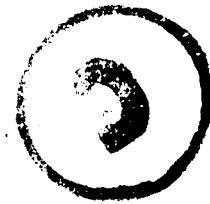


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DR. T. V. RAMKRISHNA AYYAR.

amongst his old students at the Agricultural College on his return from America.

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M. Chinnasami.

Farming will never be a success unless the farmer
had more voice in the disposal of
his produce—P. Morrel.

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DEVELOPMENT OF AN INDIAN IMPLEMENT WORKS.*

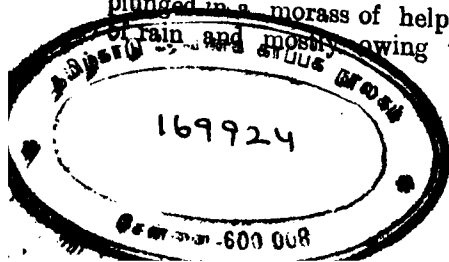
L. V. KULKARNI. L. Ag., KIRLOSKAR WORKS.

In India we have a very large area under cultivation and people are mostly dependent on the land for their food and clothing. With a variety of soils and diverse climatic conditions this country is capable of producing an infinite number of crops. Plants and crops which can be produced only in the Tropics as well as those which are native to temperate climates can easily be grown or acclimatised in several regions in India because there are localities which reproduce in their conditions typical tracts in all zones, torrid, sub-tropical and temperate. Between, for example, the climate of Ooty at your very doors which reminds an Englishman of his sweet home in the United Kingdom and places like Guntur in the Circars where the thermometer records somewhere between 110 and 120 degrees in the shade you have a very wide range which renders possible the production of all sorts of crops and fruits.

* A paper read at the M. A. S. U. Conference in July 1927.

Confining my references to the Province of Madras alone in which I guess most of you assembled here to-day are interested you have about 33 million acres under cultivation. These require, it is superfluous for me to mention, some sort of preparation before the seeds are sown and they get lodged so as to help the cultivator to get a decent harvest. I fancy that from 10 to 20 per cent of this area also raises a crop a second time in the course of an agricultural year. If I can approximately put down the aggregate area prepared in a year for producing crops you will see that you have about 40 million acres that are prepared every year. All this area certainly needs ploughing not once but a number of times at present because of the apparently unsatisfactory way in which time-honoured wooden plough does its work. During the past quarter of a century and in an intensive form in recent years a cry has gone forth from the cultivator that for one reason or another ploughing and other operations preparatory to sowing cannot be satisfactorily done. One ryot complains that he has no cattle and cannot buy or borrow, another bewails his fate and says that his animals are puny and weak and cannot sufficiently stand the strain. A third more resourceful than the previous two perhaps works early and late; is always in the field whenever sunshine or rain helps him but yet does not get an adequate return for all his labours.

Thus at any rate the necessity for owning or hiring about 10 million ploughs at 4 acres per plough in an agricultural year is patent. The wooden plough lasts only a season or two or at best not more than three. The ryot is now at his wits, and when due to the diminution in the supply of timber and the leanness of cattle owing to several causes he is forced to prepare his land as well as he can and not as he would like to or ought to, to get a maximum return from crops. This would imply the presence of an improved plough as one of the aspects and that too an important one in Indian husbandry. The Indian cultivator is poor but has considerable powers of discernment. He can and often thus weighs the results of any improvement in terms of Rupees, annas and pies and for him an improved plough or another implement placed within reach is certainly a boon to lift him up from the depression, if he can be assured of cheapness, durability and economy in the long run. Otherwise he sinks deeper and deeper and gets plunged in a morass of helplessness, partly owing to the failure of rain and mostly owing to the present social and economic



causes at work. To an average ryot therefore an improved plough on the Western model with its durability, finish, cheapness and availability of parts is welcome. He is not blind to the merits of any implement whether Indian or foreign so long as the article he purchases is really worth the price he pays for it. It was an understanding of this practical side of the ryots' character that induced an Indian Mr. L. K. Kirloskar to take up improvements in the plough line. Mr. Kirloskar of whom you have perhaps heard is an individual who early realised the inward urge of the small Indian peasant for evolving a plough to suit local conditions.

The implement works of which he is the Founder bears testimony to the genius which this poor Deccani Brahman possesses and has turned to improve the lot of the Indian cultivator.

Born amidst rural surroundings Mr. Kirloskar imbibed in early life the spirit of his neighbours and after an unsuccessful career in Bombay joined the Victoria Technical Institute as a Drawing Master. He had ample opportunities in this Institution of witnessing the effect of mechanical power and when super-session of his claims for promotion came he coolly resigned his job and with an amount of self-reliance and dash he went to the Chief of Oundh who offered him a helping hand.

The Chief granted him free a portion of the uninhabited jungle in one part of the state. He recognised in Kirloskar a man of pluck, perseverance and ideas. This piece of land with the help of no other persons than the members of his own family who numbered three at the time Mr. Kirloskar was able in the course of two years to convert into a decent estate not for raising crops but for locating a factory. This estate you may not wonder if I tell you covers over 70 acres and is now a flourishing little colony with nearly 800 souls, with a recreation ground, a theatre and a post office.

In 1901 when he stepped into this area and hallowed it by digging the first sod to put up a hut Mr. Kirloskar never dreamt that his efforts would be crowned with success.

At the start Mr. Kirloskar was his own blower, carpenter smith, engraver, designer, businessman and critic-all rolled into one. In the course of a fortnight he made a sample of plough which

soon was increased to three. A sympathetic and obliging neighbour who knew the potentialities of the first made ploughs of Kirloskar bought them outright. This raised hopes in Mr. Kirloskar who toiled all alone till 1910 when he was in a position to buy large quantities of pigiron from Bhadravati Iron Works of Mysore and the Bengal coke from the Raniganj coal fields. Since then the output has considerably increased so much so that in 1923 which was a record year, the works could daily turn out 250 ploughs. Trade depression, which has ensued has however restricted the output though it was a blessing in disguise in that it gave an opportunity to Mr. Kirloskar to get young Indians trained in recognised institutions in America, England and Germany. The Kirloskar works now can boast of several departments headed by Indians of recognised foreign degrees with severe practical training.

The Kirloskars now produce not only ploughs of every description but sugarcane mills, pumps, chaff cutters, mote wheels, shellers and winnowers and a number of other agricultural needs. So that this indigenous firm has obtained a reputation in this country which has been built up steadily and surely. There is a metallurgical laboratory attached to the works where raw material, the finished products and all substances in the intermediate processes are analysed and tested also for strength, hardness and tempering, and for preparing paints and varnishes themselves. The ploughs manufactured in this firm are used to a very large extent in the Central Provinces and Berar and Bombay (Deccan), the type particularly in favour being Kirloskar Nos. 9 and 100 which have turnwrest mould boards. Almost 5 to 6 thousand ploughs are purchased by the cultivators of the black soil tracts of these Provinces. You in Madras have gone in for the light Konkan ploughs and I suppose this has very well answered the purpose which the poorer cattle of this Province can utilize and be put to. About 1500 to 2000 ploughs have been consumed in this Presidency. With the output increased and better quality ensured through the trials which are being made daily at the works by the experts the time will it, is hoped, soon come when a larger tract of country can be reached by the firm that is anxious to extend its operations over a wider area and benefit the cultivator to the largest extent possible. This firm serves as an instance of the marvellous insight and patient industry of one who though indigent but possessing brains, pluck and perseverance has been able to achieve in one quarter of a century what eminent implement

makers under more favourable auspices could do for their own country elsewhere.

The price of ploughs has been kept very low with a definite purpose in view, the makers being satisfied with a small margin of profit. Their only aim is to encourage the spread of these ploughs and thus serve the cultivator in their own patriotic way.

Madras being the oldest Agricultural Province in this country which has suffered least from successive waves of different races who came to India at different times through the Khyber Pass it is one of the most advanced in agricultural practices and it is but fitting that it should appreciate and profit by an improvement when changed conditions do require.

I am here to pay my humble tribute to the genius of the Madras cultivator who is silently working out a revolution in modern Indian Agricultural methods and practices.

I sincerely thank the Madras Agricultural Department and its head Mr. R. D. Anstead for the way they have shown to the ryots in the use of improved implements.

As an Agricultural Graduate from a sister institution in Bombay I sincerely thank the Union for the opportunity so kindly given to me to speak a few words this afternoon about the Kirloskar works—which are the first agricultural machinery manufacturers in India.

ONGOLE CATTLE SURVEY.*

T. BUDHAVIDHAYA RAO, L. Ag.

Some three years ago a member of the Indian Legislative Assembly, asked a question about the extensive export of Ongole cattle and the resultant deterioration of the breed. This was referred to the Government of Madras who, after enquiry, took action and prohibited the export of Ongole Cattle from the Madras Ports. As a result of this, the query arose as to how far the deterioration of this valuable breed of cattle had gone on and whether any steps could be taken to arrest it. Before any definite figures or conclusions could be given, it was found necessary to make a detailed survey of some of the areas where the breeding of this type of cattle is carried on.

This work was taken up by the Livestock Section and has been going on for the past 3 years, off and on, as men were available. Up to now, the Ongole, Bapatla and Narasaraopet Taluks have been, and Guntur Taluk is almost, completed. There is thus sufficient information available for forming general conclusions about the whole area. The work in future will tend towards enquiry as to whether extension of cattle breeding can be better encouraged in some of the inland taluks which are not suffering from the economic and other factors which are warring against Cattle Breeding in the taluks near the coast. I did part of the work in the Bapatla and Guntur Taluks and I have the records for the other taluks available. These four taluks fairly represent the dry and wet areas of the Guntur District and the following observations may be considered to apply to the whole district.

The survey is confined to cattle of the pure Ongole type; each and every village and hamlet is visited and a questionnaire is filled for each centre. The questionnaire includes an enumeration of the number of cows and breeding bulls, approximate number of calves born annually, details of disposals of calves, details of methods of feeding and grazing.

*A paper read at the M. A. S. U. Conference in July 1927.

Those conversant with Indian conditions, need no telling that Agriculture is the main industry of the country and that the chief source of power for it is cattle power. Cattle also provide highly important products milk and Farm Yard Manure. Some nations have been able to replace animal power and manure respectively by machinery and chemicals. This replacement does not seem to be possible in this country except to a small degree because the size of the holdings and the economic conditions of the ryots stand against machinery and the climatic and soil conditions, against chemical manure. The results obtained at the Saidapet College and Farm in the use of machinery and those at Coimbatore in the use of chemical manures afford ample proof that the above inference is correct. Even ordinary improved implements, as iron plough, harrows, water pumps cannot be worked without strong bulls. Mr. R. D. Anstead has explained clearly the importance of Farm Yard Manure and other organic manures in his article "The Manure Problem in South India and its solution;" so cattle are not only indispensable elements to our ryots but are everything to them because to them they are the chief source of power for production. Hence it is a great misfortune to see that that source of power is deteriorating.

I must now explain the economic situation of the ryot in connection with his cattle and then go on to the facts regarding the cattle, so that you can judge how far the ryot is at fault, how his methods can be improved and to what extent he deserves the help of the Government.

Since I joined the Livestock Section I have visited many villages, mixed freely with the ryots dining and sleeping in their sheds, and discussed all the matters with the old ryots of villages, gathering all information possible. Firstly I would say that the ryot of the town and the rich landholder of the village who form a very low proportion of the ryot population are not to be taken into account. The bulk of the ryot population in the Guntur District can be classified as follows:—

1. *Wetland ryot* :—(a) Under canal irrigation.
(b) Under rainfed tanks.
2. *Dryland ryot* :—(a) With first rate black regada soil.
(b) With red soil or second rate black soil.

1. (a) *Wetland ryot—under canal irrigation* :—These form a fourth of the ryot population and the average holding of the ryot is 5 acres. He also takes on lease another 5 acres. He keeps a pair of work animals. His net income from the combined holding is Rs. 266 per annum i.e. Rs. 22 per month roughly. With this he has to support a family of 4 to 6 members and maintain a pair of buffaloes and one or two cows.

(b) *Wetland ryot—under rainfed tanks* :—The area under rainfed tanks is small and so these form about 1/20th. of the ryot population. The average holding of this class of ryots is about 4 acres to which is added about 5 acres of dry land taken on lease. This ryot maintains one pair of work animals. His net income from the holding in a normal year is Rs. 240 i.e. Rs. 20 per month. With this he has to maintain a buffalo and a family of 4 to 6 members. Most of these do not maintain a cow. If rains fail or the season is late, they get nothing or a poor crop.

2. (a) *Dry-land ryot—with first rate black regada soil* :—These form 1/10th of the ryot population and the average holding is about 8 acres. The ryot maintains a pair of work bullocks; his net income in a normal year is Rs. 410 i.e. Rs. 34 per month. These ryots maintain a pair of buffaloes and a family of 4 to 6 members. Most of them also maintain a cow in bad seasons, they get low yields.

(b) *Dry-land ryot with red soil or second rate black soil* :—These form 3/5th. of the ryot population and the average holding is 12 acres. He maintains a pair of work bullocks. His net income in a normal year is Rs. 120 per annum i.e. Rs. 10 per month. With this he has to maintain one or two buffaloes and a family; most of these do not maintain a cow.

I have thus shown briefly the average earning capacity of a land-holder in a normal year. Variations in the holding capacity of a ryot may exist according to the extent of land taken on lease. He has to pay to the landowner half the net income from lands taken on lease. The above earnings alone do not make both ends meet; so the ryot and his family work in their fields and work for daily wages in field work. His pair of bullocks is lent out for work whenever it can be spared or he drives his cart for hire; thus he is just able to maintain his family. If rains fail or an animal dies or a ceremony has to be performed he runs into debt at a high rate of interest, with the result that is

too well known. We all know how the holding of a ryot is decreasing gradually with the increase of population in spite of conversion of all *Beedus* or private pasture grounds into arable fields. To the great misfortune of the ryot, the Government has some policy or other of giving away all available poramboke and forest reserves close to villages to the depressed classes and Military men. Cattle which were hitherto grazing in *Beedus*, porambokes and reserves have nothing to fall back on. In some villages they have scarcely moving space except the donkas or pathways between villages. Buffaloes can be maintained cheaply, mainly with the refuse from the work cattle. These form the main source of what Dairy Produce there is in the country and male buffaloes are used for wet-land work. So every family maintains one or two buffaloes for milk instead of cows and this practice is spreading to the consequent deterioration in the number of cows maintained. Some villages have hills close by where cattle can graze but permits issued to large numbers of buffaloes and sheep result in over stocking.

I will now go on to some observations about the cattle belonging to the ryots whose economic condition has been described above.

According to the version of the old ryots of the villages, the present number of breeding cows is only a 4th. or even less of the number that existed some 20 years back. Herein lies the first fact of this survey. The comparison may be exaggerated, but there is no denying the fact. The ryot himself bestows all his attention to the work cattle because he subsists on the production of their toil; his wife attends to the she-buffaloes because the sale of the dairy products goes to purchase her dress and jewellery; so every straw left of the work animals and young bulls which are fed in plenty is given to the cow and then to the buffaloes. The ryots' statement about the feeding of the buffaloes is not entirely correct. When they are in milk, the house-wife feeds them well with or without the knowledge of her husband because she is interested in the out-put from them. The cow heifer calf is allowed half the milk from the dam and after that is finished she gets only thrown out straw from the work cattle and nothing more except what she can pick up. With this she has to grow. She conceives for the first time at from 4 to 6 years of age instead of within the third year, receives the bull one to two years after calving instead of 3

to 6 months, yields a daily average of 5 to 7½ lbs. of milk over a lactation period of 200 days instead of 10 lbs. over 300 days, and becomes barren after 4 or 5 calvings instead of 10—all these due to poor feeding. Thus, barely can the ryot feed the female stock upon which the increase in number and improvement in type of cattle depend. A few ryots only are maintaining cows one or two in a family; the rest are sold away or die a premature death. It was a pathetic sight to see their miserable condition in the past summer without even two buckets of water a day in some villages for drinking.

The bull calf generally gets all the milk from its dam and is fed with horsegram after weaning. The finer the calf is, the greater the attention bestowed on it. If not required for his own land, the bull calf is sold away to cattle dealers or other ryots at about 2 years of age for Rs. 50 to Rs. 150 each according to the size and the good points he bears. A well grown pair is worth from 3 to 4 hundred rupees. The cattle dealers take these calves to the Ceded Districts and sell them on the instalment system with good profits. A good bull calf of about 3 years of age with good hair marks on it and fit for stud is worth Rs. 350 to Rs. 500, and such animals can be seen only in Turlapadu and Annavaram side of the Bapatla Taluk and round about Tungtoor in the Ongole Taluk. Being quite aware of the importance of breeding bulls for the improvement of stock, the ancients of the country, as you all know have given some sacredness to the Brahmini Bulls; that sacredness is now almost gone in this area because the ryot has lost all interest in breeding and has practically given it up owing to changing conditions. Cattle breeding is no longer a regular profession for any one in the district. Where facilities exist it remains as a side line. Though not in the name of God, at least in the name of departed elders, some people are still branding a bull and letting it loose in the village. One has to consider several times before he does this, lest he is abused down-right by the other families of the village because the bull begins to feed upon everyone's crop. The idea of leaving a bull for stud is resolved upon mostly after an old member of the family dies and in their attempt to secure the bull by the ceremony of the 15th day, they fail to get the right type of animal and so any young bull of a fair growth is pitched upon. These Brahmini Bulls suffer acutely during summer time, having nothing to feed upon except some straw from the stacks, stack owners driving and

beating them off as often as not. The number of villages where there are no Brahmini Bulls is increasing gradually. The cows from such villages are taken to neighbouring places where there is a bull. There are cases when the ryot is not able to get his cow served for want of a bull within reach. It thus happens that one bull has to serve too many cows, even 150 in the season against the reasonable number of 60 or 70, thus resulting in sterility and wearing out of the bull. The cows all come to heat in one season i.e., January and February merely because they recover some condition after getting better grazing during and following the North East Monsoon. The worse cases which cannot recover in their condition and take the bull in that season lose the whole year. This is the main reason why cows come to heat either one or two years after calving.

The above shows that the breeding bulls are being reduced in number and in quality. Immediately before sowing time, that is about the middle of June, dry cows, heifers and she buffaloes are all sent to the forests in the Palnad and Vinukonda Taluks for grazing, in charge of Lambadis—a hill tribe—who were once said to be honest. Two annas per month per head for rearing and 8 annas per term June to December for license fees is all that the ryot has to pay. The cattle are returned by about the middle of December. It is during this forest grazing that promiscuous breeding takes place and here the purity of the breed is lost. Of late the Lambadis have fallen into the bad habit of selling the cattle away to butchers and others and they excuse themselves on the ground that the animals died of Foot and Mouth Disease or from injuries on account of slipping from the hills or that they have been eaten away by wild animals. The ryot can do nothing but accept their version. Seeing that they have been incurring great loss on account of the mischief of these Lambadis, some villagers have stopped sending cattle for forest grazing and are practically starving them in stalls while crops are young. Those who are unable to see them suffering are disposing of the animals.

Now put yourself for a moment in the position of a ryot whose economic condition has been given above. The ryot knows well, how to rear a calf and how to feed and rear his stock economically; selection of breeding bulls he also knows quite well. There is only one point where we can lay our finger and that is the milk record; he does not keep this and has no knowledge of

milk pedigree of an animal and how advantage should be taken of it. He knows well that it pays him to rear and feed the female stock properly but all the defects that we notice in him are due to that limiting factor—funds. With the greatest difficulty he is able to feed the male stock from which he gets a fair return rapidly by selling or by work. When such is the situation there is no wonder that he reduces his Livestock to the minimum. Correspondingly the quantity of manure which he has been applying to his fields is decreasing and with that the yield of the field is thus made poor; so in as much as Government have at their heart the improvement of Indian Agriculture, the ryot must be relieved of their troubles at home a little before any good can be done. The following suggestions are put forward to meet the situation:—

1. The improvement of grazing grounds in the reserve forests. A letter published in "The Hindu" extracted elsewhere will explain the whole situation.

2. Arrangements may be made to protect the cattle of the different villages in the grazing areas on payment of certain fees, thus preventing loss from the Lambadis. Some Government Institution could take up what they (Lambadis) are doing on a well organised system and a special officer may be deputed for this to enquire in detail how matters could be mended and to lay out a scheme for the above.

3. Arrangements to provide some exercise grounds in each village for the cattle to move about and take rest during day time.

4. Supply of cattlefood and hay to ryots in centres which are best fitted for the Ongole Breed. There is no use giving money on loan. The value of cattlefood or hay will be treated as loan. Details will have to be worked out.

5. Stoppage of issuing pattas as far as possible for the Government land where grass can be grown.

6. Seclusion of land for the cattle to graze separate from buffaloes and sheep where permits are issued for grazing and avoiding over stocking on these areas.

7. Provision of wells in villages where water is not available for cattle.

GRAZING GROUNDS.

(Extract from "The Hindu" dated the 8th June 1927).

In order No. 569, Revenue of 13th July 1897, Paragraph 7, the Government has in a lengthy manner and under different heads suggested means of improving the grazing in forests, and in the paper recorded with G. O. No. 285 of 23rd June 1896 it will be seen that the Conservator Central Circle has recorded his opinion that the successful management of grazing areas will be the most important feature in forest administration. The same papers show that the other Conservators are no less alive to the importance of the question, and anxious to dispose of it in the manner most acceptable to the people, so far as is compatible with such production as is absolutely necessary to prevent deterioration of forests and grazing areas.

The Legislative Council has also been and it is thought is still aware of the importance of grazing grounds, for in the Madras Council's Proceedings of 3rd August 1921 the question was again brought up for discussion and decision was in the following manner:

(a) That the plotting of grazing grounds be so made that there are drinking water facilities in every block and that where there are no water ponds in any block water ponds be constructed.

(b) That the improvement and development of the grazing grounds be done systematically by clearing them of shrubs, jungle etc., planting suitable trees and such arrangements so as to make the plot support as many cattle as possible and

(c) That systematic attempts should be made to prevent the inundations of the grazing grounds and a fixed proportion of the income from grazing grounds be set apart for the purpose of providing suitable grazing grounds and for the purpose of improving those in existence.

The Home Member strenuously opposed the measure proposed on the ground of expense, but the council was not to be denied and pushed the proposals to the vote and succeeded with a large majority of 32 to pass them.

So far so good, everything in the garden looks lovely; for the last 30 years proposals have been made, but has anything been achieved and a beginning made on a suitable scale to even complete the scheme in the next 20 years? Have the Forest Department even started working plans on the grazing problem which should be their first aim so as to have regular systematic work carried out, otherwise the subject is surely to be forgotten as the grazing problem is the most important one to the Indian cultivator, even more important than improving his methods, as he must first depend upon the well being of his cattle before he can do anything in furthering his prospects otherwise. The present season which has been a very trying one for pasture and drinking water has accounted for a big death roll of cattle and reduced those living to such a weakened condition that they will not be fit for much work or supply of milk.

In August 1922 this question was discussed in the papers and the Government replied that measures were already under enquiry in one district. It will be gratifying to learn that measures have been continued and enlarged on a suitable scale so that some good has resulted.

This is such a vital question that a detailed enquiry should be made and determined, steps taken to see that it is properly and systematically carried out.

Yelagiris, }
June 4th 1927. }

W. R. McCAY.

A NOTE ON THE ORANGE RUST OF WHEAT.

By T. S. RAMAKRISHNAN, M. A.

The world over wherever wheat is grown it is known to be infected by 'rusts' which occasion considerable losses. Three kinds of rusts have been observed on this useful cereal:—yellow rust caused by *Puccinia glumarum*, black rust brought on by *Puccinia graminis* and orange rust due to *Puccinia triticina*. The two latter are world wide in their distribution while the former has not been recorded from South Africa or Australia. All the three however have been observed in India. In this paper are recorded some of the observations made during 1926–27 on the Central Farm, Coimbatore on a wheat crop which was badly affected by orange rust.

Research elsewhere has shown that nutrition exerts a great deal of influence on the susceptibility of plants to diseases. Excess of nitrogenous food predisposes plants to certain diseases. Phosphates have the reputation for increasing the resistance of plants to diseases, and potash is found essential for the maintenance of their natural resistance. At Woburn in England, the nitrogen plots in the manurial series were found worse affected by rusts than other plots, and at Rothamsted wheat rust was severe in potash starved plots.

In order to find out the relative influence of different manures on the intensity of orange rust a close examination was made of the crop in the new series of Permanent Manurials (F. No. 45). In this field there were two sets of ten plots, one being a duplicate of the other. The different manures were N, N+K, N+P, N+K+P, K+P, K, P, cattle manure and cattle manure duplicate and there was in addition a no manure plot. These plots were laid out in the middle of the field and were surrounded by a wide belt of outskirts.

This field was sown with the local variety of wheat on November 15, 1926. Germination was good. The crop came up well and was free from disease till the third week of December. In the first week of January rust appeared and spread from the outskirts to the middle of the field where the manurial plots were located. In the course of a fortnight the disease had spread over all the plots and almost the whole field became infested with the

rust. This period was characterised by heavy dews in the mornings. The daily humidity ranged from 61° to 89.5° in December and 70° to 85° in January. The daily maximum temperature varied from 80.5° to 87.6° in December and 89° to 83.7° in January and the daily minimum temperature oscillated between 58.7° to 68.1° in December and 57.5° to 72° in January.

Neither yellow rust nor black rust was observed on any plant. Orange rust alone was present. The leaves showed characteristic orangecolored *uredo* pustules in large numbers. *Teleuto* spores of this fungus which are reported as of rare occurrence elsewhere were observed in plenty on the undersurface of leaves. All plants bore the rust. There was no healthy plant in the whole series of plots. There was nothing to choose between any two plots in both the sets in regard to the intensity of rust-attack. If one season's results are any indication one may say that manuring has little effect on the incidence or intensity of infection of the orange rust.

The damage caused by orange rust was visible even to a casual observer. The leaves and stems turned yellow, the crop presented a poor and dried up appearance. The earheads were prematurely and rapidly ripening. The grains were small and shrunk. In extreme cases there was no grain formation. In a portion of the outskirts small groups of plants were noticed which continued free from rust throughout. In order to study the effect of the disease on the yield of the crop four plots were marked out—two in a diseased portion of the outskirts and the other two in an area which was free. These plots were harvested separately and the weights of straw and of spikelets were noted.

Plot.		Gross weight of crop.	Weight of straw.	Weight of spikelets.
Diseased original	...	8.4	3.9	2.2
Do. duplicate	...	6.5	2.8	1.8
Healthy original	...	15	5	2.6
Do. duplicate	...	13	4.4	2.4

N. B.—Area of plot 13' × 5'. Figures in pounds. Percentage of loss 20.

Australian experience is that black rust inflicts more damage than orange rust while in India the results of experiments carried out several years ago have shown that black rust is not so harmful as the other two. Butler mentions in his "Fungi and Diseases in Plants" that owing to different kinds occurring so frequently together in bad years it is difficult to find out which does more damage. As at present orange rust alone appeared in the field under observation, no comparative estimate of the losses caused by the different rusts could be made. It was however possible to arrive at an idea of the loss sustained from orange rust because of the presence of some healthy plants in the same field growing under the same conditions.

Besides estimating the yields from different plots four groups of plants each in various stages of infection were selected in the outskirts area and the effects of the disease on the plants compared. The groups represented plants which were (1) badly diseased and prematurely dried up, (2) badly diseased but remaining green for a longer period than No. 1 and (3) plants the lower leaves of which were free from rust and (4) plants which were free from rust. These plots were individually harvested, threshed and weights of straw and spikelets recorded. The results are below:—

Group No.	Condition of plants.	No. of plants.	Total number of tillers.	Weight of straw in grams.	Weight of spikelets in grams.
1.	Severely infected and prematurely dried up ...	10	166	232	126
2.	Severely infected but remaining green for a longer time than 1 ...	10	230	358	174
3.	Lower leaves alone infected ...	10	179	310	194
4.	Free from rust ...	10	273	414	317

From the above, the adverse effect of the disease on the plants can be easily judged. The loss is severest when the plants are infected earliest, but if the infection occurs towards the later stages of the crop the damage is less.

To arrive at a clearer estimation of the injury caused 400 spikelets collected at random in lots of 100 from each of the four groups mentioned were weighed separately and compared. The weights were:—

Lot.†	WEIGHT IN GRAMS OF SPIKELETS.				
	Group I.	Group II.	Group III.	Group IV.	
1	4	4	7	7	‡ Each lot of 100 spikelets
2	4	6	7	8	
3	5	6	7	8	
4	6	6	7	7	
Total	19	22	28	30	

The spikelets from plants which are diseased weigh much less than those from healthy plants. Lighter spikelets contain lighter grains.

A similar estimation of the weights of grains from the 4 different groups was made with the results noted below:—

Lot.†	WEIGHT IN GRAMS OF GRAINS.				
	Group I.	Group II.	Group III.	Group IV.	
1	1.4	2.2	3.5	3.8	‡ Each lot 100 grains.
2	1.75	2.1	2.9	3.2	
3	2.25	2.8	3.0	3.4	
4	1.8	2.4	3.6	3.7	
Total.	7.20	9.5	13.0	14.1	

The grains from badly diseased plants are very small and shrunken. They weigh only about half as those from healthy plants, and fetch a low price in the market. The degree of loss is however dependent on the stage of infection, those that are affected very early being the most heavily damaged. The degree of damage is also dependent on other factors viz. conditions of the weather and the morphological characters of the variety infected. It should however be added that observations recorded here are confined to one season alone and further trials may be necessary before arriving at any definite conclusions.

I am grateful to the Government Mycologist for affording facilities to record the observations noted above.

THE LATE DEAN BAKER.

By A STANFORDIAN.

The world of science in general and Asia in particular have suffered a grievous loss through the premature death of Professor C. F. Baker on July 22.

Among the very few Europeans and Americans who came to the Orient and stimulated the progress of scientific agriculture and made substantial contributions to the development of Biology through original researches in Tropical Asia during the last two decades, no other name stands higher or occupies a more conspicuous place. No tribute therefore from fellow workers in the same field will be too great to this soul.

Born of a virile stock of pioneers from Wisconsin, C. F. Baker early showed his genius and remarkable abilities and had a record of good work even before graduation; later he served in different parts of the United States of America, West Indies and South America. Subsequently he was offered the Professorship of Agronomy in the College of Agriculture at Los Bonos, Philippine Islands in 1912. His qualifications for the post were succinctly summed up in the pages of the "*Monthly Bulletin of California*" by Professor A. J. Cook and Dr. Jordon who used these pregnant words:—"There are few, if any, men who have a wider knowledge of tropical crops and perhaps none who can combine the requisite general training for the Chair of Agronomy with as wide a variety of experience with tropical agriculture and economic conditions."

On the retirement of Dr. H. Copeland, Baker became head of the college and the *Philippine Agriculturist* of October 1917 welcomed the new Dean as one who had behind him an experience of about a quarter of a century in tropical agronomy by his long residence, by work along this line in many of the more important agricultural countries of Tropical America and later in the Philippines and Singapore, and though officially designated an agronomist, as one well recognised in the scientific world as an Entomologist, Zoologist, Mycologist and Botanist.

His personality, his indefatigable work and the ideals he set before himself infused new life and infected the whole atmosphere of the college and Philippine agriculture. Rapid changes took place. From a humble beginning of a faculty of 5 members, 15 students, 20 buildings and 200 acres of wild land, the college rose till in 1920 it attained the rank of an institution which could boast of a faculty of 88 members, 800 students, 61 buildings and 1000 acres of improved land. Nevertheless, Dean Baker felt that brick and mortar, number of hands, callbells and redtape which might count for progress and efficiency elsewhere would not do in the Philippines and that men employed at the college were not to run into a narrow rut, to watch the clock, or periodically to expect increasing remuneration, status and privileges but to build a college at any cost of effort or sacrifice.

The persistent habit of hard work he had early acquired was so contagious that even the slothful pupil brought under the spell of his untiring application often developed into a hard student.

As a scientific investigator, and a well known collector of specimens, he stands supreme. His spirit of co-operation in science is evinced in the letter published in the October (1925) number of this journal.

The broad outlook, the clear grasp of fundamental principles and the sympathy he exhibited in understanding local problems of agriculture find reflected in the bunch of pupils he trained to take his place and in his countless articles in the Philippine and foreign press. The remarkable editorials he wrote in the *Philippine Agriculturist* and the numerous contributions to the *Philippine Journal of Science* and to the *Philippine Agricultural Review* show his originality and versatility. 'The Stone Rejected' 'Save and Have' 'Science and the Common Farmer' 'Man Power' 'What is practical in agriculture' will endure through time. Some scientific researches of his furnish are a few landmarks for intrepid explorers in the ever-widening domain of Biology to glimpse.

The lists that have been appearing in recent numbers of the *Philippine Agriculturist* of gifts he made of his collections, books and other property to institutions in America and elsewhere and the pecuniary help he gave to struggling Scientists in post war times reveal the largeness of heart and indefatigable industry

which distinguished this rare scientist who exemplified in himself the truth of his own saying—"the man is the key to the situation."

Dr. Baker was a true "Pandit" as defined in the 'Gita' or the 'Song Celestial'—"Yasya Sarve Samarambha Kama Sangalpavargitha, Gnanagnidagdha Karmanam Thamahuhu Panditham Budhaha."

which translated means one who is free from selfishness in all his undertakings and who performs all acts with an intent to keep aglow the sacred fire of knowledge, him sages call a Pandit.

Dr. Baker was not one of that species of geniuses that when transplanted out of their native heath become impotent in the realm of achievement.

His life history is the history of the Philippine College and his is a shining example to many a somnolent institution in other countries of Asia.

The present affluent condition of the Los Bonos College of Agriculture and the lasting gratitude of the Philippine farmer will always remain fitting monuments to the ceaseless labors and discriminative genius of Dean Baker. May his soul rest in peace!

The only plea if any were needed for this lengthy note of appreciation of Dean Baker is the zeal he evinced, the prodigious amount of work he did both in the field of agriculture and pure science, and the sacrifice he has made as a foreigner by giving up his life in the unselfish cause of improving the lot of an Asiatic nation. How we wish we toiled like Baker and in company of Bakers which species is getting rarer.

The acquaintance which the writer made with Dr. Baker seven years ago which grew into friendship revealed the immense potentialities for good which men of Dr. Baker's stamp possess and the good they do in whatever climes chance may throw them. This is an additional reason for the note.

MR. R. C. WOOD IN THE NEW WORLD.

The Governing body of the Imperial College of Tropical Agriculture has offered the post of Professor of Agriculture, rendered vacant recently by the resignation of Mr. J. S. Dash who has accepted the post of Director of Science and Agriculture in British Guiana to Mr. R. Cecil Wood. Mr. Wood who is at present in South Africa has accepted and is expected to arrive in Trinidad early in October.

Mr. Wood has had a distinguished career, and has exceptionally wide experience of Tropical Agriculture. He is a Cambridge man, took the natural science Tripos with honours and afterwards the University Diploma of Agriculture. On completion of this course he remained for a year at the University as Assistant Professor of Agriculture and then joined the Indian Agricultural Service, being posted to the Madras Presidency. For the greater part of his service he was posted to Coimbatore and was Principal of the Madras Agricultural College which was built—during the early part of his service and which he was responsible for bringing into a high state of efficiency. In addition to training students for the Agricultural Department and for private work, the college carried out a good deal of original research, the main crops being rice, cotton, sugar-cane, ground-nuts and millets. The College worked on close collaboration with Indian Central Sugar Research station which is situated close by, and has produced some well known seedling canes.

After acting as Director of the Madras Agricultural Department for a short while, Mr. Wood retired on a proportionate pension in 1922 and took service under the Empire Cotton Growing corporation.

As one of their scientific officers he has been engaged in research work in Tanganyika and in Swaziland for the last four years.

The staff of the college will welcome his arrival in Trinidad and will appreciate the fact that one of the most important departments at the college is to be placed in such capable hands.

(Tropical Agriculture September 1927).

DR. C. A. BARBER BEFORE THE ROYAL COMMISSION.

Referring to the development of the white sugar trade, Dr. Barber said that given proper encouragement and protection he could see no reason why it should not be managed and capitalized by the Indians themselves.

An advantage would accrue both to the Indian Civil Service and agriculture if some form of *liaison* were formed between the two. He was asked some years ago by Indian probationers to give them an informal account of agriculture in India and he was surprised how little they knew of their own country. Their interest however was encouraging and he accordingly approached the India Office regarding a course of lectures and he was referred to the local board of studies from which he received a courteous reply saying that no money was available. It seemed to him that Indian revenue officers should have some knowledge of the possibilities of improving the conditions of the people.

(Planter and Sugar manufacturer. September 3, 1927).

CHINESE AGRICULTURE.

1. The agriculture of prehistoric China presents a marked analogy to that of early Babylonia according to Dr. Wilhelm Wagner, though the link between the two civilizations would seem to have been broken at a very early period.

2. A significant fact of the independence of Chinese development is the fact that though the Chinese had cattle since the remotest times and though they were frequently invaded by milk-drinking nomads, they never themselves took to milk.

3. As regards implements their ploughs which lack mould boards turn the soil but imperfectly and that only when they are tilted over to one side. They are constructed of wood or iron or both, according to the material available in the district. Traction is supplied by buffaloes or on poorer holdings by human kind. Their harrows, rollers and soil pressers are of primitive types. China like Egypt is a sphere of machine-saving man. Drills are primitive in design the implements being drawn by men or by animals.

4. The chief manure is human faeces, though canal mud and composts of various kinds are used. The ploughing-under of leguminosae is understood. Grass, weeds, and young shrubs are collected and ploughed in. Ashes are also used. Artificials are not used at all.

5. As regards rotations the Chinese get the utmost of the land, using wheat, beans etc. as nurse crops for cotton.

6. Among the various field crops, rice, soya beans, sweet potatoes, oil plants, cotton and tea are of special interest. Rice is a staple crop.

7. Every form of thrashing is employed, treading out by stocks, flail and primitive machines.
(Journal of the Ministry of Agriculture, England, September 1927)

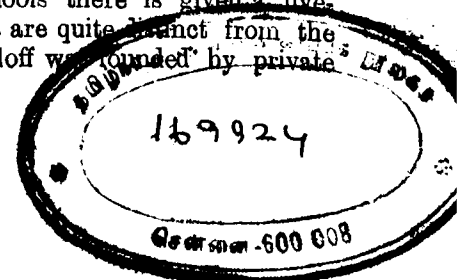
SWEDISH EDUCATION.

One advantage of travel is that it enables one to compare methods in his own country with those prevailing in other countries. This applies in a special degree to countries like Sweden and Denmark, which labor or have labored under heavy handicaps and have had to surmount those mainly through their systems and methods of education.

As far as we could gather from personal interviews with ladies and gentlemen having a perfect command of the English language primary education in Sweden is compulsory between the ages of 7 and 16. The latter date of beginning as compared with Scotland is, we presume, due to the severe winters, which would render it cruelty to send children under 7 from their homes. The period of compulsory primary education, as we understand it, is 9 years. Every Swedish boy or girl who wishes to make his or her way in the world must have a complete mastery of the languages other than his or her own. These are German, French and English. In addition we learn that many are taking Spanish in order to equip themselves for endeavour in South America. It is recognised that in that great continent there are likely to be increasingly numerous openings for men and women of enterprise and enthusiasm.

Industrial businesses are comparatively few in Sweden, but the people have a natural aptitude for commerce. Hence the boy and girl of parts must from the outset have their thoughts directed to countries other than their own. The extent to which mechanical appliances are used on farms, in households, and in the numerous dairies, co-operative and individualistic, with which the country is dotted, suggests in the people a natural aptitude for that line of things. The country is linked up as is no other country in Europe with a telephone system, electric power is in use in countless ways; and those modern appliances have a vogue in Sweden not equalled anywhere else in Europe. Compared with the Swedes, the British people in this respect lag far behind, and specially is this true of the agricultural community. All this springs from the thoroughness of the system of education. Culture is esteemed for its own sake, and we gathered that the teacher in the primary school is a person, who in measure dictates what the household economy of the people whose children attend these schools shall be. The younger children have hours which differs from those of the children of maturer years, and the hours of boys and girls of equal ages also vary.

There is a close gradation of instruction from the Primary Schools, through the Secondary to the Universities, and alongside of these schools there are different grades of agricultural colleges or institutes adapted to every type and class of farmer. One gathers that there is no cast iron arrangement under which Government grants are given or withheld. Rather would it appear that given a school founded by private enterprise, in which sound education is being imparted, Government financial assistance will be assured. But we did not gather that Government departments are required to take the initiative as with us; on the contrary the agricultural community called for a particular line of instruction and the demand was supplied. For example the school for farmers' sons and daughters visited by the B.D.F.A. pilgrims on the afternoon of Saturday, 11th June, were on all fours with the splendid school at Aspatria, which with us could not claim Government subsidies and ceased to exist. We were informed that there are 45 such residential schools for farmers' sons in Sweden, and 38 such schools for farmers' daughters. In these schools there is given a five-month winter course and these schools are quite distinct from the agricultural colleges. The one at Svaloff was founded by private enterprise.



These schools are of two types. Type A grants admission only to students with more education than can be obtained at the primary schools. There is we take it, an entrance examination of higher standard than the pass-out from the primary schools. Type B grants admission to those who only have the primary school qualification. Schools of both types must have a farm attached and that farm may be either the private venture of the Principal of the school or the venture of the school as a unit apart from the Principal. The minimum staff allowed for these schools is two, that is they must be staffed by a Principal and at least one Assistant. Of course such schools are only open to farmers' sons. It is therefore presumed that the pupils have at least a first hand acquaintance with the manual work of the farm and no work of that kind can be done during the 5 months of winter in the greater part of Sweden. It follows that the attached farms are utilised for illustration purposes and for instruction in the feeding and grooming of stock etc.

The parallel schools for farmers' daughters, of which there was also seen one at Svaloff are known as schools for Rural Economy. The girls are housed in a separate building in a short distance from the residential quarters for the boys or young men. There are as we have said, 38 such schools in Sweden and the subjects specially taught in them are cooking, baking, washing, and specific departments of animal husbandry such as poultry keeping. We did not understand that these schools give full courses of instruction in dairying. That kind of teaching is given in connexion with the agricultural colleges. But there is a third type of short course schools—those in which youths of both sexes are given instruction equipping them as milk-recorders. Anybody is not taken as a milk-recorder.

It will be recognised that to a considerable extent we in Great Britain, and especially in Scotland are endeavouring to do the kind of work done at these schools, but, in connection with the agricultural colleges, the essential difference between Scotland and Sweden is that in the former this class of instruction has to be forced upon the sons and daughters of farmers; in the latter the farmers demand it for their sons and daughters and the demand is so great that it pays private enterprise to initiate and supply it.

(From Scottish Farmer dated June 1925).

INTERNATIONAL ECONOMIC CONFERENCE, GENEVA.

MAY 4TH TO 23RD.

Report of the Agricultural Committee—Full Text.

Introduction. Agriculture is the occupation of the majority of workers throughout the world; its various products represent in value the greater part of human labour and the exchange of its products against industrial products forms, indeed, the basis of world trade.

The agricultural population remains for humanity a reservoir of energy capable of preserving the nations from the rapid human wastage which may result from any excessive growth of industry.

The quantity of foodstuffs and raw materials produced by agriculture is one of the factors which determine the maximum limit of industrial development.

The interdependence existing between nations is no less close between the main classes of occupations; agriculture, industry, and commerce—and it would be vain to hope that one class should enjoy lasting prosperity independently of the others.

Agriculture is at present hampered in the complete fulfilment of the economic role assigned to it by a general depression varying in degree but affecting a large number of countries on which the world depends for its supply of foodstuffs and raw materials.

The economic depression in agriculture is characterised by the disequilibrium which has arisen between the prices of agricultural products and those of manufactured products; as a result agriculturists in a great number of countries no longer receive a sufficient return for their labour and on their capital. This depression is aggravated in many countries by the difficulty of obtaining credit on normal terms and by the great increase in fiscal charges; while it has led to a decrease in the purchasing power of agriculturists, consumers have not, in all cases, been benefited by a fall in the price of foodstuffs.

The diminution in the purchasing power of the agricultural population has reacted upon industrial production, and is consequently one of the causes of unemployment, which in its turn reduces the outlets for agricultural products.

Unless practical measures are taken to restore the price equilibrium, it is to be feared that sooner or later there will be a diminution in agricultural production detrimental to the welfare of mankind.

Technical means exist, however, for considerable development of agricultural production. They must therefore be put into operation. Their general adoption would have the most beneficial consequences for the prosperity and economic peace of the world.

II. General Resolutions. 1. The Conference regards as a vital economic question the increase of agricultural production and, with this in view, the placing of agriculture on an equal footing with industry by enabling all those engaged in agriculture to obtain a satisfactory standard of living and a normal return for their labour and on their capital.

It is important that this necessity should be brought home to public opinion, which does not always realize the true situation of agriculture and too often regards it as an industry of secondary importance.

2. The improvement of agriculture must in the first place be the work of agriculturists themselves. The general adoption of technical improvements, the scientific organisation of production and stock-breeding, of the campaign against the diseases and the enemies of plants and animals, of marketing, of the standardization of agricultural products in the interests both of the producers and consumers, of the search for outlets, and of credit and insurance will permit agriculturists to reduce their costs of production in their own interests and to the benefit of consumers.

Owing to the considerable number of small and medium-sized agricultural undertakings—tendency towards concentration displayed in industry being absent—the organisation of agriculturalists should be continued along the lines of association and co-operation which have already been tested in many countries; it

may with advantage be supplemented with agreements between agricultural and consumers' co-operative societies.

It is to the interests of Government to encourage agriculture and the agricultural associations which have as their object the improvement of the situation of the agricultural population. In particular the creation of development of mutual credit would be greatly facilitated by Government assistance.

The Conference draws the attention of the Governments to the fact that high rates of interest and heavy taxation hamper production. (3) Other measures to be contemplated depend chiefly on legislative action. In particular, the Conference is of opinion that social laws ensuring the welfare and security of workers should benefit agriculturists no less than industrial workers and employees, it being understood that such laws must be adapted to the special requirements of agriculture and to the special living and working conditions of rural populations. It is also of the opinion that agricultural instruction at all stages and the technical training of agriculturists should receive the attention of the different governments as well as agricultural associations.

(4) It is desirable that all hindrances to the free circulation of and trade in agricultural products should be removed in so far as their removal does not endanger the vital interests of different countries and their workers.

In those States in which Customs protection is maintained it should be reduced both for industry and agriculture to the lowest possible point indispensable to production, care should be taken to assist in the maintenance of an equitable balance between industry and agriculture and not to stifle one to the advantage of the other,

The system of export prohibitions and export duties (with the exception of taxes levied for the benefit of the industry concerned) and frequent changes in Customs tariffs, which long experience has shown to be ineffectual and dangerous, should be definitely abandoned.

(5) The agriculturist should find his just remuneration not through speculation but in the regularity of prices, permitting to reckon on a legitimate return equivalent to that accorded to other producers.

(6) Since, finally, the policy pursued in industrial and commercial questions reacts on the economic situation of agriculture, and *vice versa*, the Conference requests the League of Nations to ensure that in all its organizations already existing or to be formed which are or may be entrusted with economic questions a place be always reserved for agriculture proportionate to its importance as a social and economic factor.

Special Resolutions:—In addition to the general resolutions formulated above, the Conference draws the attention of the League of Nations to the following points:—

1. *Agricultural Co-operation; Relations between Agricultural Co-operative Societies and Consumers' Co-operative Societies:*—

(1) The agriculturists of the different countries contribute to the improvement of their standard of living and to the general prosperity by utilizing to an increasing extent all forms of co-operation; co-operative supply societies, either for technical or domestic requirements of members; co-operative selling organizations for the regular marketing of products; producers' co-operative societies for the intermediate processes between the production of raw material and the sale of the finished product; co-operative credit societies to meet the need for capital (bringing equipment up-to-date, improving the cultivation of the soil, storage of products).

Co-operative institutions thus increase the purchasing power of agriculturists both as producers and as consumers. At the same time they further economic progress both by increasing productivity and improving quality and also by making it possible to utilize fully the products of the soil and their by products. Lastly, they assist the organisation of markets by methods which reduce to a minimum the costs of distribution.

(2) Agricultural co-operative societies will contribute to a still greater rationalisation of economic life in proportion as they develop their relations with the consumers' co-operative societies. Direct commercial relations between producers and consumers, and fluuous intermediaries, and, when they are sufficiently widespread result in the establishment of prices which are advantageous to

both parties. In addition to material profit, there is a moral advantage; by direct commercial relations producers and consumers learn to know each other and to take account of the special characteristics and requirements of the other party. The producers' and consumers' co-operative societies learn to appreciate the value of direct relations in accordance with their common principles. The clear realization of possibility of mutual collaboration and mutual confidence in business transactions are essential to a practical solution of the question of direct commercial relations between producers' agricultural co-operative societies and consumers' co-operative societies—a question which has for a long time past been settled in theory.

The efforts made to achieve practical results should be furthered on the part of agriculture by the production of articles of specific quality and uniform type; on the part of the consumers' co-operative societies by the determination to buy agricultural produce, as far as possible from the agricultural producers' co-operative societies; on the part of States and of public authorities by supporting the co-operative movement through the creation of chairs at universities or of other scientific institutions, the institution of public courses dealing with the co-operative movement and by a fiscal policy of abstention from the discriminatory measures against co-operative societies.

Effective collaboration, if need be in the form of common understandings, will be the easier of realization if the producers' and consumers' co-operative societies of the different countries are already nationally organized in common economic committees.

To ensure the normal development of cooperation in all the branches in which it exercises its activities, it is extremely important that the laws which govern co-operation should be unified where such is not yet the case, and should impose the fewest possible obstacles.

(iii) International agreements between co-operative agricultural organizations with regard to a number of products might be of value in placing markets on a sound basis, in regularizing production and in stabilizing prices at levels satisfactory from the point of view of the balance between production and consumption. Such international agreements, to attain their aims, require loyal collaboration with the national and international co-operative

consumers' organs by the establishment of regular business channels and long-term contracts.

(iv) These efforts of agricultural and consumers co-operative organizations should be encouraged and furthered by the creation of a committee representing national and international co-operative organizations of agriculturists and of consumers—a committee which should be entrusted with the establishment of a programme of research and documentation, as well as with the task of elucidating the lessons taught by past experience, with a view to bringing about new achievements.

2. *Agricultural Credit.*—(to be continued).

(From Journal of Ministry of Agriculture, Vol. 34 No. 4, July 27).

AGRICULTURE: THE NATION'S BUSINESS

The title, Agriculture : the Nation's Business, may be challenged. It implies that agriculture, more than all other lines of endeavour, is of particular concern to the whole nation. There are those who think this claim is presumptuous. There are those who are prone to suggest that the farmer demands privileges far beyond those enjoyed by other workers whose task is equally difficult and whose product is equally valuable. The facts, however, justify the claim that the farmer's problem because of the magnitude of his business and because of the potent influence which it has on the other industries, has an importance greater than that of any other single industry.

The farmer is peculiarly the victim—as well as the occasional beneficiary—of forces beyond his control. He is the child of fortune—good or bad. He is the passenger in a boat of which he controls neither oars nor rudder. This condition is due in part to the nature of the industry, in part to the farmer's failure to develop his own power.

Under prevailing practice, the farmer sells his product on a market over which he has no control. He purchases his supplies on the same kind of market. With few exception—and those are of

comparatively recent development—he buys on the seller's terms and sells on the buyer's terms.

Legislation will not cure the fundamental difficulty of the farmer's position. He himself by his own efforts must work the cure. Certain legislation has helped and will help to clear the way for effective measures of selfhelp. The mere machinery created by legislation will not function unless the power of intelligent direction and co-operation is applied.

The real solution must rest on the transformation of the farmer as a class from mere tiller of the soil into a business man, fitted and empowered to control his own industry as other business men control theirs—plus the realization on the part of those not engaged in agriculture that the farmer is a most essential part of our economic organization and is entitled to the treatment of an equal.

The farmer must have a greater control over the marketing of his own products, a control approaching at least that which is exercised by producers of other commodities over the marketing of their products. This is a difficult task.

Wise, intelligent co-operation between farmers and men in other lines of industry—all business men—will extend and strengthen the power of the farmer to help himself. (*Country Gentleman*—U. S. A.) reproduced.

(From Journal of Jamaica Agricultural Society—June 1927.)

HOW THE DUTCHMAN LIVES.

BY T. J. MANSHOLT, THE HAGUE.

In his interesting book published seventeen years ago, Mr. Robertson Scott called us "Free farmers in a Free State." This characterisation of our farmers is still absolutely correct.

As to the land, in more than half of the country, from day to day, from year to year, from century to century, our farmers have had of course to fight against water. Nearly 35 per cent of the surface of our country is alluvial. This explains the great fertility.

A great part of the land along the North Sea coast, below the level of the sea, was originally peat moor. In olden times the peat was removed and used for fuel; what remained was constantly flooded and lakes were formed which especially in the 16th and 17th centuries were pumped dry by windmills, leaving very fine pastures. It is clear that in such circumstances it was hard work to shut off the high tide of the sea and the floods of the rivers and also to keep the land free from all the water the rain left behind. This could not be done by individuals, only by co-operation throughout large districts. The State did not organise this co-operative system of fighting the water. The system was at work a thousand years ago by private initiative. This drilling in of co-operation has been of great value to us.

The expense of maintaining the advantage which has been gained over the water is high, in several districts from 10 shillings to a pound an acre.

In most parts, human efforts have succeeded in gaining sufficient control over the water level to keep it at the desired height the whole year round. This marsh soil being of great natural fertility, not only is a high production per acre obtained but the crop is regular and reliable. In abnormally dry seasons, as in 1911 and in 1921 when the crops of potatoes, vegetables, hay etc., in a greater part of Western Europe were insufficient, Holland has been a storehouse.

The damp climate, the low level of our country and the natural fertility of our soil account for the great development of the dairy industry. Arable land occupies 27 per cent of the country, permanent pasture 38 per cent. But these figures do not give a correct idea of the importance of pasture. Most of the best soil is in meadows. There are great districts in the western and northern parts of the country where not a single acre of arable is to be found but only absolutely flat, square meadows of about 5 to 10 acres, never touched by plough, where you seldom see a horse, but, instead innumerable quantities of milch cattle and occasionally some sheep and pigs.

During the last 50 years cattle breeding, cultivation and dairying have been subject to such great technical improvements

that, notwithstanding the ever increasing population and consumption, the export surplus of dairy products has kept going up. Although since 1900 the population has increased from 5 to 7½ millions the export of butter has gone up from 22,000 to 45,000 tons; of cheese from 47,000 to 84,000 tons and of condensed milk from nothing to 148,000 tons. The fact that Holland with all its handicaps is the greatest exporter of cheese proves how much the production of food can be increased.

It is remarkable that this high production is possible in a country where most of the farms are comparatively small. Large estates are not to be found. In the meadow districts, the size of the farms is mostly between 40 and 100 acres. The cattle are out of doors from the middle of April to the end of October.

That agricultural production has been lifted to such a high level is due not only to the practical skill of the farmers but also to the excellent organisation of agricultural instruction by the State. It is now possible for every farmer's son to enjoy technical farm training and for the farmers to obtain sound advice about all sorts of things without spending much. Conditions are such that a young farmer who has not attended an agricultural winter school or has not at least been at a winter course is not taken seriously by his fellows. Consequently the younger generation of farmers no longer holds on to the old fashioned working methods of its forbears but eagerly applies each improvement. For example, no country in the world uses more artificial manure per acre than the Netherlands.

It is noteworthy that in a country where small farmers, not strong in capital, form the backbone of agriculture, the breeds of cattle should have been worked up to such a high standard. In other countries the progress in agriculture specially in the cattle breeding line is mostly the work of a few expert large farmers specially interested in this branch of farming, who face a large expenditure to attain their aims. In our country such fancy farms are not to be found. It must be borne in mind that breeders have always been influenced by economic considerations. A Dutch farmer cannot indulge in the luxury of breeding fancy cattle. Experience taught him that raising milk production to an abnormal height would in the long run give a smaller financial result if attention were not simultaneously given to constitution.

Neither does our country set great value on artificially screwed up high milk production of individual animals especially when the fat percentage is not taken into account. One shrugs one's shoulders when one reads of the fuss that is made in England about so-called "2000 (sometimes even 3000) gallon cows."

We attach great importance to milk testing. More than 65 per cent of the milk cows in Friesland are regularly tested. Not only the milk production but the fat percentage is regularly determined and in selecting breeding cattle, greater importance is attached to the latter than to the former. By applying this method the average production of milk cows inscribed in the Friesian herd-book has been raised from 4'357 kilos in 1912 to 4.546 kilos in 1924 and the fat percentage from 3.20 to 3.52 per cent and the production of butter from 150 to 175 kilos within the same period.

We have no duties on agricultural products.

(From the Countryman, July 1927).

LAND POLICY IN EAST AFRICA.

The Governors who recently met in conference at Nairobi submitted a memorandum. It reads as follows:—

Land (i) There are those lands which were indubitably unoccupied and unclaimed at the time when British Government was established. (ii) There are those lands to which only there was a doubtful claim. (iii) There are lands effectively occupied by a large and settled native population. These lands mentioned in (iii) should clearly be reserved to its original native owners. In (i) and (ii) sufficient land for their own use should be secured to the native tribes originally sprinkled or wandering over it but the rest is clearly the property of the British Government to develop in the manner which it considers most suitable and effective.

Conclusions (i) Wherever a native population exists, sufficient land should be secured to it to afford full opportunity for either stock breeding or dairying, or for production of crops according as the land is fit for pasture or agricultural purposes. (ii) European colonization should be encouraged wherever the climate is suitable and adequate areas are available for settlement without depriving the native population of sufficient land for its own use. (iii) The area reserved for a native tribe should be sufficient to accommodate the whole tribe together.

Then follows the labour policy which reads briefly as follows:—

Labour (1) The ideal in view should be to make the land put to its best economic use while also providing for the steady progress and welfare of its native inhabitants and safeguarding them against serfdom in any form whatever. (2) Steady progress cannot be secured in some areas unless every available native who shows no tendency to work is given to understand that Government expects him to do a reasonable amount of work either in production of his own reserve or in labor for wages outside it. (3) In areas where the first alternative is not within his reach the native should be definitely encouraged to go out to labor. In others where both alternatives are open to him the Government is not concerned to impose either upon him.

4. While communications are undeveloped the native should be instructed to grow sufficient foodstuff for his own livelihood.

5. In establishing markets for produce, it is desirable that the process of production should be regulated so as to secure the most efficient methods and the highest possible standard of production. If the principles are accepted they will indicate what restrictions are necessary in the production of certain crops by natives. There is no case for debarring a native just because he is a native from growing any economical crop but there is a very strong case for debarring from production any inefficient producer who endangers other producers, whatever his race.

6. In areas open for settlement Government should encourage the growth of those crops where least labor is required and should regulate the growth of those which make heavy demands on laborers for short periods of the year.

7. It is by no means certain that the native will make adequate economic use of all the land secured to him, but there is reason why any attempt should be made in the future to take the land from him. It is evident that in most cases the native is alive to economic advantages, and that his rudimentary ideas concerning the nature of wealth are changing. He is not likely to be content for ever with owning undeveloped land or the mere multiplication of cattle where he sees the profit that can be made in neighbouring area from the skilled cultivation of land or economic animal husbandry. He will always be free to choose whether to develop the land himself or to bring in the aid of European skill and knowledge to develop it; and in many cases he will probably prefer to lease the land for cultivation by others rather than take the risk and trouble involved in organizing its cultivation himself. There is no reason why Government should limit his freedom of choice provided only that the land is leased on fair terms and that adequate rents are secured for its native owners.

(C. F. Andrews in the "Servant of India" dated 6-10-27.)

THE ROLE OF INBREEDING IN THE DEVELOPMENT OF THE CLYDESDALE BREED OF HORSES.

BY A. CALDER.

Summary of the articles.

Co-efficients of inbreeding have been calculated for 676 stallions and mares with the object of studying the part played by inbreeding in the development of the Clydesdale breed of horses. Wright's coefficient of inbreeding was used in this study.

It is found that during the early history of the breed very little inbreeding had been practised and it is suggested that this may be due to the fact that the foundation stock contained many recessive factors for undesirable characters. The first marked rise in the average percentage of inbreeding for the breed occurred during the period 1880-1890 and from that time onwards there is a gradual but constant increase in the breed average, reaching

its highest level at 6.25 per cent for the period 1920-25. A method is outlined by which a measure can be obtained of the contribution of any particular sire to the graph of the average percentage of inbreeding for the breed. It also measures the degree of concentration of his blood in animals inbred to him and the rate at which his blood is diffused through the breed.

It is found that Darnley made the greatest contribution to the average percentage of inbreeding for the breed until about 1912 and subsequent to that time Baron's Pride has been the chief contributor. There has been more inbreeding to Baron's Pride than to any other sire in the breed. Emphasis is laid on the importance of Samson (741) the maternal grandsire of both Darnley and Prince of Wales. Although there has been a considerable amount of inbreeding to Prince of Wales, few instances were obtained of inbreeding to sires of his line of descent. With the exception of Prince of Wales, there has been no appreciable amount of inbreeding to any sire outside the line of descent from Darnley.

A comparison is made of the relative rates at which the blood of outstanding sires has been concentrated in the blood and also of the relative intensities of inbreeding. Inbreeding has been most intensive to Baron's Pride and his blood has been concentrated in the breed more quickly than that of any other sire.

The result of analysis suggests that Darnley was popular among Clydesdale breeders in general whereas, for a considerable period inbreeding to Prince of Wales was equally popular among a relatively much smaller number of breeders. The statistical evidence set forth in this paper with regard to the relative popularity of the two outstanding foundation sires Darnley and Prince of Wales substantiate the popular view.

It is shown that the average percentage of inbreeding for mares rises above that for stallions during the periods 1885-1890 and 1890-1895, owing to the fact that during these periods the average percentage of inbreeding to Prince of Wales was much higher for mares than for stallions. It is also noted that the graph of the average percentage of inbreeding for mares approaches that for stallions most closely when the most marked rises occur in the graph of the average for the breed.

The frequency distribution of the coefficients of inbreeding are discussed with special reference to the fact that the greatest distribution of coefficients occurs when the graph of the average percentage of inbreeding for the breed rises most rapidly.

The most popular systems of matings practised in the Clydesdale breed are discussed. Matings of the cousinship degree of consanguinity are fairly common, while half-brother half-sister matings and the mating of sire to grand daughter are only practised with the animals of very best breeding. Noteworthy examples of "nicking" are also enumerated.

The homozygosity of the Clydesdale breed relative to the condition existing in the foundation stock, has been increased by 6.2 per cent due to inbreeding alone. Line-breeding being practised almost exclusively to member of one line of descent viz. that from Darnley, together with careful selection, appears to explain the remarkable homozygosity of the breed at the present day.

(From Proceedings of the Royal Society of Edinburgh, Vol : 47 Part II.)

FACTORS AFFECTING EVAPORATION OF WATER FROM SOIL.

BY E. A. FISHER, ST. ALBANS.

*Summary of the article. **

Some of the factors affecting the rate of loss of water from a drying system are shortly reviewed. These factors fall into two groups: (1) the drying system itself, and (2) the environmental conditions. The Second group may include (a) diffusion of water vapour through the air, (b) bulk air movements due to (i) temperature gradients between different parts of the drying vessel, (ii) temperature lowering of the drying mass itself due to evaporation, (iii) lower density of moist air, (iv) inevitable disturbance introduced by experimental conditions such as weighing or movement of apparatus (v) the geometry of the system. It is shown that of the external factors the most important are (2-a), (2-b) (i) and (2-b) (ii); (2-b) (iv) may produce irregularities in the rate curves of air-dry granular materials; (2-b) (iii) and (2-b) (v) appear to have little or no effect.

The internal factors, i.e., the character of the drying system itself, appear to be of far greater importance than the environmental conditions in determining the type of drying curve. The generalisation is reached that the drying of any capillary system can be expressed by linear and discontinuous rate curves provided that the movement of moisture or of vapour through the drying mass is regular and uniform. When movement of moisture or vapour through the system is extremely slow and irregular, owing to low porosity, as is the case with wet clay soils, doughs, etc., rate curves of various shapes may result and replication becomes impossible. There is evidence to show that the curvature exhibited by some of the earlier curves of the writer, and of Keen, and the latter curves of Keen, Crowther, and Coutts was due to such irregular moisture movements.

It is further shown that when different dry weights are employed in replicate experiments certain linear portions of the individual rate curves on extrapolation converge to a common point on the horizontal (w) axis. The intercepts thus cut off may possibly be of more than passing interest; e.g. further investigation should show where such intercepts can be employed as coefficients of granularity, whether they are affected by the colloidal contents of the system, or whether they can be used as, more or less, empirical constants in characterising a soil.

(Journal of Agricultural Science, July 27.)

HEREDITARY OBESITY.

[Obesity in humans is a matter of extreme discomfort and hence of commiseration. The following note of observation on mice appearing in *Nature* will be of interest—Editor.]

It is well known that in mice, yellow is epistatic to other coat colours and that homozygous yellow mice do not occur owing to the lethal effect of the yellow gene in the homozygous condition. Dr. Danforth has recently shown (Jour. of Heredity, Vol. 18 No. 4) that healthy yellow mice always become abnormally fat on an ordinary diet, this tendency being even more marked in the females than in the males. Thus yellow females are often twice, and sometimes thrice, as heavy as others. The fat is partly subcutaneous and partly attached to the viscera. The evidence indicates that the obesity is produced by the same gene which produces the yellow coat pigmentation and not by a separate factor, since no cross-overs appear. On a restricted diet

the yellow mice can gradually use up their store of fat, and it is suggested that the condition is similar to that in hibernating animals which store up fat in their tissues to be used later when no food is taken. The condition is also compared with that in certain human families with a pronounced hereditary tendency to adiposity.

G. N. R.

PSYCHOLOGY AS AN AID TO AGRICULTURE.

The National Institute of Industrial Psychology in Report No. 2, records the results of an investigation into certain processes and conditions on farms undertaken by Mr. M. R. Dunlop. The results would seem to show that farm management in Great Britain is by no means efficient. It is unfortunate that so many discussions on agricultural problems are complicated by political motives. The present investigation is the first systematic attempt in Great Britain to apply the point of view and methods of industrial psychology to agriculture. Some very important questions are raised dealing with future enquiries, not the least of which is the selection of the right work for the right worker, and the guidance of young people leaving school into occupations for which they are most fitted. Apparently there is a tendency for the children of a lower level of intelligence and ambition to take up agriculture, the town attracting the more intelligent. In so far as this is so, it is to be deplored, but obviously the problems connected with such a choice are very difficult to attack, involving as they do the attitude of mind of the community towards agricultural work.

(*Nature*, August 6, 1927).

THE SEAPORTS OF CUBA.

In a recent issue of *Commerce Reports* a detailed account is given of the various seaports of the island of Cuba from which the following particulars may prove of interest. Cuba has a coast line over 2000 miles in length and is remarkable for its large number of capacious harbours, roadsteads and excellent anchorages. Most of the harbours are pouchshaped inlets, indenting the coasts, with narrow outlets giving access to the sea. The island averages only 60 miles in width and no place is more than 40 miles from the sea, consequently no place is without nearby export facilities.

According to law promulgated in 1923 the handling of the foreign commerce of Cuba is restricted to certain designated first-class ports but there is a proviso that the sugar centrals and entities which had constructed and used private ports or wharves prior to the enactment of this law can continue to use them for the same purpose. Havana outranks all other ports in the volume of imports, handling over two-thirds of the total; Santiago de Cuba ranks second followed by Cienfuegos, Nuevitas, Mantanzas, Nipe and Caibarian. The export trade, on the other hand, is more evenly distributed as might be expected. In years when sugar prices are low Havana stands first but ordinarily it is outranked by Nuevitas. After them in importance come Cienfuegos, Nipe and Mantanzas.

Havana ships practically all Cuba's tobacco exports in addition to large quantities of sugar molasses, fruit and vegetables. The harbour is in a land-locked bay; the dock facilities comprise over 40 wharves completely encircling the harbour, the main portion of which is dredged to a depth of 36 feet. Santiago de Cuba on the South coast is the principal seaport of Eastern Cuba and has a land-locked harbour six miles inland, the narrow entrance to which was the scene of exploits of Hobson and the "Merrimac" in the Spanish-American War. Nuevitas on the north coast of Cuba lies on Nuevitas Bay. It is said to be the world's leading sugar port, exporting more than twice as much sugar as any other port in the world. The harbour itself is several miles inland and is large and completely sheltered; it consists of two terminals of about 3 miles apart, each serving a railroad. The latest wharves are of concrete and have special facilities for loading sugar and molasses. Cienfuegos on the south central coast is the most important export centre on that side of the island. It lies in a land-locked bay which provides a first class harbour. Nipe Bay on the north-east coast is said to be one of the largest deep water harbours in the world. It also is landlocked and affords a safe anchorage for the largest vessels. It is the north coast terminus of the Cuba Rail road and exports principally sugar. Another sugar exporting terminal is Guantanamo Bay on the south coast near the eastern extremity of Cuba. The bay is 11 miles in length and consists of an outer and an inner harbour, admitting the deepest draft vessels. Altogether, it will be seen Cuba is exceptionally endowed with good harbours which greatly facilitates its huge annual shipments of sugar.

(From *International Sugar Journal* for July 1927.

Meteorological observations recorded at 8 a. m. Agricultural
College, Coimbatore August 1927.

Date.	Barometric pressure reduced to 32 F. inches Sea-level.	Previous 24 Hours.			
		Wind ve- locity per hour (miles.)	Maximum Shade temperature F.	Minimum shade temperature F.	Rainfall in inches.
1	28.527	3.2	85.5	71.8	0.45
2	28.496	2.9	86.5	71.7	...
3	28.519	2.7	88.4	72.2	...
4	28.527	4.8	88.8	70.5	...
5	28.497	8.3	88.0	71.7	...
6	28.475	8.3	88.7	71.0	...
7	28.417	11.1	83.9	73.6	...
8	28.454	12.3	83.4	71.3	0.06
9	28.481	11.8	85.7	73.2	...
10	28.393	14.3	86.6	74.3	...
11	28.405	14.9	86.2	74.4	...
12	28.435	11.0	86.1	71.8	0.06
13	28.464	5.2	82.4	69.7	...
14	28.429	4.8	88.2	70.6	...
15	28.425	5.9	89.8	71.7	...
16	28.433	5.3	89.2	72.0	...
17	28.441	9.3	88.0	68.5	...
18	28.463	5.4	90.2	69.0	...
19	28.450	4.3	90.8	70.8	...
20	28.457	6.5	91.0	71.0	...
21	28.459	4.4	89.5	69.0	...
22	28.479	8.9	89.5	73.0	...
23	28.467	16.3	85.4	74.0	...
24	28.481	9.9	88.8	73.0	...
25	28.479	14.2	82.3	72.0	...
26	28.451	10.0	88.0	71.8	...
27	28.421	8.2	89.2	71.2	...
28	28.429	3.8	88.3	70.6	...
29	28.471	5.7	90.0	70.2	...
30	28.501	4.5	87.8	68.5	...
31	28.501	5.3	91.4	70.0	...

Meteorological Observations recorded at 8 a. m. Agricultural College,
Coimbatore September 1927.

Date.	Barometric pressure reduced to 32 F. inches Sea-level.	Previous 24 Hours.			
		Wind ve- locity per hour (miles.)	Maximum shade temperature F.	Minimum shade tem- perature F.	Rainfall in inches.
1	28.463	5.2	91.8	67.2	...
2	28.497	6.7	90.8	69.2	...
3	28.479	6.2	89.6	69.0	...
4	28.479	4.4	90.0	71.2	...
5	28.453	5.2	90.6	70.8	...
6	28.481	3.8	92.4	70.2	...
7	28.488	5.3	91.5	70.2	...
8	28.476	5.0	91.4	71.0	...
9	28.422	4.8	90.3	69.5	0.71
10	28.444	2.3	89.0	71.2	...
11	28.450	3.2	91.0	70.5	...
12	28.492	3.1	93.5	71.0	...
13	28.527	2.4	92.0	70.2	0.09
14	28.470	2.0	93.4	71.3	...
15	28.444	3.0	93.6	71.0	...
16	28.459	4.4	92.5	73.5	0.01
17	28.437	3.3	88.4	72.2	...
18	28.436	5.2	91.6	72.0	0.05
19	28.388	6.0	86.6	72.5	...
20	28.378	4.5	89.5	71.0	...
21	28.398	5.7	90.7	69.0	0.12
22	28.427	6.7	87.6	70.2	...
23	28.405	6.3	87.4	67.8	...
24	28.413	5.2	86.8	71.0	...
25	28.471	5.3	90.1	70.2	...
26	28.445	5.5	87.5	70.0	...
27	28.443	6.2	86.0	73.3	...
28	28.472	8.5	84.2	71.0	...
29	28.502	5.4	85.5	69.8	...
30	28.511	4.6	87.6	70.3	0.57

Meteorological observations recorded at 8 a. m. Agricultural College, Coimbatore October 1927.

Date	Barometric pressure reduced to 32 inches Sea-level.	Previous 24 Hours.				Rainfall in inches.	N.B —Rainfall up to date in inches
		Wind velocity per hour (miles.	Maximum shade temperature F.	Minimum shade tem- perature F.			
1	28.593	4.9	87.2	71.7	drizzle.	...	April 1st Half 0.98
2	.521	6.8	88.5	72.5	...	...	April 2nd half 0.77
3	.488	6.8	89.6	69.0	...	...	May 1st half 2.16
4	.474	4.3	89.5	68.0	...	...	May 2nd half 0.48
5	.502	8.4	85.1	71.8	...	...	June 1st half 1.24
6	.465	5.6	88.3	69.2	...	...	June 2nd half 0.39
7	.521	8.4	89.0	64.5	...	...	July 1st half 1.13
8	.494	4.3	91.5	64.0	...	...	July 2nd half 0.70
9	.489	4.4	90.4	63.2	...	...	August 1st half 0.57
10	.503	3.5	89.3	61.5	...	...	August 2nd half 0.00
11	.545	3.2	88.6	63.2	...	...	September 1st half 0.80
12	.559	5.4	90.3	64.6	...	...	September 2nd half 0.75
13	.531	3.3	90.0	66.5	...	...	
14	.563	4.2	91.3	64.8	...	...	
15	.577	3.0	91.2	72.0	...	...	

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16	.593	2.8	91.8	69.5	...	...
17	.601	3.0	92.3	71.6	...	...
18	.627	2.8	92.0	72.2	0.09	...
19	.616	2.9	93.2	73.0	0.02	...
20	.612	3.4	92.7	70.0	1.04	...
21	.608	2.5	87.5	68.5	0.80	...
22	.609	3.1	86.8	71.5	0.85	...
23	.604	3.9	87.4	71.4	0.03	...
24	.609	3.6	88.8	72.6	...	drizzle.
25	.601	3.3	89.8	72.2	0.45	...
26	.603	3.2	90.0	68.7	...	...
27	.595	2.0	89.2	71.6	1.54	...
28	.588	4.1	87.4	65.2	...	...
29	.507	2.3	89.0	70.4	...	...
30	.516	2.8	85.2	70.0	0.21	...
31	.513	2.3	86.6	68.3	...	...

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Index numbers of wholesale prices in Calcutta by group of articles.

[PRICES IN JULY 1914=100].

	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
Cereals	115	106	92	110	163	154	145	137	114	123	136	140
Pulses	122	107	96	119	180	166	160	152	112	114	128	149
Sugar	164	184	189	180	288	407	270	221	246	226	179	178
Tea	115	114	95	95	105	78	100	159	206	205	180	180
Other food articles	121	146	185	226	206	184	157	186	222	217	184	163
Oil seeds	81	85	83	104	198	173	135	147	138	144	146	134
Oil, mustard	78	71	71	104	161	128	108	116	100	107	113	117
Jute raw	68	80	65	75	115	104	83	110	90	102	154	120
Jute manufactures	109	129	138	219	175	149	105	144	138	159	177	147
Cotton raw	89	121	174	309	230	153	143	191	244	272	205	147
Cotton manufactures	97	134	203	298	295	325	280	239	221	229	210	173
Other textiles (wool and silk)	94	114	129	145	149	162	142	162	163	146	132	119
Hides and skins	102	118	112	96	184	147	108	120	135	124	104	113
Metals	120	186	266	301	226	238	237	175	165	162	131	140
Other raw and manufactured articles	128	155	183	184	192	231	242	235	207	193	165	141
Building materials (Teak wood)	99	103	143	137	138	146	131	120	103	108	119	132
All commodities	112	128	145	178	196	201	178	176	172	173	159	148

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The Indian Trade Journal Sep. 29th, 1927.

		875				
		MAY RAINFALL IN MADRAS.				
No. of Stations.	DISTRICTS.	First Half.	Second Half.	Mean average month.	No. of rainy days.	Mean average rainy days.
16	CIRCARS—Ganjam (Littoral).	0·66	0·75	2·51	3·3	3·8
17	Vizagapatam do.	1·01	1·06	2·63	4·1	4·0
14	East Godavari Plains	0·45	0·51	1·96	2·4	2·9
8	West Godavari	0·80	0·61	1·70	3·0	2·6
13	Kistna	0·69	0·06	1·55	1·6	2·5
16	Guntur	0·39	0·54	1·54	1·7	2·3
15	DECCAN—Kurnool	0·35	0·21	1·32	1·1	2·6
11	Bellary	0·29	0·98	1·93	2·9	3·6
14	Anantapur	0·41	0·84	1·96	1·9	3·4
11	Cuddapah	0·47	0·25	1·48	1·8	2·4
16	CARANATIC—Nellore	0·11	0·40	1·31	0·9	1·7
14	Chingleput	0·18	0·33	1·43	1·5	1·5
1	Madras	0·21	0·16	1·84	2·0	1·4
17	South Arcot	0·75	1·59	1·93	3·2	2·6
13	CENTRAL—Chittoor	0·78	1·04	2·34	3·7	3·6
16	North Arcot	0·62	1·43	2·74	4·3	4·1
21	Salem	2·26	2·21	4·17	7·4	6·1
20	Coimbatore	2·17	1·22	...	6·3	...
1	Kollegal	0·27	5·27	5·19	6·0	7·6
16	Trichinopoly	1·36	1·11	3·59	5·0	4·7
11	Pudukota	0·85	1·20	2·45	3·7	3·4
26	SOUTH—Tanjore	0·78	0·61	2·06	3·1	2·7
15	Madura	2·70	1·03	3·07	5·5	5·0
20	Ramnad	1·94	0·78	1·87	4·2	3·0
21	Tinnevely	1·83	0·35	1·35	3·4	2·4
6	HILLS—Ganjam Agency	1·82	1·13	3·93	5·2	6·3
11	Vizag Agency	0·62	0·91	3·06	2·9	5·4
5	East Godavari Agency	1·19	0·91	2·39	4·4	3·9
1	Kodaikanal	2·53	2·55	6·27	11·0	10·0
1	Yercaud	2·96	1·45	6·54	8	8·3
11	The Nilgiris	2·35	2·79	5·67	10·1	9·4
1	Anamalais	0·70	7·09	1·47	4	...
10	WEST COAST—Coorg	1·05	3·84	6·17	7·7	8·7
11	South Kanara	0·02	5·09	5·71	7·8	6·2
25	Malabar	1·81	7·20	8·00	10·9	8·6
6	Cochin	4·20	7·85	9·08	12·8	5·6
	Devikulam	1·60	4·97	7·94	11·6	11·0
14	Kottayam	4·05	7·86	10·97	14·3	11·7
21	Quilon	2·84	1·39	8·40	13·0	10·4
31	Trivandrum	0·84	6·37	4·92	9·7	6·9

JUNE RAINFALL IN MADRAS.

No. of Stations.	DISTRICTS.	First Half.	Second Half.	Mean average, month.	No. of rainy days.	Mean average rainy days.
11	CIRCARS—Ganjam (Littoral).	0.73	8.80	5.51	7.7	7.3
17	Vizagapatam do. ...	2.63	7.36	4.91	10.5	7.2
14	East Godavari Plains ...	3.10	4.84	5.36	11.6	6.6
8	West Godavari ...	5.15	3.35	5.46	9.4	6.5
13	Kistna ...	1.43	2.56	4.73	7.4	6.6
16	Guntur ...	0.85	3.52	3.33	6.8	5.2
15	DECCAN—Kurnool ...	2.85	0.96	2.54	5.9	4.7
11	Bellary ...	1.60	1.02	2.59	5.6	4.8
14	Anantapur ...	2.02	0.54	2.09	4.5	3.8
11	Cuddapah ...	1.23	0.58	2.25	4.8	4.2
16	CARNATIC—Nellore ...	1.14	1.12	1.57	4.3	3.1
14	Chingleput ...	0.76	2.36	1.87	5.4	3.6
1	Madras ...	0.26	3.45	1.97	7	4.2
17	South Arcot ...	2.00	1.97	1.72	5.1	3.1
13	CENTRAL—Chittoor ...	1.61	0.73	2.24	5.1	4.1
16	North Arcot ...	2.77	1.78	2.21	6.9	3.9
21	Salem ...	2.90	0.51	2.04	4.9	3.5
20	Coimbatore ...	1.54	0.84	...	4.5	...
1	Kollegal ...	3.74	0.50	2.64	6.0	4.6
16	Trichinopoly ...	1.74	0.42	1.36	2.8	2.2
11	Pudukota ...	0.88	1.01	1.72	2.8	2.8
26	SOUTH—Tanjore ...	0.68	0.67	1.42	2.2	2.3
15	Madura ...	0.89	0.79	1.38	3.3	2.8
20	Ramnad ...	1.25	0.29	0.89	2.4	1.7
21	Tinnevely ...	0.48	0.75	0.91	3.1	2.2
6	HILLS—Ganjam Agency ...	1.11	10.98	8.92	6.3	11.2
11	Vizag Agency ...	2.73	13.01	8.42	11.2	11.4
5	East Godavari Agency ...	3.6	4.42	6.91	10.4	8.5
1	Kodaikanal ...	4.79	1.59	4.11	14.0	9.3
1	Yercaud ...	2.55	0.73	5.30	8.0	8.3
11	The Nilgiris ...	7.10	6.44	10.12	15.9	13.4
1	Anamalais ...	20.20	22.07	...	2.6	2.1
10	WEST COAST—Coorg ...	10.46	12.30	22.73	18.5	20.5
11	South Kanara ...	22.43	12.19	39.65	27.4	24.5
25	Malabar ...	20.52	9.57	31.43	22.5	23.3
6	Cochin ...	21.01	6.78	27.98	23.8	23.1
9	Devikulam ...	12.70	12.05	24.89	19.6	19.9
14	Kottayam ...	20.58	8.45	28.41	27.3	23.9
21	Quilon ...	17.14	6.74	20.55	24.0	20.5
31	Trivandrum ...	6.22	3.57	10.98	14.0	4.3

JULY RAINFALL IN MADRAS.

No. of Stations.	DISTRICTS.	First Half.	Second Half.	Mean average, month.	No. of rainy days.	Mean average rainy days.
16	CIRCARS—Ganjam (Littoral).	2.41	4.78	7.22	10.1	10.1
17	Vizagapatam do. ...	2.61	3.31	5.41	10.7	9.3
14	East Godavari Plains ...	4.40	3.24	6.26	11.6	9.7
8	West Godavari ...	5.59	4.28	6.99	14.2	10.8
13	Kistna ...	4.53	4.23	6.72	14.4	10.4
16	Guntur ...	1.92	2.29	4.48	10.0	7.9
15	DECCAN—Kurnool ...	2.21	3.41	4.28	10.4	8.0
11	Bellary ...	1.37	3.13	2.74	9.4	6.3
14	Anantapur ...	0.44	3.06	2.42	5.8	4.8
11	Cuddapah ...	1.38	2.85	3.23	7.7	5.7
16	CARNATIC—Nellore ...	1.84	1.30	...	7.4	...
14	Chingleput ...	1.03	1.36	3.64	6.1	6.5
1	Madras ...	0.88	0.29	2.46	6.0	5.1
17	South Arcot ...	1.09	1.19	3.19	5.9	5.2
13	CENTRAL—Chittoor ...	1.31	1.15	3.04	6.0	5.6
16	North Arcot ...	0.87	2.00	3.58	4.8	5.6
21	Salem ...	1.36	1.19	2.73	5.9	4.7
20	Coimbatore ...	0.63	0.76	...	3.4	...
21	Kollegal ...	2.12	0.43	2.46	8	5.2
16	Trichinopoly ...	0.23	1.50	1.82	2.4	2.7
11	Pudukota ...	0.23	0.71	2.37	2.0	3.7
26	SOUTH—Tanjore ...	0.42	1.00	2.03	3.1	3.4
15	Madura ...	0.30	0.36	1.44	2.1	2.7
20	Ramnad ...	0.11	0.62	1.26	1.1	2.0
21	Tinnevely ...	0.07	0.42	0.70	1.3	1.7
6	HILLS—Ganjam Agency ...	3.57	5.73	12.06	13.7	15.4
11	Vizag do. ...	5.15	8.56	13.98	17.5	18.1
5	East Godavari Agency ...	3.87	6.05	10.65	14.8	12.9
1	Kodaikanal ...	0.95	2.68	4.32	12.0	9.9
1	Yercaud ...	6.13	3.25	7.13	15.0	11.1
11	The Nilgiris ...	9.09	7.56	14.46	19.5	15.8
1	Anamalais ...	29.58	25.02	...	30	...
10	WEST COAST—Coorg ...	24.38	19.10	32.94	30.0	23.7
11	South Kanara ...	39.46	18.66	45.91	30.5	28.0
25	Malabar ...	24.35	17.27	32.24	29.8	25.4
6	Cochin ...	20.48	12.91	25.96	29.2	23.8
9	Devikulam ...	14.11	14.81	23.42	24.7	20.0
14	Kottayam ...	18.15	14.56	25.53	28.6	24.1
21	Quilon ...	8.94	8.70	15.60	23.8	19.3
31	Trivandrum ...	1.26	2.97	4.78	10.9	9.2

AUGUST RAINFALL IN MADRAS.

No. of Stations.	DISTRICTS.	First Half.	Second Half.	Mean average month.	No. of rainy days.	Mean average rainy days.
16	CIRCARS—Ganjam (Littoral).	6'82	8'26	8'03	15'6	11'2
17	Vizagapatam do. ...	4'69	3'96	6'51	11'9	10'0
14	East Godavari Plains ...	4'18	2'49	6'19	13'3	9'2
8	West Godavari ...	5'52	3'67	6'83	14'4	10'0
13	Kistna ...	5'38	1'73	6'72	12'6	10'2
16	Guntur ...	3'58	2'12	5'14	9'8	8'1
15	DECCAN—Kurnool ...	1'99	1'64	4'51	7'1	7'8
11	Bellary ...	0'93	0'41	3'54	3'5	6'6
14	Anantapur ...	1'61	0'30	3'22	3'5	5'3
11	Cuddapah ...	2'88	0'37	4'38	6'3	6'8
16	CARNATIC—Nellore ...	1'04	1'34	3'03	4'0	5'4
14	Chingleput ...	2'80	1'34	5'00	7'4	7'9
1	Madras ...	1'98	1'73	4'54	8'0	7'9
17	South Arcot ...	1'69	1'25	5'50	5'2	7'8
13	CENTRAL—Chittoor ...	1'87	0'53	4'29	5'1	6'6
16	North Arcot ...	2'21	0'48	5'40	5'3	7'5
21	Salem ...	4'02	0'81	4'32	6'5	6'7
20	Coimbatore ...	1'65	0'25	...	2'9	...
1	Kollegal ...	3'78	1'33	4'31	8'	6'6
16	Trichinopoly ...	2'40	0'38	3'67	3'6	5'1
11	Pudukota ...	1'76	0'68	4'45	4'	6'5
26	SOUTH—Tanjore ...	1'05	0'97	4'30	3'2	6'0
15	Madura ...	1'90	0'60	2'55	4'0	4'3
20	Ramnad ...	2'50	0'60	2'40	3'5	3'6
21	Tinnevelly ...	0'50	0'16	0'68	1'2	1'5
6	HILLS—Ganjam Agency ...	6'39	7'53	12'41	18'2	16'2
11	Vizag do. ...	7'82	9'66	14'85	17'4	18'8
5	East Godavari do. ...	5'91	4'77	9'71	16'0	12'2
1	Kodaikanal ...	3'24	1'70	6'56	10'0	12'0
1	Yercaud ...	10'47	1'67	10'47	9'0	13'0
11	The Nilgiris ...	4'7	2'19	9'72	12'6	13'8
1	Anamalais ...	13'43	7'95	...	26'	...
10	WEST COAST—Coorg ...	9'31	6'06	17'23	22'6	21'2
11	South Kanara ...	10'15	14'11	27'51	27'0	25'7
25	Malabar ...	8'89	5'50	16'68	19'2	19'7
6	Cochin ...	7'73	4'77	14'18	16'5	18'2
9	Devikulam ...	6'05	3'57	14'31	14'7	16'9
14	Kottayam ...	7'97	6'04	15'45	17'0	20'0
21	Quilon ...	2'27	3'51	9'22	10'1	15'0
31	Trivandrum ...	1'30	0'79	2'54	4'5	6'2

SEPTEMBER RAINFALL IN MADRAS.

No. of Stations.	Districts.	First Half.	Second Half.	Mean average month.	No. of rainy days.	Mean average rainy days.
16	CIRCARS—Ganjam (Littoral).	3'89	4'03	8'09	11'5	10'2
17	Vizag do. ...	2'09	4'70	7'63	11'2	10'0
14	East Godavari Plains ...	1'80	4'09	6'81	11'1	8'8
8	West Godavari ...	1'72	2'66	7'13	8'6	9'1
13	Kistna ...	0'84	6'52	5'96	8'5	8'9
16	Guntur ...	0'59	5'07	5'61	8'1	8'3
16	CARNATIC—Nellore ...	0'04	4'24	4'20	5'2	6'2
1	Madras ...	0'20	2'68	4'86	8'	7'4
14	Chingleput ...	1'47	3'73	5'35	6'5	7'0
17	South Arcot ...	2'46	2'62	6'18	5'9	7'5
15	DECCAN—Kurnool ...	0'32	5'71	6'00	7'7	8'5
11	Bellary ...	2'71	5'11	5'67	9'2	8'2
14	Anantapur ...	1'43	6'23	5'70	9'3	7'5
11	Cuddapah ...	0'85	6'14	5'55	9'6	7'5
13	CENTRAL—Chittoor ...	1'87	6'48	5'34	9'3	7'3
16	North Arcot ...	2'94	6'95	6'78	10'4	8'3
21	Salem ...	2'05	5'59	5'78	9'6	7'8
20	Kollegal ...	0'94	2'21	...	6'	...
16	Coimbatore ...	3'38	2'39	5'18	7'5	6'6
11	Trichinopoly ...	1'63	1'93	5'59	5'5	6'8
1	Pudukota ...	0'68	5'43	6'10	9'	8'3
26	SOUTH—Tanjore ...	1'07	2'44	4'72	5'3	6'5
15	Madura ...	2'33	2'34	3'64	7'7	5'5
21	Ramnad ...	0'79	1'59	2'73	4'0	4'3
21	Tinnevelly ...	0'71	0'65	1'02	3'1	2'0
6	HILLS—Ganjam Agency ...	3'98	2'78	9'68	9'7	13'3
11	Vizag do. ...	2'87	3'84	10'00	10'4	13'6
5	East Gadavari ...	1'82	4'31	8'83	10'8	9'7
1	Kodaikanal ...	4'94	4'04	6'81	12'	12'3
1	Yercaud ...	3'23	10'47	10'38	16'	11'8
1	The Nilgiris ...	2'93	4'32	7'77	13'8	12'8
11	Anamalais ...	3'41	10'56	...	19'	...
10	WEST COAST—Coorg ...	3'05	5'99	7'73	15'1	13'6
11	South Kanara ...	2'56	11'80	12'45	15'5	16'0
25	Malabar ...	0'91	12'42	8'22	14'2	12'7
6	Cochin ...	0'30	13'63	8'43	13'3	12'0
9	Devikulam ...	2'36	2'48	10'31	13'8	13'9
14	Kottayam ...	1'07	14'88	10'19	15'0	13'9
21	Quilon ...	1'37	11'64	7'44	14'3	11'3
31	Trivandrum ...	0'40	8'94	4'25	12'2	6'4

N. B.—Rainfall figures in inches.

AMERICAN LETTER

ACROSS THE PACIFIC No. V.

DEAR FRIENDS,

In the same manner as I watched the Rameswaram temple tower from the Ceylon steamer, I kept gazing on at the gradually receding majestic form of the snow-clad "Fuji" from the upper deck of the "Siberia Maru" as she left Yokohama harbour and was directing her course to the far-west, from the far-east, but in an easterly direction. Again a period of life at sea from the evening of the 9th December. The voyage on board the "Siberia Maru" was far more enjoyable than on the 'Suwa' since in this huge liner, there were numerous facilities for passengers to pass their time; there is a big library of books of various kinds and these are daily given on loan to those who wish to read; there are numerous deck games and in addition the ship's officers gave a cinema exhibition of Japanese views and history twice a week after evening-meals, in the big dining saloon, where all cabin class passengers were allowed to assemble. We had besides these, two actual performances put on the stage by the crew with curtains and full dress. Of course there were also numerous music grinders in the 1st and 2nd class drawing rooms for use at odd hours. I had many fellow Japanese passengers this time, some going to Hawaii and some to the United States; and in addition, we had some Russians, a few French, a sprinkling of Germans, a couple of South African burghers and some Jews. All of them were very courteous to me, and I enjoyed their company very much and had nothing to complain. Occasionally when I found time weighing heavily and the daily routine monotonous, I used to go round the ship walking on the deck from one to the other watching the vacant ocean and gazing at the huge trail of white, creamy foam behind the ship. I cannot recount what all thoughts did or did not pass through my mind during those hours of silent observation and meditation, though one idea and that a sure one, was always prominent, viz., that every revolution of the steamer's propeller took me further and further away from home. Oh! how unconcernedly and with what defiance does this huge leviathan of a steamer dash through the vast expanse of surging water. We had some bad weather and the sea was squally for a couple of days at the beginning and even this huge liner was tossed about and waves dashed their waters through port holes into the cabins. I was very much upset one night, when the sea appeared to me, of course, rather rough, and to

add to my terror a fellow passenger was thrown down into the floor of the cabin from his bed, due to the heavy listing of the steamer. The next day the ship's purser assured me these were only the peaceful pranks of the Pacific. Peaceful and pacific indeed! On the 14th December, we passed the antipodal meridian and I was surprised to hear from the crew that we shall have two days to be reckoned as the 15th December. The rule appears to be that ships passing the meridian from America to Japan gain a day, and those from Japan to America lose a day and so we had 2 days reckoned as the 15th December! By the evening of the 17th the blue mountain ranges of the Hawaiian Islands came into view and by the following morning the good ship entered the beautiful and placid harbour of Honolulu in glorious warm and sunny weather. "The Stars and Stripes for ever" ran the cry from some American passengers on board when a few launches approached the steamer with the Government Health Officers floating the American flag. The Hawaiian Islands form an outpost of the U. S. A. in the Pacific and I saw for the first time American officers in uniform exercising their power; they looked very grim and serious but were perfectly courteous. The steamer halted at Honolulu for 10 hours and of course some of us took advantage of this to see something of the island. Four of us—one Japanese student going to California, two South African passengers (husband and wife) and myself engaged a taxi and went round the Island for about 5 hours. The scene all round, the natural beauties of the tropical island, the luxuriant tropical vegetation in the hills and valleys, all defy description and can never be forgotten, when once seen. Tourists call the Hawaiian Islands the Paradise of the Pacific; the group is made up of 7 or 8 islands and of these the biggest is Hawaii, which contains the lofty Mouna Kea, the highest Island mountain in the world. 14,000 feet above the sea and the active volcano "Kilanea." Oh! how remarkable are nature's ways; that in the broad expanse of over 5,000 miles of water, there should not only be a small area of land like an oasis in a big desert, but that in such an oasis there should arise haughty and lofty mountain peaks rising to 14,000 feet. The city of Honolulu is not in the island of Hawaii but in the island of Oahu, second in size to Hawaii and 300 miles to the north-west of it. It is a beautiful semi-tropical city with all the look of a modern Americanised centre, with up-to-date buildings, roads and avenues. The population is a mixture of colored and colorless nationalities, a regular melting pot

in the Pacific for the amalgamation of the different race, of people. There is a good sprinkling of Japanese and Chinese the latter appearing to monopolize a good number of the eating houses and stores in the locality. Most of the familiar tropical trees are found here, and our driver-cum-guide was actually explaining to us the different trees and their scientific names—such as *Poinciana*, *Santalum*, *Erythrina*, *Artocarpus* etc. We saw numerous and extensive pine apple, banana, and sugarcane plantations, coconut groves, mango and papaya gardens and many such things during our stroll, for over 30 or 40 miles round. The beach along Honolulu is always crowded with men and women enjoying their surf bath and water sports; I asked our guide whether there were not sharks in the water that might be dangerous to sea bathers, to which he replied 'there are no sharks in the sea but there are quite a few land-sharks on the island whom you have to be careful about'. He further added that they were only a few compared to what we may hope to find in the mainland (U. S. A.)! The taxi guides appear to be well versed in everything and talk good English and I questioned myself whether some of them are not themselves the land sharks, he spoke about.

By about 7 P.M. the same day, the 'Siberia Maru' left Honolulu harbour and took a north-easterly direction towards the mainland of America, and again we returned to the monotony of the voyage; but this was to a great extent relieved by the consolation that the destination was fast approaching. On the morning of the 24th the long ranges of the 'Sierras' of California came in sight and by midday with bright and sunny weather, and with a chill breeze, we were fast approaching the 'Golden Gate' leading into the largest land-locked harbour in the world—San Francisco bay. Long before we approached the harbour gate, the immigration officials ordered to assemble in the dining saloon with their papers in different groups—Chinese and Japanese, Americans and Aliens. With my passports and other papers I took my place in the portion set apart for aliens showing a huge label. But fortunately I was not alone; there were a few English, German and Russian aliens also, and some of these were describing their past troubles with immigration officers, the inconveniences to which some aliens are put to, and all that; incidentally—Angel island—the place to which aliens are sent for days on quarantine, was pointed out to me at some distance. This was sufficient to upset my already un-

balanced mental equilibrium. Even as the ship was some miles away from the harbour, my mind was filled with conflicting ideas and had become uncomfortably excited. I had satisfaction and pleasure at the thought I should be in *terra firma* soon; but, side by side several ominous thoughts haunted me concerning my unknown future in this new land to which my apparently "mad and rash adventure," had brought me. "Where shall I go," Shall I find any one to help me? Will the sharks I heard of in Honolulu scent me as a green horn and try to do me harm?" These were the thoughts I was experiencing at the time. While in this mood, an elderly man with a grim official uniform and with a bundle of papers accosted me and demanded my passport and connected papers. Though outwardly he appeared very serious and grim he was very courteous and was satisfied with my credentials, but only wanted some reference to an American resident or my local address about either of which I had no idea at all as yet. But luck seemed to favour me. An entomologist friend of mine to whom I had written about my trip but whom I never expected at this juncture stepped in and introduced himself to me and offered himself as referee to the Immigration Official. I cannot express adequately the satisfaction and happiness I felt at this God-send. I was only able to gauge the magnitude of the services this friend rendered me after a day when I was comfortably settled in my lodgings. Being an important and well known official in the city he was able to get me go through the formalities of customs examination etc., very soon, and by the time I was leaving the ship with my friend there were many passengers still waiting to undergo the ordeals and it was already six in the evening by then.

Thus on Christmas eve of 1926 with a flood of election lights all round and in the midst of an ocean of humanity I set my foot on the soil of the Antipodes—the realisation of a wild dream of the past few years. The first tremendous impact of this city at the gate of the great continent was terrible on my mind. I was dazzled, bewildered, amazed and practically nonplussed at my surroundings—it was all a dream land to me that night, as I gazed from the sixth storey of my hotel on the traffic and the activity in the streets below. Streams of automobiles with green and red lights huge skyscrapers with advertisements staring you in 6 and 7 feet

letters—some suddenly appearing and disappearing in floods of light, some revolving and others projecting in terrible searchlights. My experience alone can realise the effect produced on a perfect stranger on the first day of his stay in a city like this.

SAN FRANCISCO, }
16th June, 1927. }

T. V. R.

MADRAS FORECASTS.

Paddy. First Report:—The area in Madras is 13.2 per cent of the total area in India. The area sown up to the end of September is 7,443,000 acres,—an increase of 7.5 per cent over last year. This increase is mainly in Tanjore and in the Circars. Deccan, Nellore, Chittoor, North Arcot, Ramnad and Malabar have shown a reduction.

Harvest of first crop is over on the West Coast and has just commenced in Tanjore, Madura, and Tinnevelly. The yield on the West Coast is slightly above normal. It is expected to be normal in Tanjore and Madura, while in Tinnevelly the effects of water scarcity will be visible. In other districts the condition of the crop is fairly satisfactory.

Sugarcane. Second Report:—Madras contributes 4.3 per cent to the total area in India. Up to the end of September 101,800 acres are estimated to have been planted to sugarcane. There is a decrease of 7 per cent this year. The reduction is general and is due to the partial failure of the North East Monsoon and consequent scarcity of water at planting time. The condition of crop is fairly good except in South Arcot and Chittoor where it has slightly suffered from draught.

The estimated yield of raw sugar (Jaggery) is 287,400 tons.

Cotton. Second Report:—Madras raises 10.5 per cent of the total area in India. The area sown up to the end of September is estimated at 680,300 acres—a decrease of 7 per cent. The area in the south and central districts relates partly to last year's

crop and partly to new sowings. Madura, Ramnad, Tinnevelly and Trichinopoly have shown a large reduction in the last year's crop. August rainfall was poor in Bellary and the area went down. The rest of the Deccan showed an increase due to timely rains.

In Kistna owing to late rains, sowings are late by a fortnight.

The condition of the crop is fair.

Gingelly. Second report:—12.6 per cent of the total area in India is found in Madras. Up to the end of September 557,700 acres are estimated to have been sown. This is an increase of 45 per cent over last season. The increase is due to timely rains and occurs in most districts. West Godavari, Chingleput, South Arcot and North Arcot, Salem, Coimbatore, and Trichinopoly alone show 227,000 acres against 94,100 of last year.

In the Circars the early crop was harvested. The yield was below normal. This was due to water—logging and damage by rains in Ganjam and Vizag and to insect pests in Godavari (East and West.)

Drought affected the crop in Bellary, Chittoor and North Arcot. In other districts the crop is fair.

Groundnut. Third Report:—11.3 per cent of all area in this country is found in Madras. The area sown up to the end of September is 2,813,900 acres or an increase of 42 per cent. The increase is general and is due to good rains and remunerative prices in recent years. The greatest increases are in Guntur, the Deccan, South Arcot, North Arcot and Trichinopoly. In Guntur Kurnool, Bellary, Chittoor, North Arcot, and Coimbatore the area sown has exceeded the final area sown in any previous year. In Guntur the area has risen from 2,500 acres in 1918-19 to 120,000 acres this year.

The harvest of summer crop is over.

Heavy rains have affected Ganjam, and Vizag and drought Bellary and South Arcot. Elsewhere the condition of crop good.

DEPARTMENT'S WORK—OFFICIAL DIGESTS. No. 58 & 59.

APRIL.

Weather.—April was generally characterized by bright weather except in the last week, when there were heavy rains in Ramnad and Tinnevely and good showers in Coimbatore, Trichinopoly, Tanjore, Madura and the Nilgiris, and on the West Coast.

Irrigation supplies were adequate only in Kistna, Tanjore, Tinnevely and the Nilgiris, and generally inadequate elsewhere.

The rains were useful in promoting the growth of good second flush of cotton in the central districts and the south. Standing crops were adversely affected in parts of Bellary, Nellore, Chittoor, and Coimbatore. Dry crops in parts of West Godavari, Guntur, and Trichinopoly were not satisfactory. Standing crops were generally fair in other districts.

Prospects were not satisfactory, especially in parts of the Deccan.

Stations. Anakapalle.—The Vizagapatam District Co-operative Conference was held here this year and the visitors came to know very intimately of the nature of the work in progress and the improvements, possible thereon, in the District.

Samalkota.—Here the sugarcane harvest was completed. J.247 which ripened late and was under a large area, gave 10,462 lbs. of jaggery per acre. The line planting of canes showed its superiority over broadcast and the use of Chattanooga cane mill showed an increased extraction of 4.6 per cent juice.

Hagari and Nandyal.—An unusually dry month was experienced. Yet the usefulness of an improved heavy plough like the S. A. E. Gallows Plough was clearly visible, in that 21 acres at Hagari and 15 acres at Nandyal could be ploughed.

At the *Pelakuppam* groundnut station 1.60 inches of rain was received which benefitted the standing crops and helped in ploughing and the sowing of groundnut and cholam for fodder.

A little rain received at *Palur* facilitated ploughing and sowing of dhaincha.

At the *Kasargod* coconut station the crop harvested during the month was smaller than last year. This was due to prolonged drought. Female flowers showed much reduction and marked shedding was noticed.

In Tinnevely, cotton selection work was done by the Deputy Director until 1923 when it was taken up by the Cotton Specialist and an Assistant was posted to *Koilpatti*.

Now the whole station has been handed over to serve as the Cotton Breeding Sub-station. Here 10 inches of rain was received in the month, season picking was over and plants flushed a second time.

At the potato Experiment station, *Nanjanad*, the main crop planted between 15th and 25th March had not germinated upto 30th April on account of drought.

At the Coimbatore *College Farm* the highest acre yield of Kapas (seed cotton) was obtained from Cambodia farm mixture (irrigated) and was 948 lbs., while Uppam (dry) gave an average acre yield of 431 lbs., over an area of 30.90 acres and Uppam strain 34.779 lbs., an acre.

At the Pomological Station, *Coonoor*, plums of the varieties Hale, Alu Bokhara and Rubio were producing heavy crops and quinces, apples, figs, and persimmons were fruiting satisfactorily.

Cattle Farms.—Lack of rain was the feature of the month. Fodder problem was severe. Silage was largely fed. Of the cows that dried off in the month a daily average of 14.5 lbs. (8½ Madras measures) of milk was credited to an Ongole cow which milked for 234 days in this, her 5th lactation (or calf) period. One buffalo cow gave 15 lbs. on an average over a period of 268 days, and 15.3 lbs. of milk was the average of a Bangalore cow over a period of 322 days in her first lactation period.

Demonstration.—Exhibitions were held in Madura in connection with the Provincial Co-operative Conference, in Kariangla during the Potali Chendoo Utsavam, in Cuddapah during the Health Week, at Tiruvadi in Tanjore District, during the Sapthasthanam festival and at Manchovla and Kavalai. In all these, the Department took active part; several exhibits were put up and demonstrations and lectures given.

The District Officers visited 976 villages during the month, and engaged themselves in demonstration work in manifold directions.

77 iron ploughs—36 in Madras and 41 in Madura circles and 30 bags of sunn-hemp seeds in Madura, were sold. 24,856 lbs. of paddy were distributed from Aduturai, 19,943 lbs from the College Farm and 18,757 lbs. from Samalkota.

Demonstration work on the use of calcium cyanamide, an artificial nitrogenous fertiliser, to be undertaken by Mr. Frattini was arranged in the West Coast Circle:

As the result of operations conducted under the Pest Act in 1926, it was ascertained that 15,411 palmyra trees were operated upon and saved from death in Godavari, Kistna and Guntur and the number of affected trees has been considerably reduced.

The *Spodoptera* campaign started in the Kole area of Ponnani, in Malabar was brought to a close and a new one was begun in dry sown paddy areas of Chirrakal, Kottayam, and Palghat tracts. It was also proposed to continue the campaign with the villages of Elakulli, Kollengode, Alathur, and Kongod as centres.

An attempt was made in the Nilgiris to interest the Todas in the cultivation of potato. A trial with short duration varieties of paddy—G.E.B. 24 and C.O. 3—met with success in Guntur. Under the Peddakancharla tank G.E.B. 24 gave 4500 lbs. grain per acre and C.O. 3, 3,000 lbs. though planted late in August while 800 lbs alone was obtained from the local paddy.

In the villages of Edayanoor and Thondamanatham in the Madras Circle 18 and 16 Konkan ploughs respectively were in use. A good loose box shed for the preservation of cattle manure was also built by the ryots.

Some 200 acres were sown with sunnhemp in the Kumbum valley in the Madura Circle and arrangements were made to stock wild indigo seeds near Melur.

During the month 41 cows and 60 buffaloes were served by Government stud bulls stationed in different centres.

MAY.

There were good showers in Coimbatore, Madura, Ramnad, Tinnevely, Malabar, and the Nilgiris in the first week of May. Showers were also received on the West Coast and the Hills in third week and in Malabar in the last week. On the whole, the hot weather showers in May were satisfactory only in West Godavari, South Arcot, Salem, Coimbatore, Madura, Ramnad, Tinnevely and the Nilgiris. The rainfall was good and well distributed in Salem. It was in defect, in the other districts, especially in North Arcot.

Irrigation supplies were adequate only in Kistna, Tanjore Tinnevely, Malabar, and the Nilgiris and generally inadequate elsewhere.

Standing crops were generally fair. The rains were useful in promoting the growth of a good second flush of cotton in the South. Tinnevelles cotton put forth fresh flushes, so profusely that they resembled the first crop in some places.

Prospects continued to be satisfactory, especially in parts of the Deccan.

Palur.—At Palur a little rain was received. There was a shortage of water for crops. Junior hoe was freely worked between rows of canes and for eradicating weeds. The use of stone roller to break clods in fields effected a saving of Rs. 1-6-0 an acre over the local method of breaking with sticks which costs Rs. 4-8-0.

Cattle Farms.—Welcome rain was received at Hosur, on other farms there was still shortage and anxiety.

One cow in the Coimbatore herd gave in the first lactation 15'3 lbs. milk a day over a period of 325 days.

Demonstration.—An exhibition of buffalo bulls was given at the exhibition at Ponnur (Guntur District). Other exhibitions held were at Nerur (Trichy District), Kannurseri (Sathur Taluk), Pudukudi (Srivaikuntam Taluk), Tiruvadanur (Melur Taluk), and at Punganur and Madanapalle (Chittoor District).

The district staff visited 962 villages in the month. Konkani ploughs were sold in Punganur. Seeds of improved strains of Cambodia from the Cotton Station, Coimbatore were distributed to villages in Dindigul and Usilampatti and improved strains of karungani introduced into black soil areas of Tirumangalam and Dindigul. 8912 lbs. of paddy seed were supplied from Aduturai, 27,158 lbs., from Maruteru, 122,78 lbs., from Coimbatore. Very strenuous demonstration work of different kinds was proceeding in all districts.

48 cows and 38 she buffaloes were served by stud bulls.

NOTES.

Co-operative Development in the United States. It is estimated that in 1900 there were approximately 2000 farmers' business organisations functioning in the United States. Between 1900 and 1925 the number of active associations increased to about 12,000 and the purposes for which the associations existed also increased.

At the close of 1925 there were approximately 12,000 functioning associations, including 40 federations, 80 centralised associations, 35 sales agencies, 50 bargaining associations, and nearly 10,000 independent local associations. The number of associations marketing dairy products increased from 1600 to 2200; the number of associations handling grains from 100 to 3,400; the number of livestock shippings association from less than 100 to 1,800; fruit and vegetable marketing associations from 100 to 1,300. There were also formed nearly 100 associations for marketing wool, and 70 for marketing poultry and poultry products.

It is reasonable to assume that the business done in 1900 amounted to less than 200,000,000 dollars. This figure is significant in comparison with 2,400,000,000 dollars which is the estimated amount of business by farmers associations for 1925. The 1900 figure is even more significant in the light of the fact that several of the present day associations report sales of more than 50,000,000 dollars a year.—(News Bulletin of the Markets and Migration Department Federal.)

(From the Agricultural Gazette of New South Wales for September 1927.)

A new cattle disease.—From a Copenhagen message to the Scottish Farmer it is understood that a new disease has been discovered at Halling, Alen (Norway) attacking both the hoofs and mouths of the animals. The ailment is distinct from foot-and-mouth disease. In the primary stages it is said to resemble eczema and causes great pain. It is believed that in some way the disease is connected with damp.

Sweet and Sour Silage.—"The production of sweet and sour silage depends chiefly upon the temperature of the material in the pit at the time of making and this, in turn, is dependent upon the access of air." Says H. C. Stening in the Agricultural Gazette, of N. S. Wales. "When the pit is filled and pressure is applied rapidly so that the air be excluded from the material the temperature does not rise allowing vigorous action of acid-producing bacteria, resulting in the formation of volatile and fixed acids which cause sour silage. "Sweet silage" on the other hand, is produced when the pit is filled slowly before being compressed. In this case the air has comparatively free access to the material and a high temperature is induced resulting in the destruction of acid producing bacteria and consequent production of only relatively small amount of acids."

Norway.—One third of the total population of Norway live on the land. The soil so far as potatoes and usual corn crops were concerned was fully competitive with the most highly developed farming countries anywhere. Wheat and potato crops have doubled in production, the increase of the oat crop being about 50 per cent but rye has declined during the past 25 years. This increase in corn is due to the cultivation of large areas of new soil owing to the bounty on corn given by the Government.

The Making of Men.—"When a man leaves school or colleges his education is not complete—it is merely beginning." Says the Times. "Other things being equal, the University man should have a better foundation on which to build than his rival straight from school, but if, in after-life, he neglects his opportunities, that foundation alone will not carry him very far. There are born leaders of men and there are born administrators but we cannot trust to a sufficient supply from that source and it is desirable that men should be trained,"

"The tragedy of our time is that in every sphere of life many good men of natural ability are condemned to comparative obscurity by the jealousy and ignorance of those who have it in their power to keep them back. It is a fallacy to suppose that good men always come to the top. Some men are broken by the way."

What an Agricultural College should be. The ideal would be to have a farm as close to the College as possible. The advantages of that are obvious. The aim of the College is to impart knowledge to the students which they could not get at home namely the scientific principles underlying agriculture and the economics of different ways of farming. It is not the work of the college to teach a batch of 200 students how to turn turnips—work they could learn at home. A college farm is very necessary for demonstration purposes but the greater part of the students' time must be spent in the class room and the laboratory. (Principal Paterson in *The Scottish Farmer* of 6th August 1927).

An American Puzzle. The ratio of cattle population to the human population has been steadily declining in U. S. A. since 1900, until to-day it is about 50 per cent of what it was in that year. The official figures are 0.89 (1900), 0.67 (1919), 0.63 (1920), 0.55 (1925) 0.49 (1927).

Opinions differ. Some believe vegetarianism is spreading; others, that it is due to improvement of milch breeds resulting in a fewer number of animals being maintained,

(C. F. Andrews in the "Servant of India" dated 6-10-27.)

DEPARTMENTAL NOTIFICATIONS.

Gazette Notifications:—Mr. S. Sundararaman, is confirmed as Government Mycologist in place of Dr. Mac Rae.

Mr. C. Narasimha Ayyangar is confirmed as Lecturer in Engineering from 3rd August 1927.

Messrs. C. Ramaswami Nayadu, Assistant Director of Agriculture and V. Ramanatha Ayyar Assistant Cotton Specialist are confirmed in their posts from 1st October 1927 and 1st August 1927 respectively.

Mr. R. C. Broadfoot on return from leave is posted as Deputy Director of Agriculture 6th Circle and Mr. C. Narayana Ayyar on relief, as Assistant Director of Agriculture 6th Circle.

Mr. C. R. Srinivasan, Assistant Paddy Specialist, Aduthurai, leave on average pay for one month and three weeks from 23rd August 1927; Mr. Samuel Jobitha Raj, Assistant to officiate as Assistant Paddy Specialist.

Mr. K. S. Viswanatha Ayyar, Assistant Agricultural Chemist, leave on average pay for one month from 26th September 1927.

Mr. T. V. Ramakrishna Ayyar, Assistant Entomologist is permitted to return to duty on 1st October 1927.

Mr. Y. G. Krishna Rao, Assistant Director of Agriculture 4th Circle leave on average pay for four months. Mr. K. Gopalakrishna Raju is posted to 4th Circle to officiate.
Non-Gazetted Appointments, Promotions, confirmations etc.:—

Messrs. V. N. Krishna Rao and R. Sankara Ayyar, officiating assistants to the Cotton Specialist to be on probation from 1st April 1927 Mr. N. Kesava Ayyangar to officiate as Assistant to the Cotton Specialist.

Mr. P. Rajaratnam to be Upper Subordinate 5th grade probation under the Deputy Director of Agriculture, Live Stock Hosur.

Mr. M. Sanyal Raju, Assistant, G. A. C. Section to be Assistant, Agricultural Bacteriological Section on probation.

Messrs. C. Raghavendra Achar and M. Sundaram to officiate as assistants to the Agricultural Chemist.

Mr. O. Narasimha Acharya to be assistant to the Lecturing Chemist.

Mr. V. R. Sundararaman to be temporary assistant to the Cotton Specialist from 10th August 1927.

Mr. T. K. Krishnamurthi to be assistant to the Millets Specialist on probation. Messrs. M. Satyanarayana, V. Satagopan, M. Eggiaswami Ayyar, S. Varadarajulu Nayadu, N. C. Tirumalai Ayyangar, P. S. H. Narayanaswami Nayadu, C. S. Krishnaswami Ayyar, P. A. Venkateswara Ayyar, and M. R. Balakrishna Ayyar are confirmed in their respective appointments.

The following promotions are ordered from the date noted:—

Mr. C. V. Seshacharya from 3rd grade to 2nd from 8th June 1927.

Mr. S. Kasinatha Ayyar from 4th to 3rd grade from 1st April 1927.

Messrs. L. Narasimacharya, B. Shiva Rao and G. Rajagopal Mal from 4th grade to 3rd grade from 8th July 1927 and Mr. C. V. Ramaswamy Ayyar to 3rd grade from 1st August 1927.

From 5th to 4th Grade:—Mr. T. K. Balaji Rao, from 1st April 1927; Mr. M. P. Kunhikutti from 8th June 1927.

Mr. P. Janakirama Ayyar, Assistant Demonstrator to Upper Division 5th grade from 1st August 1927.

Transfers:—Mr. K. T. Bhandari to Hospet Third Circle; Mr. M. V. Raghava Rao to Agricultural College as Assistant Lecturer and Mr. S. V. Doraiswamy Ayyar to Agricultural College as Assistant Lecturer. Mr. M. V. Narasimha Sastri to Guntur as Assistant Manager *vice* M. Alaghiriswamy transferred to Chintaldevi, Mr. C. S. Krishnaswamy Ayyar from Tirupattur to Palur Farm, Mr. P. Janakirama Ayyar to be in additional charge of Tirupattur Circle, Mr. Y. Venkateswara Rao Assistant Manager of Guntur, to be Assistant Demonstrator, Masulipatam, Messrs. V. Krishna Rao and K. Ramanathan, Demonstrators 5th Circle to work under the Assistant Cotton Specialist, Koilpatti.

Leave etc.:—*First Circle*. Mr. K. Suryanarayana, Assistant Demonstrator, Anakapalle, leave on average pay for one month from 10th September 1927, Mr. S. Suryanarayana, Assistant Demonstrator, Bobbili, leave on average pay for one month from 10th October 1927.

Second Circle:—Mr. S. Sithapathi Rao, Assistant Demonstrator, leave on average pay for three weeks from date of relief. Mr. S. Ramachandran, Manager, Guntur, leave on medical certificate for 45 days.

Third Circle:—Mr. K. Ramanatha Ayyar, Manager, extension of leave on average pay for three months. Mr. Subbarao Naidu, Assistant Demonstrator, Allagada, leave on average pay for 20 days from 14th September 1927. Mr. M. Krishnaswamy Ayyangar, Assistant Manager, Nandyal, leave on average pay for 10 days from 22nd September 1927. Mr. K. L. Ramakrishna Rao, Assistant on cotton work Hagari, leave on average pay for 15 days from 27th October 1927.

IV Circle:—Mr. M. C. Krishnaswamy Sarma, Assistant Manager, leave on average pay for three months and 9 days from 23rd September 1927.

V Circle:—Mr. L. S. Natesa Ayyar, Demonstrator, leave on average pay for two months from 16th August 1927 preparatory to retirement.

VII Circle:—Mr. P. A. Kunhiraman Nambiyar, Assistant Manager, extension of leave on average pay for two months. Mr. M. K. Nambiyar, Headmaster, Taliparamba school, leave on average pay for one month.

Mr. A. Gopalan Nayar, demonstrator, leave on average pay for one month and 10 days from or after 25th September 1927 on relief by Mr. A. P. Balakrishna Nayar, Mr. V. K. Kunhunni Nambiyar, demonstrator leave on average pay for one month from or after 7th November 1927.

Curator's section:—Mr. S. S. Katchapeswara Ayyar demonstrator leave on average pay for three months from 21st September 1927, Mr. K. Govindan Nambiyar assistant manager, leave on average pay for 15 days from 25th October 1927.

Live stock:—Mr. K. Ramanujacharya manager extension of leave on medical certificate for four months.

Superintendent's section:—Mr. V. T. Subbaya Mudaliyar Manager leave on average pay for 11 days from 3rd August 1927. Mr. K. M. Jacob, Manager leave on average pay for 4 days from 15th August 1927 and leave on average pay for 15 days from 26th October 1927.

M. S's section:—Mr. P. Krishna Rao Assistant leave on average pay for one month from 3rd August 1927.

P. S. Section:—Mr. T. Lakshmipathi Rao, Assistant. Manager, Maruteru, leave on average pay for one month from 15th October 1927. Mr. N. Subramanyam, Manager, Aduthurai, leave on average pay for 10 days from 25th October 1927.

G. L. C. section:—Mr. M. Rajagopala Ayyar, Assistant, leave on average pay for 30 days from 29th August 1927.

G. S's section:—Mr. P. N. Krishnan, Assistant, leave on average pay for 13 days from 19th September 1927, Mr. T. V. Subramanya Ayyar, Assistant, leave on average pay for three months from date of relief. Mr. M. S. Kylasam to officiate.

G. M's section:—Mr. P. S. Suryanarayana Ayyar, Sub Assistant, leave on average pay for 15 days from 30th September 1927.

Artists' section:—Messrs. K.R. Ramamurthi Ayya, C. Ranganatha Mudaliar and M. Singara Royan leave on average pay for one month from 3rd August 1927, 22nd August 1927 and 1st October 1927 respectively.

REVIEWS.

The Indian Labour Review.

We welcome into the ranks of Journalism '*The Indian Labour Review*' a monthly devoted to the interests of all workers. We congratulate Mr. Ernest Kirk on the new venture. As a distinguished member of the Theosophical Society a world wide organisation whose motto is "Brotherhood of man", Mr. Kirk is best fitted to edit this journal on behalf of labour. He has been long connected with labour and as an Irishman has studied the woes of labour not only in his native land but in other countries as well. We hope that, guided by the principles for which Mr. Kirk stands viz; constitutional agitation and harmony amongst different sections of the population, Indian labour will considerably advance and gain their rights and privileges which they now know not of. We hope that workers in India will profit by the experience of fellow workers in England and other countries in the west and always be led by such selfless men as Sir M. V. Joshi and Messrs. Ernest Kirk, B. Shiva Rao, and V. Giri.

Some Indian Dyes

In this small English booklet of 17 pages, Mr. C. Balaji Rao condenses a mass of useful particulars about Indian plants which yield materials for dyeing purposes. Information as to the parts which are used and their preparation is given in clear and simple language. Authorities are quoted wherever possible. Names A to G are dealt with in the present pamphlet. We hope Mr. Rao will pursue his labours further and very soon give the public a completed brochure. The usefulness of the publication and the very modest price of annas six will, we are sure, appeal to a large class of readers, and industrialists. Copies can be had of the author, Extension, Coimbatore.

Hand book of Forest (systematic) Botany for Madras.

BY G. VISWANATHAM, B. A.,

Curator, Forest Museum, Coimbatore.

PRICE 2/8. pp. 130. DEMI 8vo.

This handbook gives in a clear and concise manner the names, distribution and characters of over 200 Forest plants which would enable a layman to identify them without any reference to

experts or investigation in a laboratory. It is also a sure and safe guide to the novice in forestry. We congratulate the author on this production and hope the maiden attempt of this young botanist will receive due recognition and stimulate him to further work in spreading a knowledge of the Forest plants among the lay public. Copies can be had of the Author.

EDITORIAL.

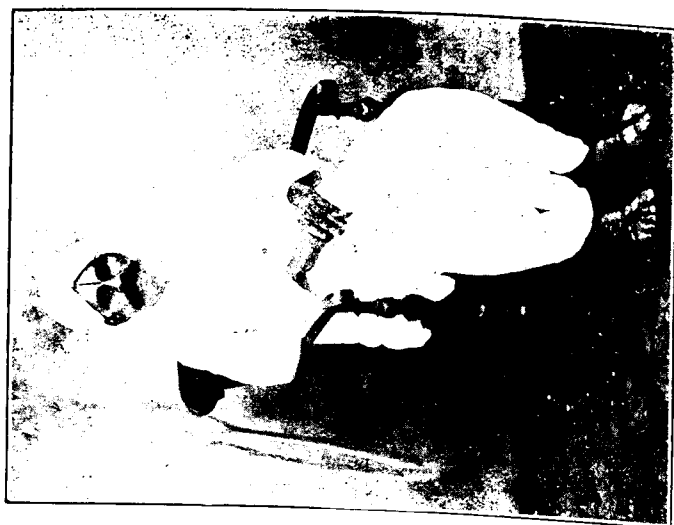
The Townsend Committee on Co-operation.

This country has taken very rapid strides in Co-operation. In this Presidency alone the number of Co-operative societies that function is large. But majority of them being only credit societies both the Government and the public have felt deep concern in the future advancement of the movement and it was therefore right that the local government appointed a committee to enquire into the existing situation and furnish them with their considered views so as to facilitate future progress. The personnel leaves nothing to be desired, constituting as it does of veterans in the cause. Mr. C. A. H. Townsend (Chairman) is a tried civilian of the Punjab. Mr. G. K. Devadhar is the pillar of the movement in Bombay. Mr. V. Ramdoss is the President of the local Provincial Co-operative Union. Other members are also ardent co-operators.

We hope their report will be unanimous and help Government to advance the cause of co-operation amongst the rural population.

Dr. T. V. R's Homecoming.

Mr. T.V.R. Ayyar, one of our distinguished members recently returned to us after an absence of about ten months. He left Coimbatore in November last. Voyaging across the Eastern seas, Mr. Ayyar landed on Xmas eve at San Francisco, that wonderful city in that young and fascinating country—the U. S. A. He spent about 8 months in the Stanford University which has now conferred on him the degree of Ph. D. in Zoology. His earlier work in Entomology enabled the University authorities there to



Mr. Neelam Sitharamaswami.



Dr. T. V. R. Ayyar.

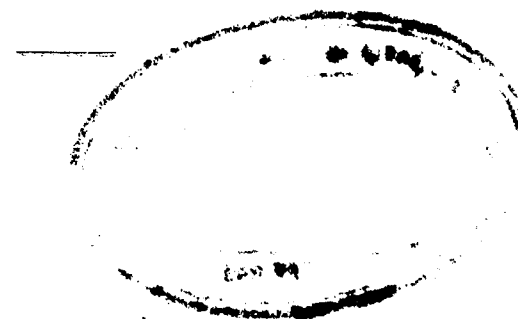
dispense with some formalities necessarily insisted on in the case of a fresher. A few friends were at the time of his departure last year, of the deliberate opinion that it was an act of "unthrift" on the part of their friend to leave Indian shores at his own cost and at an advanced age, as he was well-known in entomological circles for ever 20 years and as he had to lean for this undertaking overseas solely on his own financial resources which were notoriously slender and as this trip could add very little to his intellectual equipment. For he was already the author of several entomological papers both in the Indian and foreign press and a specialist in Thysanoptera, Coccidae and Hymenoptera—three of the little explored orders of insects—and in numerous forms of economic importance. His letters that have appeared in this journal from time to time have proved delightful reading. His homecoming therefore was looked forward to with eagerness. His friends at the College welcomed him in a suitable way and his old students greeted him in a befitting manner and entertained him at a dinner. Dr. Ayyar is now the only official who possesses the highest academical qualifications in the Madras Agricultural Department. We hope his knowledge and experience will be fully utilised for the benefit of his countrymen. We wish him very many more years of usefulness and tranquillity in his future career.

Retiral.

Mr. N. Sitharamaswami Nayadu, Agricultural demonstrator, Samalkota, retired on the 29th June after 25 years' connexion with this department.

With an intimate knowledge of Godavari conditions and an amount of local influence Mr. Nayadu has been very helpful to all officers.

The success of the Smalkota farm in its initial stages and of the demonstration work in the Godavari delta is all due to Mr. Nayadu who since its inception in 1901 has laboured hard. The department is however indebted to Mr. (now Dr.) C. A. Barber, C. I. E. for discovering this "born agriculturist" as a devoted and loyal servant for work in the circars.



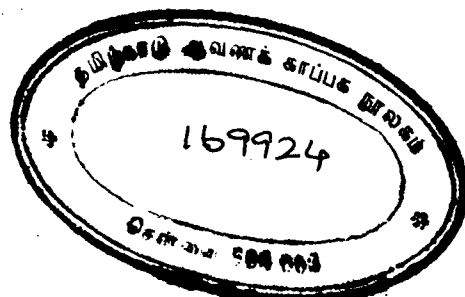
(iv)

The Ramasastrulu-Munagala Prize 1927.

1. The Prize will be awarded in July this year.
2. The Prize will be in the form of a Medal and will be awarded to the member of the Union who submits the best account, of original research or enquiry, carried out by him on any agricultural subject.
3. The subject matter shall not exceed in length twelve foolscap pages type-written on one side
4. Intending competitors should notify the Secretary of the Madras Agricultural Students' Union not later than the 1st June the subject of the paper which they propose to submit and the paper should be sent in so as to reach the Secretary, Madras Agricultural Students' Union not later than the 15th June 1927, with a covering letter showing full name and address of the sender. The author's name should not be shown on the paper which should be entered under a *nom-de-plume*.
5. Four type written copies of the essays should be sent in.
6. The name of the successful competitor will be announced and the prize awarded at the time of the Conference.
7. The Union reserves to itself the right of publishing all or any of the papers.
8. All references in the paper to published books, reports or papers by other workers must be acknowledged.
9. Papers submitted will become the property of the Union.

Any further particulars may be obtained from the Secretary Madras Agricultural Students' Union, Lawley Rd. P. O. Coimbatore

Secretary,
M. A. S. Union.



(v)

The Journal of

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AGRICULTURAL COLLEGE, LAWLEY ROAD P. O. COIMBATORE.

Issued on 4th October 1927.

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