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No. M. 2169.

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MADRAS Vol. IV—8

Rural India.

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Vol. IV. August, 1929. No. 8.

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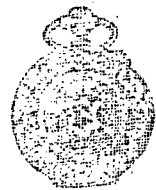
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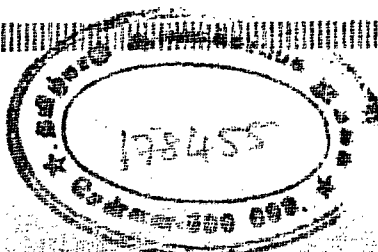
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RURAL INDIA

Managing Editor:--A. Swaminatha Iyer, B.A.

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August, 1929.

No. 8.

Agriculture in India.

6
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MADRAS

WE have perused with interest Dr. D. Clouston's Review of Agricultural operations in India for 1927-28. The Agricultural Departments in India have for some time been devoting particular attention to the distribution of improved varieties of the principal staple crops of the country. The improvement effected was one which appealed to the cultivator as its adoption did not involve any material increase in his expenditure. It is reported that the area under the improved varieties in the year under review, has almost doubled since 1923-24 which shows that the improved varieties are appreciated by the cultivators. Dr. Clouston estimates the average additional profit realised by the adoption of improved varieties at nearly twelve crores of rupees. Whatever it be, there is still a vast field for further work in this direction as remarked by the Royal commission on Agriculture,

Although the area under sugar-cane was estimated to be 29,54,000 acres as against 29,24,000 acres last year or an increase of one per cent, there was no corresponding increase in the estimated production of jaggery (raw sugar) which was 32,21,000 tons as compared with 32,55,000 tons last year or a decrease of one per cent. There was not much production of refined sugar, which amounted to only 62,941 tons while the imports of refined sugar amounted to 715,791 tons. This is a serious matter which deserves to be carefully considered. India which has such vast areas suitable for growing sugar-cane should be able to produce all her home requirements besides being able to export her surplus output of sugar.

Ground-nut has in recent years assumed an economic importance of the first magnitude. The area of 53,21,000 acres sown in the year under review was nearly four times as large as that in 1918-19; it has more than trebled in Madras in the same period, while the increase in Bombay was over 500%. In Madras which has 63% of the total reported acreage under this crop, varietal and cultural experiments were in progress on a special groundnut farm at Palakuppam.

Dr. Clouston's remarks on the subject of manures and fertilisers are interesting. There is not enough manure to go round, and the ryot generally uses cow dung as fuel rather than as manure, whilst large quantities of oil seeds, oil cakes and bones are exported.

The ryot is obliged to use cow-dung as fuel, because fuel is not available in sufficient quantities nor is it cheap. During the last few years owing to the wise policy of the Madras Government, village forests have been handed over to Panchayat Control, and the experiment has proved a success. It should be possible to grow in the Panchayat forests all the fuel required by the ryots and at the same time steps should be taken to make available fuel at reasonable prices from Government forests. The policy of allowing without restriction the export of valuable manures is questionable and in the interests of the agriculturists an embargo should be placed on such exports. The advantage of the introduction of improved varieties of crops cannot be secured, until and unless their introduction is accompanied by liberal manuring. The possibilities of adding to the manurial resources of the country by producing artificial farm yard manure by composting waste products are under investigation at several centres. Success has been achieved at Coimbatore in converting such materials as sorghum stubble, gram stalks, prickly pear etc., into manure of excellent composition. In field trials it proved to be as valuable a manure as ordinary village cattle manure, prepared by the loose box method. Plantain stems are being successfully utilised in Bombay for the manufacture of synthetic manure. In Travancore, the addition of bone-meal to the cattle dung emulsion, used as a starter has enriched the result-

ing product in phosphoric acid content and accelerated the rate of decomposition. In Bengal large quantities of artificial farm yard manure were prepared from refuse straw, sugarcane trash and weeds to which were added cattle urine, byre washings and a little bone meal.

Next to the judicious use of manures, the designing of improved implements, suited to the economic condition of the ryot, the agricultural tract and the system of cultivation pursued is of great importance. This aspect of the agricultural problem has not received the attention to the extent the importance of the subject deserves. In Bombay it is stated that an improved indigenous seed-drill designed by the Agricultural Engineers has achieved considerable success. A labour-saving machine for harvesting ground nuts and a winnowing machine designed to give a clean sample of grain are other implements, under trial in that presidency.

All will remember the old motto "cattle first, corn second." The prosperity of the ryot depends mainly on his cattle. The draught power available for village operations is inadequate and there is a general shortage of milk products. Such a position must in the words of the Royal Commission on Agriculture, be ascribed to a vicious circle.

The problem of improving the cattle breeds of the country by providing suitable draught cattle and milch kine is a formidable one. The different indigenous breeds are being studied and pure bred herds established with a view to providing a foundation on which the edifice of improved cattle-breeding and dairying can be raised. Much attention is also being paid to the question of growing and storing fodders. Luscious fodder crops have been newly introduced and methods of storing fodders in silos and in the dry state have been devised and accurate information regarding the digestibility and nutritive values of different food-stuffs and fodders is being collected. With the object of demonstrating the possibilities of transporting milk from rural areas where it is relatively cheap to urban centres where it is dear, schemes have been promoted for supplying milk to large cities.

Cattle breeding operations at Pusa are being directed along two lines. A herd of Sahiwals or Montgomeries is being graded up by selective breeding and the poorer milkers of the same breed are being crossed with Ayreshire bulls of high milking pedigree, with the primary object of obtaining reliable information regarding the inheritance of observable characters in the crosses. Having produced a cross of good milking capacity by cross breeding, attempts are now being made to adapt the cross to local conditions by mating half bred dams with Sahiwal bulls of good milch pedigree. In accordance with the breeding policy adopted at Pusa, most of the cross bred cows on the Bangalore and Wellington farms, are now sired by Indian bulls of good milch pedigree. Similar experiments are being carried on in the provinces and if satisfactory results are to be achieved systematic and intensive work should be done. The great interest which H. E. Lord Irwin has been taking on the subject of animal husbandry is a guarantee that there will be no slackening of effort in this direction.

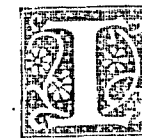
Before we conclude, we should like to say a few words on the co-operative movement as affecting agriculture. The co-operative movement is in a some-what unhealthy condition in at least three provinces. Outside the Punjab and Bombay it has not yet touched even 10% of the families in rural areas. In 1927-28, there were in British India some 72,000 agricultural credit societies with nearly 2½ million members and a working capital exceeding 26 crores of rupees. So far little progress has been made with forms of co-operative activity connected with purchase, production and distribution.

There has been some activity of late in the organisation of co-operative milk societies. The number of milk societies in Bengal increased from 97 to 123 during the year. 93 of these societies are affiliated to the co-operative milk union, in Calcutta, which realised nearly 6 lakhs of rupees by the sale of milk, reduced its outside liabilities by over 44 thousand rupees and earned a net profit of nearly 24 thousand rupees. The success of this union has led to the creation of similar organisations at Dacca and Darjeeling. Madras also has recently been active in this direction and the milk societies organised in the

Chingleput District now number over 20 and from all accounts are doing good work. This is a direction in which co-operative effort may with advantage be directed. Cattle insurance societies have proved a failure, wherever they have been tried in India, and no information is given in Dr. Clouston's review as to the reason for the failure.

Cattle Problem in India

By Lieut : S. Datta, B. Sc., M. R. C. V. S.,
Bengal Veterinary College, Belgachia, Calcutta.



IN this paper, it is not my purpose to emphasise the importance of the cow in our national life because, to the members of the Cow Conference it will be, I take it, like preaching to the already converted. That the cattle represent the working capital of the agriculturists or that they are indispensable for motive power or for milk production needs no repetition. It is necessary, however, to bear in mind the above facts to be able to realise how very dangerously the disease of cattle can undermine the whole fabric of agriculture, the fundamental industry in India.

As there is so little elementary knowledge in the country and confused thinking even in the quarters that ought to have known better, I make no apology for quoting the Under Secretary of State for the Colonies, Mr. Ormsby Gore. He told the Imperial Agricultural Research Conference in London that "I use the word 'Veterinary' in what I regard as its only proper sense, that is, as including animal husbandry animal nutrition and animal genetics and not merely the pathology of domestic animals." My contention is that these branches are not separate problems and to produce the fullest measure of benefit they should be administered by one single Livestock or Veterinary department. The Veterinary Service cannot prove its proper utility and gain public esteem, if it has to be content only with the negative aspect of prevention or tackling of diseases. That these aspects are so closely knit together and are interdependent will be evident from the fact that

Notes of an Address delivered to the All-India Cow Conference under the Presidency of Pandit Madan Mohan Malaviya.

a wellbalanced diet determines the degree of physical development and general wellbeing of animals and as such is a preventive of diseases. Dr. Crew of the Institute of Animal Genetics at Edinburgh has shown that by breeding from stock that is known to have a high degree of resistance to an epizootic, it is possible to raise stock almost free from the dangers of cattle epidemics.

I am fully convinced that the stamping out or prevention of cattle diseases is the very first preliminary to any successful scheme of cattle improvement. If the losses due to epidemics are not reduced or stopped the "vicious circle" from which India has been suffering badly, will not be broken. Unless that is clearly understood, endeavours by methods of selective breeding and scientific feeding is, in my opinion, useless.

The State Veterinary Department concerns itself only with combating outbreaks of contagious diseases, which endanger the lives of a large number of cattle at the same time. Conditions in India have not allowed the State to take interest in the minor ailments or those affecting the individual. The Indian Veterinary Service has not been in existence for more than thirty years. It has already set up a rudimentary machinery for combating these plagues of cattle. The work that awaits to be done is enormously large and the available resources are, in the same measure meagre. The fact that India is so vast and is a continent with scarcely any natural boundary between its provinces, makes the problem more complicated. It is not easy to estimate the exact loss that the agriculturist has to suffer every year due to those scourges. The figures supplied by the Civil Veterinary departments must fall short of the actual casualty. Suffice it to say, that animal losses are appallingly great.

Unless the feeling of uncertainty of cattle life from the agriculturists' mind is removed and animal life is made more vigorous and secure, the improvement of livestock cannot attract private enterprise, capital or intellect. The apathy against cattle raising has been very largely caused by economic factors. There is no justification for us to maintain a C. 3. population of cattle at the expense of A. 1. population. The

cost of keeping cattle, whether of the A. 1. or C. 3. grade, is about the same but their productivity and usefulness are very substantially different. We are overstocked with quantity at the expense of quality and hence the prolific diseases.

The essentials of success in any campaign against cattle pests are four in number.

Firstly, the knowledge of the science of diseases, causes, methods of cure, prevention, local and foreign experience. Our problem is not the lack or insufficiency of our knowledge of these diseases. It is no mean achievement for the Veterinary profession in the British Isles to have cleared the country of sheep-pox, glanders, cattle plague, pleuropneumonia and rabies in the present state of our knowledge, which is, by no means, complete. The Veterinary profession has held its own with its confreres of the medical side and to-day the Royal Society of Medicine and the British Medical Association welcome veterinarians on terms of cordiality and fellowship. The fighters against disease have combined in public spirit and civic responsibility. The record of veterinarians in India has not been insignificant. Martyrs like Shilston and Gaiger and scientific workers like Evans who did the pioneer work on trypanosomes, stand to the credit of India.

Secondly, men of the requisite type have to be trained to gain public and professional skill. That brings in the question of Veterinary Colleges and suitable curricula. The colleges are already there. It is only necessary to reorganise them in the light of the present day requirements and difficulties. I cannot lay too great emphasis on recruiting the very best men for the Veterinary profession.

Thirdly nothing can be done without funds. In this connection, the credit of pioneer work must fall on the State. There are a few private organisations that have the same object in view but though their objects and sentiments are to be admired their methods are not modern or efficient. Unless the Veterinary work inspires more confidence and raised in public esteem, voluntary contribution for such work cannot be hoped for. The example of the late Mr. Wadia in leaving a large sum of money for a animal hospital at Bombay, of Mr. Henry

Phipps of Chicago, who donated £30,000 for Agricultural Research at Pusa should be held up before the public as an object lesson.

Fourthly, no success is possible without public cooperation. Cooperation is possible with people who have the same angle of vision and the same line of thought. There is every grade of progress and decline in India. To make cooperation possible, these different grades of people have to be levelled by education. Propaganda is very necessary. A positive propaganda to awaken a desire in the community for better things, cleaner milk, more efficient bullocks and a campaign of "drink more milk" will bring far better results than a negative propaganda like "do not kill cows". The experience of the publicity campaigns of the Indian Tea Cess Committee is an example in point.

It passes my comprehension how a population that is so fastidious about its food does not insist on clean milk production and incidently on a systematic veterinary inspection of dairy cows, premises and utensils. I am unable to understand the workings in the mind of people who resist the slaughter of cattle for food purposes by certain communities and yet do not lift their smallest finger against the indiscriminate slaughter that is brought about by preventible epidemics on a very much larger scale.

Diseases can be carried by animals to man as well as by human beings to animals. The veterinary expert that eliminates and destroys the sources of infection of anthrax and rabies is no less important in public service than the medical officer that combats the problems of cholera or small-pox. That the cow's milk is an excellent food for the human baby is undeniable. Bacteria or organisms of a devastating disease like tuberculosis are capable of being conveyed with contaminated milk to man, particularly to children. To what extent this source of infection has played its part in the tragedies of life, in the ceaseless sufferings of helpless children with twisted or deformed limbs is not for me to say. I am here only to tell you how very closely bound with animal health

or otherwise is our own life, how the lack of proper veterinary Health Department for meat and milk inspection for urban supplies has been a potent source of danger to human life.

So far I have only touched the general aspect of the problem. I have made many a digression to make the subject interesting. Now I shall name some of the commonest scourges in India that take the heaviest toll. Rinderpest, haemorrhagic septicæmia, foot and mouth disease, tuberculosis and parasitic infestations. As rinderpest is the most dreadful of all, let us consider this as an example. There is no lack of scientific knowledge about this disease, thanks to Imperial Institute of Veterinary Research at Muktesar in Naini-Tal. The experience of Egypt and South Africa are there to help us. Nearer at home, the Mysore State has already shown us how much can be done by hastily improvised and trained staff. The rapid strides of the Veterinary department in the Punjab should be an object lesson and incentive to individual and corporate effort in other parts in India. Methods of inoculation should be popularised to win over the sentimental objections to use cow's blood. Inoculation should be done on a voluntary basis. Initially it must be allowed free otherwise the cost will be a deterrent to extensive use. In the process of time, public opinion is bound to gather round the serum-simultaneous method and it will be time then to insist on compulsory immunisation. This will need a lot of tact, judgment and initiative. India has some great advantages for combating rinderpest. Suitable cattle for the production of materials for inoculation are available in the hill bulls of Nainital and the sera can be produced very cheap. The Institute at Muktesar has made a profit of over 5 lacs recently after having met all the expenses of production. Achievements have been great no doubt, the possibilities are greater. We have it on the authority of the Royal Commission on Agriculture that in no sphere has scientific research conferred greater benefits on agriculture than by the means of controlling livestock diseases and it may be added that India has no reason to be dissatisfied with the contributions its scientific workers have made to world knowledge during the last thirty years.

The recently brought out 'Goat Virus' method does offer a strong hope that in the course of a few years, at any rate, it may substantially increase our powers of control of rinderpest. Experience now is very insufficient and a definite assertion is not justifiable.

I suggest that a more expanded and better organised livestock department will mean a substantial increase in the wealth of the cultivator as also a corresponding increase in the resources of the State will be achieved. It is a matter of paramount importance that the cattle wealth be first protected from the menace of these virulent scourges before any real progress in the improvement of rural India or Agriculture for that matter, can be effected.

The right Hon'ble L. S. Amery-the Secretary of State for the Colonies in London, said not long ago "There is no Science which has a greater importance for the outer Empire today or indeed in a measure for the old country itself than your Science of Animal Health-the Veterinary Science and there is no wider field for its activity than is offered by the many diverse problems of the British Empire." That statement coming as it does from a responsible minister is full of significance and substantiates my contention that livestock work is far more important and is capable of far greater development than any other branch of Agriculture.

Constipation

By Dr. M. S. Krishnamurthi Ayyar, M.B.C.M., F.R.I.P.H.,
Sanitary Commissioner of Travancore, (Retd.)

ONSTIPATION is a disease of civilization. Among free lower animals and primitive men it was rare. The cooking of food, the wearing of clothes particularly tight clothes interfering with the proper movements of internal organs, social conditions requiring withholding or delaying defecation when it actually presses, lazy life etc. are the chief causes that have contributed to this condition which is not only a disease but the mother of a large number of other diseases. The intestines are the sewer

age canal of the body and if they are not properly flushed and kept clean the general body is affected. The number of micro-organisms, some of which are disease producing, found in the intestines is enormous. The weight of the faecal matter passed by a man in a day is about $3\frac{1}{2}$ ounces or 100 grains and this when dried up weighs 20 grains. Of this the remains of the micro-organisms constitute one half. Raw foods, fresh fruits, and nuts are not constipating. But when they become devitalised by bad cooking they are made not only innutritious but produce constipation. The action of the muscular walls of the intestines by which the food is driven downwards through the intestines can act satisfactorily only when the intestines are full and contents therein come in contact with the entire surface of the walls of the intestines. And as it is not desirable that all the food taken should be absorbed and assimilated, a portion of it should consist of indigestible and harmless material to facilitate the moving of the bowels by acting as Roughage ballast. The best substance which can serve as a ballast is cellulose which is found in all green vegetables. There is no secretion in the human alimentary canal capable of digesting it though it is said that in the South African Indians and Bushmen the vermiform appendix secretes a ferment which digests cellulose. Cellulose is a kind of starch and as such can undergo only fermentation which is not bad while proteins undergo putrefaction which is very harmful. The number of evacuations which is normal to a human being in good health is two, one after breakfast and the other after dinner. It is within the observation of most of us who have children that they invariably answer calls of nature after their meals. This is evidently due to the stimulus given to the muscles of the intestines by the presence of food taken in to start their peristaltic action; also to the action similar to that of a popgun in which the loading of a shot at one end and pushing it expels the one at the other end. Mothers are not generally satisfied if their infants do not pass two or three motions a day. It is only in grown-up persons by their bad habit and devitalised food they take, regular motions are not obtained. It is said that in London when horses were much in use for traffic it was a rare sight to see in the roads or streets horse dung and urinen.

The animals before they are taken out from their stables urinate and defecate on signs such as whistling made by the keepers. It is also within the knowledge of the writer that even in India well-bred horses pass their excretions if the horse keepers place some vessels to receive them and whistle. If only all human beings make it a habit to answer the calls of nature at fixed times and start for work afterwards the streets and public wards would not have been strewn with faecal matters as is common in Indian towns and villages and the sight of people answering nature's calls at road side will be avoided. The number of public latrines and urinals, which in many towns serve by the insanitary condition in which they are kept the purpose of warning people from going into them for calls of nature, may be considerably diminished. Among Europeans, even in India the children are taken to W. C. after breakfast and kept there and made to pass stools. If this is persisted in and followed it will become a desirable habit. The usual time required for the food taken to pass out as stools is 14 hours. The length of time can be easily found out if a charcoal tablet is taken with meals and the time when it appears in the faeces is watched. If it takes more than 36 hours the longest time consistent with safety then it is certain that there is something wrong in the alimentary canal. The article may be closed with a digestive time table taken from the "Healthful Living", of the Battle Creek Food Company, Michigan.

THE DIGESTIVE TIME TABLE.

Arrival	Gate	Station	Departure
8 a.m.	No. 1 Food Administrator	Mouth	8-30 a.m.
	No. 2 Inspector	"	"
	No. 3 Food and water	"	"
8-30 a.m.	No. 4 Stomach	Stomach	12 Noon
	No. 5 Bowel-Pylorus	"	"
12 Noon	No. 6 Ileo-Sphincter	Small intestines	4 p.m.
4 p.m.	No. 7 Colon-Ileo-Valve	"	"
6 p.m.	No. 8 Reversing Gate	Transverse Colon	8 p.m.
8 p.m.	No. 9 Ejector Gate	Pelvic Colon	10 p.m.
	No. 10 Exit	Rectum	10 p.m.

SPECIAL BULLETINS.

Train Late Held at stomach station for 2 hours. Bowel gate refused to open.

Losing time. Wreck at Colon Gate (No. 7) Ileo-Coal valve refuses to open. Track obstruction with rubbish. 8 hours late.

Losing time. Collision with heavy train backing up 10 hours late.

Losing time. Obstruction on the track—Ejector gate No. 9 rejects to operate 20 hours late.

Losing time. Serious obstruction.—Track buried with rubbish 35 hours late. Train arrives at last after clearing track with dynamite (Castor oil) 40 hours late.

(This is the usual programme when the bowels moves only once a day or occasionally).

To a Consumptive Friend

Since health thou seekest, Friend of mine,

Go learn this while you may.

That Nature's aid must be invoked.

To drive thine ills away.

No panacea waits for thee

But do not feel dismayed,

For God's good gifts of sun and air

Are on thy side arrayed.

The fields and trees, the golden sun,

The sky and mountains blue,

Will bring you close to Nature's God,

And win back health for you.

Then go thou forth resolved to live,

No matter what the clime,

As near to Nature as thou canst,

And outdoors all the time.

So plain a life may hold less charm,

Than one more full of strife,

But health is worth a ton of wealth,

In sunning up a life.

—H. Edwin Lewis M. D.



Co-operation in Agriculture

Co-operative societies in the rural tracts for the provision of credit to the ryots is not all that the co-operative movement is intended to bring for the benefit of the ryot. There are other forms of co-operation which are as important as the provision of credit. For example, the formation of co-operative societies for purchase and sale of agricultural commodities. The former are easier of management than the latter and yet we see very little has been done towards organising co-operative purchase societies. There is great scope for the development of this form of co-operation, to cite an instance in respect of the purchase of concentrated manures like oil cakes and tannery refuse. During the cultivation season individual cultivators go to the oil pressor or to the tannery for purchase of manures and by the time the last cultivator goes on this job, either there is no manure or the prices have gone up sometimes by 200 per cent. Here is a great scope for the formation and working of a cooperative purchase society. As regards co-operative sale or marketing of agricultural produce which is more important and more difficult, very little has been attempted. As stated by a leading British Economist, co-operation connotes the idea of working together to an end or purpose and co-operative marketing covers all the activities from the time the product leaves the producer to the time it reaches the consumer. Although a co-operative association must strictly be viewed as a business organisation whose motive is to increase the savings of the co-operators, eliminate waste and thus bring higher prices for its members at the same time not raising the price to consumers, it should be borne in mind that a co-operative association works more as a union of individuals rather than the aggregation of capital. In other words any profit made by the association goes to the members themselves and not as dividend on the stock held by any group of outsiders.

Mr. Ramji Das Kapur, M. Ag., B. Sc., writing in the Agricultural Journal of India has interesting remarks on the need of co-operative marketing in Agriculture. First there is the possibility of shortening the channel between the producer and the

consumer by eliminating the middleman. Then there is elimination of waste which may be due to glut in the market, transporting of inferior products or inadequate storage facilities. As regards glut in the market, it may be within the experience of many agriculturists that during the gathering of the main paddy crop and the ground nut crop there is a pronounced glut in the market. In the former case, government assessment has to be paid and the paddy must somehow be disposed of and in the latter case one cannot keep the groundnut indefinitely as foreign markets rule the price and the produce has to be disposed of quickly. Here then is the use for a co-operative sale society. The case of fruits a perishable article, is even more serious. If there was some organisation of paddy growers, of ground nut growers, or of fruit producers which would keep adequate market news about the demands of these products in various markets and thus distribute the total quantity according to that demand better returns can be obtained. A farmer has neither the time nor the means of getting up-to-date information regarding demands at various markets and is often content to take the risk by sending the crop to a central market thus creating an over supply causing prices to drop and in some cases resulting even in an entirely unprofitable market. On the other hand, an association of farmers will keep itself well informed about the market situation, its future trend and by pooling the bargaining power of the farmers will get better price for their products. An association can also save a lot by not transporting inferior products to the market when there is no demand for them. It often happens that when the inferior product is sold mixed with the superior, a lower price for the total results. This has often been the case with respect to ground nuts. It may be within the knowledge of many a farmer that by storing his produce at the time when the price is low due to over-supply, he can get a better price later when there is a shortage in the market. This is particularly the case as stated above with respect to grains coming into the market during kist months. A farmer as an individual has neither the capital nor the resources to build for himself some sort of storage which will keep his product in perfect condition. On the other hand,

an association after pooling its resources can command either the capital or borrow for building such storage for the entire membership. Another advantage of a marketing association is the use of co-operative effort in advertising and thus increasing the sales. What the Department of Agriculture can do to help the farmer through the co-operative organisation, to solve the marketing problem, is as stated by Mr. Kapur to provide in an intelligible form facts gathered through research and education to enable an association of farmers to adjust production according to the demands of the market.

Clean Mouths and Sound Teeth.

Tooth brushes, pastes and powders have begun to invade even distant villages. Are they for the good of the villages? Not at all. If so the town people and even the womanfolk among them who have begun to use these modern appliances should have clean mouths and sound teeth but they have not. It is a general belief even among Europeans that Indians possess excellent teeth and healthy mouths. And as stated by Dr. Charles G. Johns in *Home and Homeopathy* it is quite true that the ancient Indians did possess remarkably fine teeth and healthy mouths for centuries, 'Dental and Perio Dental diseases being practically unknown among them'. Unfortunately, however, owing to the increase of so called 'civilisation' among the majority of educated and well-to-do Indians who are trained to live in western style with its luxurious food and habits, it is not with them as it was with their forefathers but very nearly the same as it is with Westerners. On the other hand, villagers who are not yet completely caught in this so called civilisation but lead simple lives of healthy and peaceful habits can boast of sound teeth and healthy mouths because they have followed the ancient Indian Ideal. What was there in the lives led by the ancient Aryans and Dravidians which gave them excellent teeth and healthy mouths. Dr. Johns attributes this to several causes. 1. They and their children were breast

fed. 2. They were absolute vegetarians. 3. They lived principally on coarse starchy food, vegetables and fruits. 4. They enjoyed open air life and exercises gained in cultivation. 5. They adopted simple but effective hygienic prophylactic measures. The ancient Indian mother nourished her child by her own natural gift of nutrition. She did not adopt cow's milk as a substitute. The vitamin and chemical properties of cow's milk are naturally meant to suit the vitality of the hardy young beast along with grass for its functional activities and exercises for the teeth.

This milk is not really suitable for the delicate and relatively feeble new born human infant. Owing to the effects of civilisation the majority of educated and wealthy Indians are now suffering with focal infections and carious teeth. No orthodox Hindu of south India will have his meals without bathing, or thoroughly cleansing his mouth, hands and feet with water before each meal and it is a regular practice even among the lower caste Hindus to wash their mouths thoroughly before and after their meals i.e. to have the mouth and teeth cleaned and made as septic as possible before meals and wash the mouth after them in order to expel the bits of food which may be clinging around the teeth. There is a feeling that the modern tooth brush is a powerful and reliable instrument for preventing Dental caries and focal infections. Dr. Johns however considers that a tooth brush is really no good unless it is thoroughly sterilised prior to every use, an unsterilised tooth brush being unfit for use even on the mouth of an animal. It is on record that Diphtheria has been caused by the use of unsterilised tooth brush among school children. There is therefore something to recommend the practice of the ancient Indians which also obtains generally among villagers of cleansing their teeth with fresh thin stick of special herbal plants such as margosa, banian (fig) etc. These sticks are used regularly every morning the ends of the sticks being thoroughly chewed between the molars to form a small point like a flat painting brush of different grades of thickness to suit the purpose of users. A fresh new stick is used each day and even the most fastidious of hygienists cannot but admit that this

method is far more helpful and effective than that of using over and over again a filthy germ laden tooth brush. The ancient Indians were fully aware of the value of the astringent antiseptic and refreshing properties of the margosa, babul or mango sticks before the allopathic world knew anything of their value. Dr. Johns has in his long experience not come across the person who is a habitual user of margosa sticks who suffers from Pyorrhoea or other focal infections of the mouth.

The Village School House.

If the village school should be the centre from which will radiate all the good influences which will go to building a happy contented village community one would bestow some thought not only on the selection and training of the teacher who has to play an important part in the work of village reconstruction but also on the school house itself. The school house should be a centre of attraction the beauty spot of the village. That will be the place where the villagers will assemble after their work is over to meet friends and exchange thoughts; that will be the place where the meetings of the village Panchayat will be held, there will be staged dramas and bhajanas and periodical readings of the Ramayana and the Mahabharata will also be held there. Children are lovers of the beautiful and teachers should be encouraged to develop in them the sense of the beautiful. The village teacher should have sufficient training and equipment to be able to interest children in art by encouraging them to decorate the walls of the school house with pictures illustrative of scenes from the Ramayana, the Mahabharata and the Bagavata. Children who would otherwise have passed their school hours in uninteresting unromantic surroundings will be enabled to develop artistic perception and a sense of the beautiful. If the success achieved elsewhere is a guide, the soundest method of beautifying a school both inside and outside will be by co-operative effort by enlisting the support of every possible member of the school. The school house and surroundings will thereby be transformed from a dull barrack-like chamber into a thing of colour. The Educational Department should encourage these endeavours by the bestowal of special prizes and certificates of merit.

Educational, Revenue and other departmental officers should in their inspection tours make it a point of visiting the village school and impress on the teacher and the pupils the importance of beautifying the school and the surroundings.

Wireless Broadcasting and 'Agricultural Propaganda.'

The potential power of wireless broadcasting as an educational force says Mr. W. H. Peterson, Secretary Y.M.C.A., Rural Department "is understood better as an educational force in the countries of Central Europe. To the people of Czechoslovakia, wireless is not merely a new form of entertainment but it is essentially a modern and most effective method of disseminating useful information to the public. There are over 200,000 licensed receiving sets in daily use in Czechoslovakia. They are not articles of luxury to the peasant but new tools for use in his old profession. The most important part of the service is the weather forecast given twice a day and the regular daily reports of the market prices of agricultural staples and live stock. Twice a week, a review of foreign exchange rates, estimates of future tendencies in agricultural prices, reports on the cooperative marketing societies and special reports on foreign markets are given. On Sunday is given a review of foreign agricultural conditions and a review of agricultural books and magazines. More than half the time is taken up by lectures by well-known persons and discourses on such practical subjects as storing of grain in the farm, the value of deep ploughing, poultry raising, correct manuring etc. The appeal is as much to the uneducated as the educated. If the education of the adult villager is one of the pressing needs of India today may not the Agricultural Department in addition to the demonstration caravan which it has introduced think some day of the wireless as an effective means of breaking the impregnable wall of illiteracy. Are we indulging in dreams?

Some Factors Affecting Growth of Sugar-Cane.

Mr. K. Krishna Rao, Assistant Sugar-cane expert, Imperial Sugar-Cane Station, Coimbatore read an interesting paper

on the subject at the last Science Congress which is published in the March issue of Agricultural Journal of India. The author's investigations spread over a series of years reveal the fact that sugarcane which is a tropical plant thrives best in places where high temperature, well distributed rainfall and plenty of sunshine prevail during the growing period and cool dry weather during the ripening time. The quantity of water required for growing a good crop of cane obviously depends on (1) the growing period of the crop (2) the temperature condition and the prevailing wind of the tract (3) the nature of the soil and the sub-soil and (4) the varieties grown. It is a debatable point whether the water requirements of cane can be wholly met by artificial means. The opinion of cane growers of India and elsewhere is that though irrigation does supplement rainfall and play a very important part as the substitute for rain, yet its effects cannot be so beneficial as that of a good soaking rainfall. Rainfall in addition to supplying moisture for cane growth has the following additional advantages over irrigation. (1) It has moderating influence on temperature and increases the moisture content of the cane, (2) It helps growth by washing the lower surface of leaves thus promoting free transpiration. (3) It washes out plant toxins and any harmful salts accumulated on the surface soil; also eggs of injurious insects deposited on leaves and (4) It brings small quantities of nitrogen from atmosphere. Drought and water-logged conditions are both unfavourable for cane growth. Continued drought makes the cane fibrous and pithy and dwarfs its growth. Rainfall at the time when the cane is ripe and fit to be harvested affects the sucrose contents of the cane adversely by inducing shooting. Places which have a heavy and continued rainfall over a long period without a pronounced ripening season are also unsuitable for the development of sucrose in the cane.

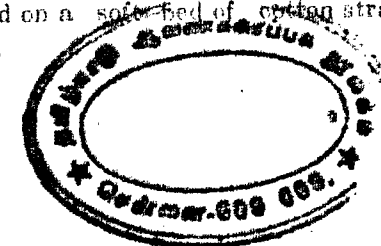
Calcareous soils which are generally well drained yield the most robust canes which are also the richest in juices. Saline soils containing a good deal of chlorine render the juices of cane growing on them highly saline and also lower the sucrose and glucose. The quality of the irrigation water has some bearing on the nature of juice from canes grown. For example, sodium

chloride in irrigation water is the most harmful for sugarcane cultivation.

Sugar-cane responds faithfully to the proper treatment of soils and to the application of manures. Heavy application of bulky nitrogenous manures retard the maturation of canes. So it is important to bear in mind the fact that the economic limit for the application of manures will naturally depend upon the growing period of the crop, the nature of the soil etc.

Preservation of Mangoes by Cold Storage

Fruits and vegetables are in abundance only in certain seasons of the year which are of short duration. Owing to their perishable nature, they have to be disposed of quickly which means loss to the cultivator owing to the glut in the market. There are many good varieties of mangoes for instance which if they could be preserved, a profitable trade extending over a longer period than now can be had including exports to foreign countries. The problem therefore is to keep the mangoes in the raw condition for a month or more after they are fully matured without impairing the efficiency of the ripening enzyme and storage of cold temperature suggests itself as one of the feasible methods. Messrs C. S. Rama Ayyar and N. V. Joshi Assistants to the Imperial Bacteriologist discuss the problem in the Agricultural Journal of India and the conclusions arrived at by them are summarised below. (1) Fully ripe mangoes could be kept for three weeks without rotting while partially ripened one could be kept for about six weeks by storing them at 10° in the 'frigidare' (2) In order to secure the best results, they should be plucked from the tree when they are fully matured allowed to ripen partially at the room temperature which generally takes two to three days and then transferred to the cold storage at 10° Centigrade; the period of storage can thus be lengthened to two weeks without deteriorating the quality of the fruits. (3) Any impact on hard surface or even rough handling of the fruits should be scrupulously avoided. They may be wrapped individually with a piece of tissue paper and stored on a soft bed of cotton straw or any other packing material.



Middle Class Unemployment

About a year ago a scheme for training the youths of the agricultural community in practical agriculture was tried in Faridpur Dt. of the Bengal Presidency. The scheme was intended to deal with the question of unemployment among the educated middle classes. One year's training in practical agriculture required by the scheme includes instruction in agricultural carpentry, elementary veterinary knowledge and the principles of cooperative credit. During the period of training the boys are required to work in the Government agricultural farm as labourers on Rs. 12 per month. Free accommodation is provided for them but they are required to arrange for their meals, bedding etc. After the year's training, each boy or young man is to receive a provisional settlement of a fifteen *Biga* plot of *khas mahal* land free of rent for three years, and will also be given an advance of Rs. 200 by Government, under the land Improvement or Agricultural Loans Act, for initial expenses, these advance being made on the personal joint and several security of two persons acceptable to the District collector. The advance will be recovered with interest in four annual instalments commencing from the second year after the money is advanced. Each boy or young man is expected to bring the land under cultivation with his own hands and will not be allowed to let out the land nor in any way sublet the land or any portion thereof. At the end of three years provided satisfactory progress has been made, an ordinary ryotwary settlement will be made on the usual terms. Further land may also be settled at the collector's discretion upto the limit which can be cultivated personally by each boy or young man and his family. In the pages of the *Modern Review* for April 29, Sir P. C. Ray has given an interesting account of the first year batch of boys in the Faridpur Agricultural farm; who are taught every operation in the farm from ploughing to sweeping the cattle shed and removing the dung. The scheme has great potentialities and it requires for its success the sympathetic help and guidance of District administrators and officers in immediate charge which fortunately it is now having.

Flavour and Odours in Milk.

The quality and quantity of milk produced bear a direct relation to the quality and quantity of feed which the cow gets. It has not however been clearly recognised that the kind of food given has also some effect on the sweetness or flavour of the milk produced. Cow's milk has more or less pronounced flavours and odours varying from those which are pleasing to others which make the milk objectionable. They result mainly from four causes. (1) The physical condition of the individual cow; (2) highly flavoured feeds and weeds; (3) odours absorbed by milk after production and (4) biological changes in milk. According to Mr. C. J. Babcock, Bureau of Dairy Industry, U. S. Department of Agriculture, (see leaflet No. 25) flavours and odours caused by the physical condition of the cow and by highly flavoured feeds and weeds are noticeable just after the milk is drawn and usually do not increase with time. Those slight flavours and odours caused by absorption after the milk is drawn develop only when the atmosphere to which the milk is exposed is permeated with pronounced odours while those due to biological changes become more apparent after some time has elapsed.

Feed flavours and odours in milk are most frequently caused by succulent feeds. Proper methods of feeding are therefore essential to the production of palatable milk. In most cases feed flavours are not imparted to milk except for a few hours after feeding. For this reason, dairy cows should be given highly flavoured feeds immediately after milking, never just before. Proper aeration and cooling reduce strong feed flavours and odours. Therefore when the practice of feeding immediately after milking is followed by proper aeration of the milk, most highly flavoured feeds will not make the milk unpalatable. The conclusions to be drawn are that in the production of palatable milk preventive measures are always best. Dairy men should therefore feed just after milking all material likely to taint milk; they should keep cows and cowsheds clean and properly ventilate them; they should aerate milk in order to decrease the intensity of feed and cowshed taints. Finally prompt cooling and storing of milk at a low temperature will retard the development of flavours and odours from biological action.

Madras Forest Panchayats.

The Report of the Board of Revenue on the work of the Forest Panchayats during 1928-29, shows that there were 1102 Panchayats managing an area of 3441.83 square miles and paying an annual assessment of Rs. 1,59,493-15-0 during the year as against 1130 Panchayats managing an area of 3353 square miles and paying an assessment of Rs. 1,57,256 in the previous year. It is stated that the fall in the number of Panchayats inspite of the increase in the area handed over to Panchayat management is due to clubbing in the interests of economy and efficiency in small adjacent areas which were formerly under the management of more than one Panchayat. The number of cow units during the year rose to 7,49,332 against 675632½ in the previous year. The figures work out to 2.9 acres a cow unit in the year under report as against 3.1 acres in 1927-28. There was a wide variation in grazing rates which ranged from 2½ annas to Rs. 1-4 per cow unit. It is not clear why there should be such variation, and the highest rate collected must we fear be felt as a great hardship by the cattle owners. The number of offences reported by Panchayats was 8912 as against 5912 in the previous year. 7907 offences were compounded for a sum of Rs. 65702-6 as against 3935 compounded for a sum of Rs. 34351 in the previous year. It has been a long standing grievance with Panchayats that they have not been allowed to get the benefit of the compounding fees. A representation was, we believe, made to Government in this behalf at the last Panchayat Conference. We hope the Government will view sympathetically the request of the Panchayats. Only 31 Panchayats have so far been empowered to compound offences and no new Panchayats were so empowered in 1928-29. Out of 1102 Panchayats only 144 or about 13 per cent are reported to have done good work, 622 Panchayats or 56 per cent being characterised as fair, 145 or 13 per cent improving, and 191 or 18 per cent indifferent. Although the percentage of Panchayats which was reported to be good was slightly in excess over that of last year (11 per cent) it is hardly creditable to the Panchayats that only 13 per cent should be

able to give satisfaction, and this probably accounts for a larger number of Panchayats not having been empowered to compound offences. During the year, 344 Panchayats sunk new wells and repaired old ones in Panchayat areas at a cost of Rs. 20603-14-3 as against 307 Panchayats which spent Rs. 23770-0-0 in the previous year. 160 Panchayats removed rank growth or made other improvements at a cost of Rs 10526-3-4 as against 59 Panchayats which spent Rs 2048-0-0 in the previous year.

Several Panchayats are reported to have been making earnest attempts to improve the supply of *Avaram Bark*, a remunerative minor forest produce and instructions have been issued as to the best method of growing it. Provision has also been made in almost all the agreements for incurring expenditure on this improvement. Some of the better panchayat Forests should, we think, be encouraged to try bee-keeping on modern lines. This as a profitable forest industry should appeal to some of the good Panchayats and it is well if the Board of Revenue could instruct Collectors of Districts to interest themselves in this line of work wherever it is possible. The Y. M. C. A. Rural Reconstruction Centre at Ramanathapuram Coimbatore, is prepared to teach modern methods of bee-keeping and to give demonstrations in improved methods. We understand that it will be neither costly nor difficult to establish apiaries in suitable Panchayat Forests. We commend this suggestion to Panchayats and to the Government.

Experiments were carried out in Chingleput Dt. to test the possibility of eradicating prickly pear by the use of arsenic pentoxide. The results were not sufficiently encouraging. It was found that eradication was quicker and more successful with Robert's Pear Poison a quantity of which with necessary instruments has been recently obtained from Australia. It is reported that the experiments which are now being carried out in Chingleput and South Arcot Districts are so far promising. The results of the experiments will be awaited with interest.

As stated by the Board of Revenue in submitting its report to Government there has been an encouraging improvement

on the whole in the administration of the ryots' forests by Panchayats. The Panchayatdars are honorary workers and most of them are not over educated. Mistakes there will be and they need for their improvement all the sympathy and encouragement which District Collectors and Divisional and supervising officers can show to them.

Notes and Comments.

International Co-operators' Day.

The Seventh International Co-operators' Day and the Silver Jubilee of the Co-operative Movement was celebrated last month in the Victoria Public Hall, Madras, under the Presidency of the Hon'ble Mr. M. R. Seturathnam Ayyar, the Minister for Development. Mr. Sethurathnam Ayyar stressed the aspect that the co-operative movement was a potent instrument for rural reconstruction and he gave the gratifying assurance that as the Minister in charge of the Co-operative portfolio he would be happy to consider any scheme or proposal calculated to widen the scope and usefulness of the movement, and his appeal, particularly to women to take active interest in the work was timely and appropriate. The Co-operators' day was also celebrated at several mofussil stations.

A CONFERENCE OF CO-OPERATORS. The Seventeenth session of the Madras Provincial Co-operative Conference was held on the 20th. July at Mylapore, Madras, under the Presidency of Dewan Bahadur T. Raghavayya, President of the Council of Regency, Pudukottah. A large number of delegates from various parts of the Presidency were present and they were welcomed by the Hon'ble, Mr. V. Ramadas Pantulu, President of the Provincial Co-operative Union. At his request the Hon'ble Sir Muhammad Usman Sahib Bahadur, Home Member, then opened the Conference. Thereupon Mr. Raghavayya delivered his Presidential address which was an able and searching examination of the progress of the co-operative movement in this Presidency containing useful constructive suggestions for its future development on sound lines. The whole address is well worth careful study by co-operators, and for the benefit of our readers we shall be glad to publish it in full in our next issue.

COIMBATORE AGRICULTURAL CONFERENCE. The College Day and the Conference of the Madras Agricultural Student's Union were celebrated at the College of Agriculture Coimbatore, early last month. The Conference was opened by Dr. Gilbert J. Fowler D.Sc., formerly of the Institute of Science,

Bangalore and now Principal of the Harcourt Butler Technical Institute, Cawnpore. In doing so, Dr. Fowler delivered a valuable address on "the utilisation of the waste materials of the farm and the country." We hope to be able to publish the address in full in our next issue.

AYURVEDIC MEDICINES. It is understood that arrangements are being made by the Government for opening a garden in Peruninamkulam, Tripunithara, for the cultivation of herbs used in the preparation of Ayurvedic medicines.

AGRICULTURAL MOTOR VAN. Rao Bahadur S. Rm. Ct. Sapatratnam Chettiar, President of the Union Board, Kanadukathan has presented to the Agricultural Department a motor van for conducting agricultural exhibitions which was opened by the Hon'ble Dr. Subbarayan the Chief Minister at Trichinopoly. This we believe is the first private gift of a demonstration van. It will be remembered that Lord Goschen opened at Coimbatore last year the first Agricultural Demonstration van which was provided by the State.

AN AGRICULTURAL COLLEGE FOR HYDERABAD: The Government of His Exalted Highness the Nizam of Hyderabad has recently been interesting itself in various schemes for the economic development of the state. The authorities have on the advice of Dr. Harold H. Mann, formerly Director of Agriculture, Bombay, elaborated several schemes for the development of agriculture in the State which are now under consideration including the scheme for the establishment of an agricultural college. Considering the immense agricultural resources of the state, a well equipped Agricultural Department and a first class Agricultural College are of first importance.

TAKAVI LOANS FOR AGRICULTURE AND INDUSTRIES IN MYSORE

The Government of Mysore have issued rules for the grant of Takkavi Loans for agricultural and industrial purposes through Cooperative Societies. The Registrar of Cooperative Societies will select the Societies that may undertake this work. Each Society will prepare a list of members wishing to obtain loans under these rules for whom it is willing to stand as surety and will submit such list to the authority competent to sanction the loans. The Society will be responsible for the recovery of the Principal and interest on the loans.

LONG TERM LOANS FOR FARMERS IN BARODA. The Government of his Highness the Maharaja Gaikwar of Baroda have sanctioned a new comprehensive scheme to help agriculturists. The scheme will provide long term loans at 4 per cent interest to agriculturists for sinking wells, for purchasing bullocks and agricultural implements. The period for recovering the amount advanced will be three years for agricultural implements, six years for the purchase of bullocks, six to eight years for installation of engines and pumps and eight to twelve

years for construction of wells. For the first two or three years, no interest will be charged on the aggregate debt incurred by the ryot but deferred interest will be added subsequently on the amortisation system to the instalments due from him when he begins to earn an increased income from the irrigated crops. Another feature of the scheme is that the ryot who borrows money from the state has to give an undertaking to plant five to ten trees as are useful for shade, fruit bearing and agricultural purposes.

FOREST SOILS. As a result of recent work on forest soils in Norway it has been found that there is a close connection between the state of the organic matter and composition of the forest and of the ground vegetation. Each affects the other; soil conditions determine what kind of plants will grow; plants in turn influence the formation of humus. From the proceedings of the International Society of Soil Science (IV-1, 1929) it is learnt that the most unfavourable humus has arisen from markedly acidic organic material poor in lime and nitrogen as the conversion of this material into humus proceeds very slowly. On the other hand, residues of grassy and herbaceous plants yield more humified and less acid type of humus. They break down much more quickly the organisms controlling this change leading to a lower degree of acidity.

WOMEN AND THE COOPERATIVE MOVEMENT. A noteworthy and quite a welcome feature of the Cooperative movement in Travancore is the growing popularity of the movement among women. We learn from the report of the Registrar of Cooperative Societies, Travancore for 1103 M. E. that the total number of women members for the year was 19507 as against 15687 for 1102 M. E. This is full of promise for the good of the movement. Travancore which is ahead of the other parts of India in respect of the female literacy shows what education can do in nation building.

A USEFUL OCCUPATION FOR FOREST PANCHAYATS. Forest Panchayatdars are cattle owners and the Panchayat Forests are primarily intended to provide grazing for village cattle. A useful and in every way a desirable occupation in which the Forest Panchayats may engage themselves is the maintenance of breeding bulls with a view to improve the cattle in the Panchayat villages. Provided the Panchayats find the necessary money to purchase the bulls, Government are prepared to give grants for their upkeep. The more important of the conditions regarding the grant of premium to Panchayats for the maintenance of bulls are (1) that the bull should not be less than 2½ years when selected and sent out to stud, (2) the bull should be well fed and maintained in good condition, (3) a register of service should be maintained, showing the dates of services and the names and addresses of cow owners. A Panchayat may fix its own scale of fees, the

fee being limited to eight annas for each service. The bull will in the first instance have to be approved by an officer of the Live Stock Section or the Dy. Director of agriculture. Before the premium is paid the Deputy Director of agriculture or Live Stock or one of his assistants will inspect the bull and the service register, and if he is satisfied will recommend a grant off from Rs. 100 to Rs. 150.

RURAL MEDICAL PRACTITIONERS. In connection with the Government scheme of rural medical relief under which subsidies are paid to private medical practitioners in order to encourage them to settle down in rural areas and build up a practice, the subsidy for L.M.P. has been raised to Rs. 500 a year and for qualified midwives from Rs. 100 to Rs. 300 a year.

Reviews and Notices.

LAND TENURE AND AGRICULTURAL PRODUCTION IN THE TROPICS. by H. Martin Leake Sc. D. (Camb) W. Heffer and Sons Ltd. Cambridge pp. VIII+139. Price 7sh. 6d. net.

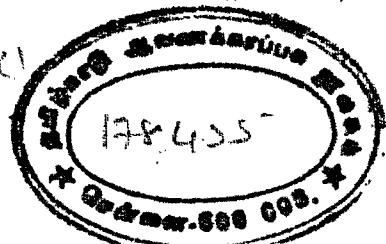
We owe an apology to the publishers for the delay in noticing Dr. Martin Leake's book. The recent publication of the voluminous Report of the Royal Commission on Agriculture in India has turned the thoughts of many persons to the social and economic problems associated with Indian agriculture. Dr. Leake has discussed the subject of land tenure not as an isolated question but in its relation to the general problem of agricultural development and his long experience of India as the head of the Agricultural College at Cawnpore and the intimate knowledge he has derived of the agricultural conditions and administration in India entitle him to write with authority on the subject he has chosen and his book will form a fitting introduction to the larger works on the subject such as those of Baden-Powell. As may be expected, Dr. Leake bases his conclusions largely on Indian conditions with which he is familiar. Starting with a discussion on the theoretical aspect of land holding the author has given in Ch. II, a sketch of the Indian tenure systems. In the next two chapters he deals with tropical development and its requirements and agencies of development. The central fact of Indian land tenure is that Government has retained a share in the produce of the land, a share which is represented by a land-tax. To the two parties found elsewhere as having common interest in the land, namely the landlord and tenant, a third party, the Government is added, which the author calls "The triple partnership." Dr. Leake discusses in Ch. V, the equitable proportion in which the wealth produced from the land should be shared between the three parties to make for progress and development. The last chapter dealing with the educational problem is important. "A system involv-

ing a triple partnership in the land can only prove effective if the educational development is attuned to the conditions." Dr. Leake points out the necessity of giving proper technical training and education to the people who can take advantage of it in order that the error into which the Indian educational policy has fallen could be rectified. As a thoughtful contribution to the subject of agricultural land tenures to its relation to agricultural and economic development, Dr. Leake's book requires careful study.

We have received a MEMOIR ON CANE SYRUP, by Dr. R. H. Hurst and Prof. W. Scott. This forms number 1 of the Memoirs of the Imperial College of Agriculture, Trinidad (Sugar Technology series) As the result of numerous experiments the authors have been able to produce direct from cane juice a table syrup which possesses the following properties (1) pleasing light golden brown colour comparable with that of refinery syrup and (2) retention of the characteristic cane flavour. In the Memoir, the process of manufacture is described and analyses of syrup before and after treatment with vegetable carbon are tabulated and the results discussed. Copies of the Memoir (Price 1 shilling) can be had on application to the Editor, "The Journal of the Imperial College of Tropical Agriculture" Trinidad, B. W. I.

BUSINESS MAGAZINE. [Edited and published by Mr. V. Balakrishna Chetti, 245 Lighi Chetti Street G. T. Madras. Annual subscription Rs. 2-8]. We welcome this new periodical which seeks to work in the fields of commerce, industry and allied professions, a feature of Indian journalism which has not received the attention, the importance of the subject deserves. The special features of the Journal are stated to be the encouragement of indigenous industries, trades and professions, the publication of special articles with a view to importing technical knowledge to traders and information to small capitalists as to the best and most profitable methods of investment. If the standard of the opening number which contains useful articles on a variety of topics is maintained the Journal has an assured future. We wish our young contemporary all success.

THE VOICE OF YOUTH. Edited by Mrs Rukmani Lakshminipathi, 43 Harris Road, Mount Road, Madras. We have received the opening issue of "the Voice of Youth" which is the official organ of the League of Youth, Madras. It is the aim of the promoters of the Journal to keep every member of the League whom it is intended to reach, in touch with the various activities of the league and also of other youth organisations. Annual subscription for members of the League Re 1, for others Rs. 1-3. Foreign Rs. 3.



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