rig Veda of the Hindus, for whilst as the lecturer had shown the ancient Babylonian code was somewhere like 7,000 years old, the Rig Veda was probably not more than 4,000 years old. If they desired to trace the origin of law they must go right back to the beginning of the existence of communities, for when one man began to live with another, there must have been some law or code to guide them in their social relations one with another.

What is Money-Lending?

A stray or an occasional investment of surplus funds by an individual fortunate enough to own them should not be taken advantage of by a Municipal body for the imposition of a tax on him under colour of a claim that such a transaction amounts to carrying on the profession of money-lending. This was decided in *The Municipal Council of Tirupathi v. Sree Mahant Prayad Dossje Varu* (27 M. L. J. 281) where it was held, following an earlier ruling in *Kunmetta Chinnarappa v. Kona Timma Reddi* (1911 1 M. W. N. 111) that the money-lending transactions should be numerous, continuous and systematic, if they are to constitute the carrying of a trade or a profession of money-lending.

DIARY OF THE WAR.

30th Nov.—Statement that Germany offered Japan peace on any terms if Japan would attack Russia. The Allies are taking energetic offence, South of Ypres. The Germans on the Warta-Vistula front are said to have been broken into three unequal fragments, one of which pierced the Russian lines at Brezin. One has reached the frontier, the others are thought doomed.

1st Dec.—Germans on the defensive in Belgium, troops transferred to Eastern Theatre. Kaiser leaves for eastern frontier. Operations on Vistula-Warta frontier.

2nd Dec.—King George visits France. Struggle for Ypres, German's half hearted attacks, destructive bombardment. Stubborn fighting at Lodz. Russian successes in the Carpathians. Turks routed in Euphrates Valley. Trouble in Somaliland.

3rd Dec.—King George at the front. Austrian invasion of Serbia. Belgrade evacuated. Neutrality of Italy and Persia.

4th Dec.—King George at the front. Germans fortifying Belgian Coast. Aerial raid on Essen, rumoured dropping of bomb on Krupp's factory. German Chancellor's diatribe against Great Britain. Battle of Lodz. General Renenkampf suspended. Serious situation at Przemyśl. Austrian occupation of Belgrade. Defence of Egypt.

5th Dec.—King George at the front. Steady progress of the Allies. French activity in Alsace. German offensive at Lowicz. Russians capture Bartfeld, in Carpathians, and occupy Wrelitzka, in Poland.

6th Dec.—King George and King Albert meet in France. French advance in Alsace. Germans reinforce the Yser front. French successes North of Lys. Bombardment of Rheims. Kaiser indisposed, returns to Berlin. Obstinate fighting at Lowicz and near Lodz. Attitude of Italy, statement by Premier.

7th Dec.—King George returns to London. Evacuation of Vernelles by Germans. Retirement

on the Yser. Fierce fighting round. Further particulars of Italy's attitude. Russian successes in Caucasus. Capture of De Wet.

8th Dec.—Allies progress on the Yser. Austrian reverses in Serbia. Turkish cruiser *Hamidieh* disabled by a mine.

9th Dec.—Advance of the Allies in Flanders. Aerial raid on Friedrichshafen, protest by Swiss Government. Russian evacuation of Lodz. The advance on Cracow.

10th Dec.—Allies advance on Ostend supported by the Fleet. French progress in Argonne and on the Meuse. Austrians retreating from Serbia. The Boer revolt, tragic death of Commandant Beyers.

11th Dec.—German Pacific Squadron sunk near the Falkland Isles. Air raid on Freiburg, in Baden. Obstinate fighting in Poland; German offensive repulsed. Success of Serbians. Surrender of Kurna to British Persian Gulf Expedition. End of Boer revolt.

12th Dec.—Advance of Allies, occupation of Roulers. Another air raid on Freiburg. Brilliant Serbian victories.

13th Dec.—Another German cruiser sunk by mine in the Baltic. Capture of Vermelles and La Basse. French Government return to Paris. Austrians routed near Cracow.

14th Dec.—German retirement from the Yser Canal. German attacks on Ypres repulsed. Germans repulsed in Poland. Serbians drive Austrians across the Drina. Turkish outrage at Italian Consulate at Hodeidah.

15th Dec.—Allies progress in the West. Strong Russian defence. Serbian pursuit of Austrians; advance on Shabatz and Losnitza. Turkish warship sunk in Dardanelles by British submarine. Turkish defeats in the Euphrates Valley. Italy demands reparation for Hodeidah incident. Khedive's alleged complicity with Germany.

Submarine trial at Bruges. Freiburg. Two Austrian

ECONOMIC PRODUCTS.

The Multiple Uses of Sugar.

It is not widely known that sugar has many valuable applications in the industries which have nothing to do with its role as an ailment. The fact that sugar is a cheap carbohydrate containing a rich proportion of carbon, and that it acts in some cases as an acid forming definite and soluble compounds with the bases, renders it a useful agent in certain industrial processes.

It gives a smooth, silk "char" when heated with sulphuric acid. The acid is neutralised and the mixture converted into a paste which is the common boot blacking. To some extent such paste has been replaced by wax and fluid polishes, but the old blacking made from sugar is regarded by many authorities as holding its own both as a polisher and preserver of the leather.

Sugar is employed in the manufacture of leather in order to remove the lime used as a scourer of the hides, and in the tanning process glucose is largely used as a "filler"—that is, a vehicle or carrier.

Its affinity for the alkaline earths—e. g., lime—accounts for the use of sugar in removing and preventing boiler-scale.

Sugar enters largely also into the composition of copying inks, and printers' rollers are made up of a mixture of glue and glycerine or sugar.

It is used also as a cheap substitute for glycerine or alcohol in the manufacture of transparent soaps. It excludes those constituents in soap which make for opacity.

Sugar, again forms nitro-compounds, and hence a series of explosives owe their potentialities to the association of sugar with nitric acid.

Sugar, apart from being directly a food, also serves to stimulate the flow of the gastric juices, and so acts in a way which recalls the action of soaps or meat extracts. The use of sweet liquors after dinner may have some foundation in this physiological fact.

As is well known, however, an excessive

indulgence in sugar may lead to irritation of the mucous membranes of the stomach and to the flow of a strongly gastric juice, in which case sickness is commonly a sequel—*The Lancet*.

Uses of Mica.

In former days it was used to a great extent for glazing windows and known as muscovy glass, and even now "muscovite" means "white" mica; but it is now largely employed for gas stoves and lamp chimneys. Its demand amongst electrical manufacturers is increasing very rapidly for they prefer it to any thing else for its high electrical resistance, perfect basal cleavage, flexibility, elasticity, insusceptibility to heat and its indifference to acids and other corroding agents, and also for the fact that mica in thin "lamale" is readily cut into desired shapes and sizes. Within recent years "Micanite" has to great extent been manufactured by a simple process of "cementing" several sheets of inexpensive mica into big plates together with shellac under pressure. This product is gradually replacing the natural "slabs," owing to its comparatively small cost. In addition to these uses mica that has no other commercial value, especially when it is found in very small sizes, is pulverised and used for boilers and pipe laggings; some being manufactured into lubricants, so largely used by some Indian and other railway companies. It is also used in paints and for wall paper.

Cattle Food from Tomato-Seeds.

A valuable cattle food, rich in proteids and carbohydrates, has been prepared from tomato-seeds. The process is simple and straightforward. The seeds are first desiccated in drying-furnaces, and then carefully sifted to eliminate the woody fibre which is useless. After this treatment the seeds are passed between heated millstones, which reduce them to a kind of pulp. The latter is then submitted to tremendous pressure in hydraulic-presses which treatment not only drives out the oil which is present in large quantities, but consolidates the granulated mass into large slabs similar to cotton-seed and copra cakes. Careful tests with this residue have been carried out at the Portici Agricultural Station to determine the nutritious value of the food, and the stock has thriven thereon. The oil is a valuable by-product, since vegetable oils are now in keen demand, especially for the preparation of foodstuffs of various descriptions.

HINTS AND RECIPES.

Removal of Grease from Wall-Papers.

Marks or oil stains may be removed by mixing pipeclay and water together to the thickness of cream and placing it on the spot. Let it stay there for twelve hours and then remove it with a brush or pen-knife.

Gently warm the greased or spotted part of the book or paper, and then press upon it pieces of blotting paper, one after another, so as to absorb as much of the grease as possible. Have ready some fine clear essential oil of turpentine heated almost to a boiling state; warm the greased leaf a little, and then, with a soft clean brush, apply the heated turpentine to both sides of the spotted part. By repeating this application, the grease will be extracted. Lastly, with another brush dipped in rectified spirit of wine, go over the place, and the grease will no longer appear, neither will the paper be discoloured.

Ant Extermination.

For the extirpation of ants the following remedies are good. To be effective, they require attention and perseverance. It is well to find their main burrow or nest, if possible. Arsenic is sure destruction to them, but it is dangerous to handle.

Air-slaked lime plentifully dusted in warm dry weather over and around the hills, or in the house or other places infested, will cause the ants to vacate them in a short time.

Snuff: Dust a little snuff upon the floor of the rooms or pantry.

Draw a thick chalk line around a smooth tree or across an upright board or post, and they will not pass over it.

Camphor.—Put a piece of camphor, the size of a filbert nut, into 2 quarts of hot water. When cold, apply to pot and other plants, and the insects will be driven off without injury to the plants.

Mix together 1 part of calomel and 10 parts

of finely powdered white sugar, and lay it in little heaps about their nests and runs. The ants will eat it and die.

Coal oil, mixed with six times its bulk of water, sprinkled over the nests every few days, will kill and drive them away.

Pans or saucers, nearly filled with honey or sweet oil, attract ants, and they are drowned in it.

Flowers of sulphur, $\frac{1}{2}$ lb., potash, 4 oz. Set in an earthen vessel over the fire until dissolved and united. Afterwards beat to a powder. Infuse a little of the powder in water and sprinkle in places infested with ants.

To Destroy Black Ants.—A few leaves of green wormwood scattered among the haunts of black ants will drive them away.

Red Ants.—Powdered borax sprinkled around will exterminate both red and black ants.

Make holes in the ant hills, 6 inch deep and 1 foot apart, with an iron or zinc tube fitted with a wooden stake. Withdraw the stake. Pour 1 tablespoonful of bisulphide of carbon down the tube. Withdraw the tube and stop the hole immediately. Bisulphide of carbon is very inflammable.—*The Queensland Agricultural Journal*.

How to Treat the Horse.

Do not buy a horse that is too light for your work! You will gain nothing by overburdening him; he will soon become unsound, and wear out, says *Dumb Animals*.

Feed him well, if you wish him to work well. Give him three good meals per day (four if he does an extra long day's work), and ample time to eat them.

Let the horse have one day's rest every week. See that he is comfortable in his stable, that it is neither dark nor damp, and that he has a good bed to lie on.

See that his harness fits properly, and is kept clean!

Horses, like human beings are often thirsty when hard at work, so offer them water frequently. A little oatmeal in the water is very refreshing and sustaining.

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 sunk by mines. Serbian victory at

17th Dec.—German naval raid on Scarborough, Whitby and Hartlepool shelled. British naval bombardment of Belgian coast. Belgian success on left bank of the Yser. Germans repulsed in Alsace. Germans concentrating on Vistula. Serbians recapture Belgrade.

18th Dec.—Egypt declared a British Protectorate. Statments from Petrograd that the Kaiser ordered the capture of Warsaw at all costs. Germans defeated and vigorously pursued on the Mlava front. The German Cruiser *Friedrich Karl* sunk in the Baltic. The bombardment of the Gulf of Saros put the Turks to flight. The Conference between the Scandinavian monarchs opened. The meeting was very cordial.

19th and 20th Dec.—The death is announced of Lieutenant Hardinge, son of the Viceroy, who was seriously wounded quite early in the war. France recognises the British Protectorate over Egypt. According to Dutch reports violent fighting on the Yser, the artillery from the British fleet is said to play havoc in the German ranks. The Allies have gained ground near Nieuport. The Scandinavian Monarchs' meeting at Malmoe is officially stated to have been a success. The French gain ground south of Dixmude. The new Sultan of Egypt was festively and solemnly installed. The Aga Khan has arrived at Cairo to assist in the ceremony of accession of Sultan Hussain. The rebel leader Captain Fourie was court-martialled and shot. The Scandinavian Kings Conference has terminated. The three countries will assist each other in preserving neutrality.

21st Dec.—A sortie from Przemyśl failed lamentably. An Italo-Rumanian League formed to strengthen the bonds uniting the two countries. A German hydroplane dropped two bombs in Calais on Sunday. No damage. The Kaiser has completely recovered and has returned to the front. Progress was made by the Russians round Przemyśl. The Russians seized part of the defensive works after a sortie by the garrison. The Austrian offensive in Galicia definitely checked the recent success in the Mlava region. The Austrians retired to prove that laws as to burg-Neidenburg.

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 The Russians maintain their position in the Bzura river. They have pushed back Germans in the Mazawa direction, but on the left they have retired from Pitorkow to Opoczno 25 miles further east.

23rd Dec.—The French gain a footing at Bourevilles. The Russians are strengthening their position on the Vistula. An airman drops bombs in Strasburg. The Germans attack Angola.

24th Dec.—Better progress is being made, owing to additional men and guns, in West Flanders. The bombardment from the sea, on the German Right Wing in West Flanders is demoralising the German troops. An Austrian submarine torpedoing a French battle-ship; causing no harm. A German aeroplane drops a bomb in a Dover garden. Tiflis German troops defeated near the Van. Troops from Przemyśl made a sortie, but are defeated.

25th Dec.—A vigorous general advance of the Allies. An enemy aeroplane passes over Sheerness. The *Dresden* escapes to Chile. A German regiment is cut up in Poland.

26th to 28th Dec.—The air raid at Cuxhaven was admirably executed, and it is believed that considerable damage was done to the German ships.

The Germans in Central Poland reduced to defensive after suffering grave losses especially in an abortive attack to the south-east of Skierniowice. The Austrians definitely evacuated the left of the Nida. South of Upper Vistula fighting continues to develop favourably to the Russians. The Austrian retreat towards Dukla Pass in Carpathians is increasingly disorderly. Germany fears Turkish National revival. German advance on the Bzura is stopped.

29th Dec.—Russia has captured 15,000 prisoners in a week's fighting.

30th Dec.—Indian troops inspected by H. H. the Aga Khan at Cairo. *Emden's* Captain is interned in England. Russians have repulsed the Turks in the Nordensk region. Allies advance in Nieuport district, and consolidate the ground gained all over the front.

31st Dec.—The Bank of France has been removed back again to Paris. Seven German airships drop bombs on Dunkirk causing damage to buildings. Russians advance victoriously in Western Galicia. An Austrian battle-ship is torpedoed by a French submarine, but being near the docks, escapes there. A strong Turkish column is routed by Russia. Germans are driven off from the Bzura.