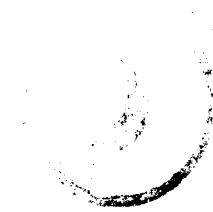


Journal of the Madras

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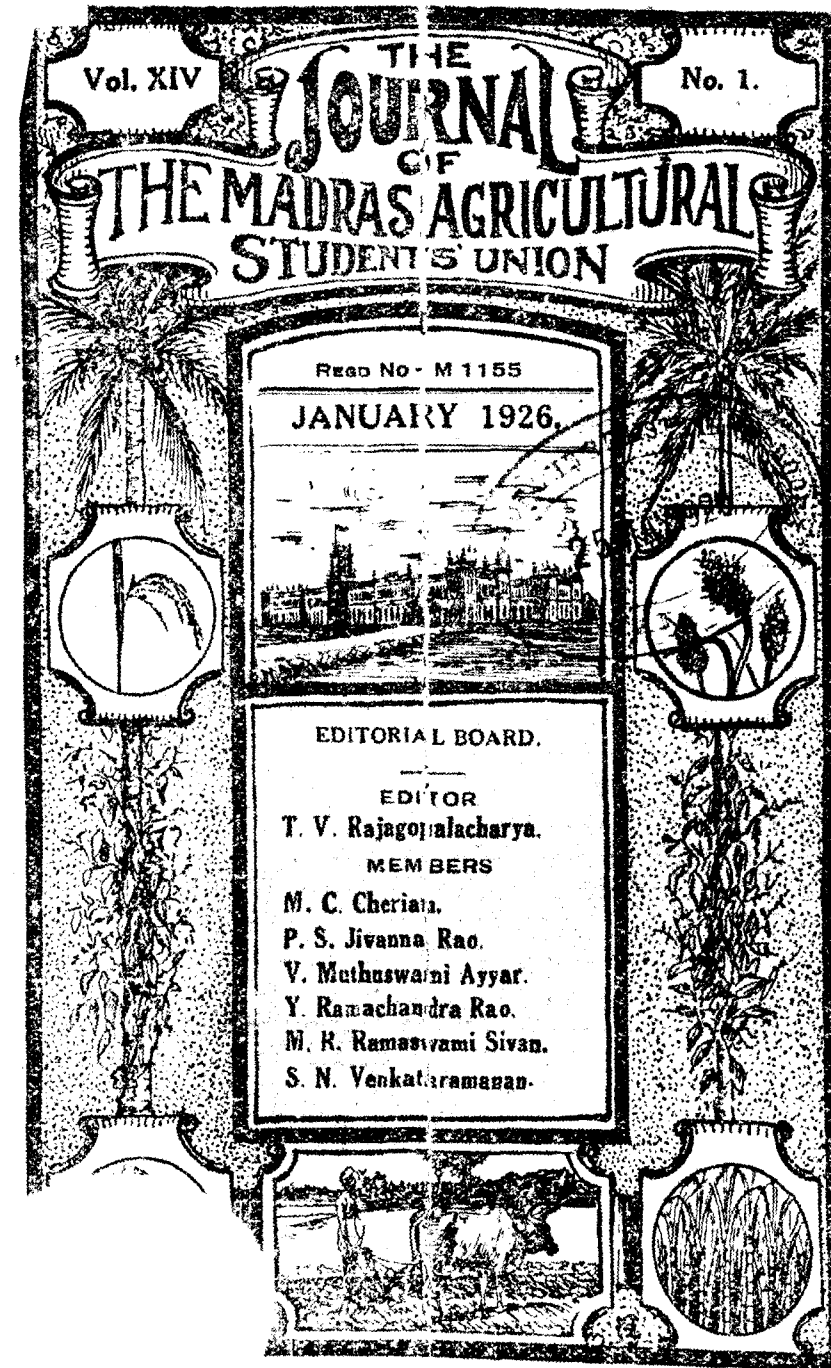


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THE JOURNAL

The Madras Agricultural Students' Union.

Vol. XIV] JANUARY. [No. 1.

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

THE JOURNAL

OF

The Madras Agricultural Students' Union.

Vol. XIV.] JANUARY 1926. [No. 1

To Sell Sugarcanes to a Factory or to Convert them into Jaggery-Which is Better?

D. ANANDA RAO B. Sc.

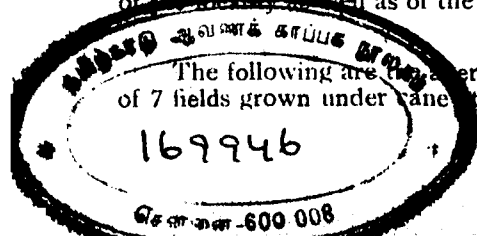
It is well known that sugarcane cultivation cannot be spread through the country as extensively as paddy. It is a long duration crop requiring a good deal of attention in all its stages. Besides it is an expensive crop to grow, and therefore is beyond the reach of the poor man. It is partial to well drained soils and being an exhaustive feeder requires large quantities of manure. It should also be grown within easy reach of road communications. All these and similar factors control and limit the area under this important crop. In this country sugarcane is chiefly grown for the manufacture of jaggery. In certain localities situated in proximity to large towns canes are grown for chewing purposes, but the area under this is indeed be very small. However, the idea of growing canes in large areas to supply to factories for making sugar has been brought to the fore front especially by the recent Sugar Commission under the Presidentship of Mr. MacKenna.

Three such factories are being run at Aska in Ganjam district, Samalkota in Godavari district and Nellikuppam in South Arcot district. In the last place there has been of late a growing tendency on the part of the ryots to plant large areas under sugarcane and cultivate it intensively, applying at the rate of 7-8 candies of ground-nut cake per acre. Such people fall into the temptation of growing canes every other year in the same land. The deterioration of cane is the obvious result but is at present masked by the heavy doses of manuring given to it. The Nellikuppam factory itself grows large areas under it besides the very large number of ryots who grow solely for selling as canes to the company. There are now several thousands of acres of cane in the vicinity of the factory. It has come to the notice of the writer that even Rs. 1,000 gross income is obtained off an acre. The result is that after the opening of the factory, the practice of jaggery making was given up so that today with the solitary exception of the Palur Government Agricultural station there is practically nobody who makes jaggery in that neighbourhood.

Owing to the inauguration of a series of manurial, varietal and rotational experiments in sugarcane in the farm some 3 years ago, the area under this crop nearly trebled itself. It was therefore impossible in the circumstances to crush the canes and prepare jaggery out of 6 or 7 acres under cane as there was no power mill at the time. Incidentally the question of finding a sale for a large quantity of jaggery in that out-of-the-way place had also to be considered. Therefore steps were taken to sell a large area of canes to the factory, the rest being prepared into jaggery. This gave us an opportunity to study the profits obtained under each system (i. e.) by selling canes to the factory and by making jaggery and selling it on the spot. Palur farm is situated at a distance of 5 miles from the factory and this may be taken as an average distance from which canes are taken to the factory by ryots although in some cases it is even 10 miles. The canes were carted on hired carts as is often done by the cultivator.

Whether canes are sold to the factory or jaggery is made from them the cost of cultivation up to harvest is the same so that little comment is necessary on this. The same variety of cane is compared in both cases, namely, Fiji B, which is still the favourite cane of the district as well as of the factory.

The following are the average acre figures under separate heads of 7 fields grown under cane at Palur in the year 1923-24.



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Details.	Cost.	Percentage of expenditure to total.
(1) Preparatory cultivation ...	14 13 2	3.90
(2) Manures and manuring ...	112 9 7	30.20
(3) Seeds and sowing ...	50 8 11	13.55
(4) After cultivation ...	38 6 8	10.30
(5) Irrigation (by engine) ...	65 11 9	17.65
(6) Topping, cutting, cleaning canes and removing trash from the field.	18 8 6	5.00
(7) Bundling and transporting to the milling yard ...	15 3 8	4.10
(8) Milling and collecting juice to pans.	32 1 6	8.60
(9) Weighing and supplying juice to pans.	2 3 4	0.60
(10) Preparing Jaggery ...	16 8 11	4.45
(11) Transporting Jaggery to stores and weighing ...	0 15 9	0.25
(12) Drying megass and supplying trash to furnace ...	5 2 7	1.40
Total Rs. ...	372 14 3	100.00

If the depreciation, interest and repairs to the mill pan and accessories are added, the total cost would be increased by Rs. 15 per acre. It is also found that it costs Rs. 5-3-0 to manufacture one candy of jaggery out of Fiji B cane. It will be observed that expenditure incurred in growing the crop is 75% of the whole, while the balance of 25% is made up of items under harvest and manufacture. Now taking the case where canes are sold to the factory—and as we have already assumed the cost of growing in this case also is the same—the details of the remaining items are as follows:—

Cutting, trashing, bundling, loading in carts at 4 annas per cart load of 500 canes ... 11 7 7

Cart hire from farm to factory at 10½ annas per cart load of 500 canes ... 30 9 6

With regard to cart hire it is the practice of the factory to give back to the parties, up to a definite distance from the factory from half to a third of the expenditure incurred in order to encourage the cultivators to bring the produce to it. The 10½ annas rate quoted above is the net cost per cart from Palur as the normal cart hire is Re. 1 in this neighbourhood. Half of cart hire is borne by the company calculated at 8 pots (each pot 5 gallons) of juice per cart.

It is obvious that in this case the items of expenditure are few and the actual cost is less than half of what it is in producing jaggery. In other words while the total cost of manufacturing jaggery out of one acre is over Rs. 385, the cost of delivering the canes at the factory is fully Rs. 85 less per acre.

Let us now consider the receipts. At the farm we were able to sell at nearly Rs. 42 per candy of 500 lb. which is by no means a high value. This is because Palur is situated about 10 miles from Cuddalore and 6 miles from Panruti so that few merchants care to come all the distance to purchase the stuff. Besides it being not a jaggery centre, the prices offered are always on the low side. Even with all this the Jaggery produced per acre at 17½ candies fetched at that rate Rs. 735 excluding Rs. 80 obtained in the shape of setts. Whereas in the case of canes sold to the factory, the farm obtained at the rate of Rs. 34 per candy of jaggery. This is arrived at in the following way:—

All the canes are milled in the presence of the cultivator. Three pots (15 gallons) of juice are taken and boiled down to jaggery and the actual weight is recorded. This forms the basis of their calculation. From this the approximate quantity expected from the whole quantity of cane brought is calculated and paid for. This comes to Rs. 595 per acre, which is Rs. 140 less than what was obtained by making jaggery at the farm itself.

We have already seen that it was dearer to manufacture jaggery than sell canes by about Rs. 85 per acre, so that the net profit by the former process is Rs. 55 per acre. In favourable years the company pay in addition a bonus on the profits obtained. If the price of sugar falls the cultivators are denied this bonus. For example in 1924 over and above the rate of Rs. 34 per candy, the company paid at the end of the season Rs. 8 which was the difference between the initial and final prices of jaggery. The final price was worked out at the rate of 6 annas in the rupee of the average price obtained for white sugar during the crushing period. In 1925 no bonus was paid. From the above figures two things are obvious. Firstly since the sale of canes is less irksome and saves a deal of labour of the cultivator it should be encouraged so long as the price paid by the factory does not go lower than what it is paying at present. If conditions are such that better rates are offered, there is no doubt that growing of canes in large blocks will greatly increase to the advantage of the factory.

Secondly as at present constituted jaggery making appears to be slightly more profitable. But it is very doubtful whether it is worth while to undertake the laborious task of making jaggery which is so difficult to keep long in this climate and which does not fetch a proper price.

It may be argued that in other localities where factories do not exist ryots obtain more handsome profits than they do by selling to the factory and that such a state of affairs may also come into being in this area. But the fact is that only on account of the existence of the factory the area under canes has increased beyond one's original expectations, and in this area as long as the present conditions remain jaggery making is not likely to replace the sale of canes to the factory. It will be interesting to know how in other farms where sugarcane is cultivated the several items of expenditure range and what proportion they bear to the total cost of production.

The "Pollu" Disease of Pepper.

RAO SAHIB Y. RAMACHANDRA RAO, M. A., F. E. S.

Pepper (*Piper nigrum*) is a characteristic crop of the West Coast—especially of Malabar. A native of the damp ever-green zone of the forests of the Western Ghats, it flourishes in all suitable situations in the moist rainy tract of Malabar. In almost every compound in Malabar the vine may be found trained on the stems of tall trees, the produce being usually intended for the consumption of the household, but as a regular crop, however, Pepper is found cultivated mostly in the interior valleys of the sub-montane region and in Wynaad above the Ghats. Here hillsides are cleared and standards mostly of *Erythrina* are first planted, and the pepper vines are later on trained on them. These pepper gardens are often of large extent and in good seasons bring in a plentiful harvest. Pepper is a spice characteristic of moist tropical regions like Malabar and in ancient days it was a valuable commodity that formed the main medium of barter for goods imported from outside and was, therefore, appropriately termed "the money of Malabar."

Pepper is however subject to the attacks of certain pests and diseases which combine to reduce the profits of cultivation considerably. A good many of the pests and diseases are usually of minor importance and of casual occurrence, but there are some which are of a serious nature of which the Wilt of the Pepper Vine studied by Dr. Barber in Wynaad is one, and the "Pollu" disease of North Malabar—the subject of the present paper—is another. "Pollu" lit-

rally means "*hollow*" and is usually applied to the occurrence in varying numbers on individual spikes of empty berries the interior of which has been hollowed out mostly by insect agency. In a wider sense it is more often employed to denote the loss occasioned by the presence in varying quantities of improperly developed or damaged berries of low commercial value in the harvested crop. While the proportion of such worthless berries to the sound ones has been estimated at the Taliparamba Pepper Farm during the last 15 years as varying from 6 to 60 per cent, there is little doubt that the real loss sustained is vastly greater, for most of the hollow berries damaged by insect agency are so fragile that they become reduced to powder during threshing, while a large proportion of the spikes dropping down owing to Fungus attack are never collected. The experience of the Pepper cultivators appears to be that "Pollu" is in greatest evidence when there are heavy rains at the time when berries begin to mature i. e. at the time of North-east monsoon in November-December, and this is confirmed by the observations made on the Farm during the past many years.

The "Pollu" disease. The disease is known to have been in existence at the time of starting the Taliparamba Farm and it is evidently a long-standing one—being probably co-eval with the history of the pepper crop itself in North Malabar. It was in 1908 that the existence of the disease was first brought to the notice of the Entomological staff and the writer had the opportunity of studying the disease at that time. He found that in reality two factors were at work: one—an insect—a Flea beetle grub boring in the berry and the other—a non-insect agency probably a fungus—causing the rotting of some of the berries and, what was more serious, also a fall of the spikes. It is regrettable that there were no opportunities of continuing this study further for some years thereafter. It was not till 1918 that further progress was made in our knowledge of the disease. The life history of the beetle was studied in greater detail by the Entomological Section and certain experiments were conducted towards checking the ravages of the pest; and an account of the results of these observations and experiments is given in "A Preliminary investigation of the "Pollu" disease of Pepper in N. Malabar in 1918" by Mr. T. V. Ramakrishna Ayyar assisted by Messrs. J. A. Muliyl and P. Susainathar in the Year Book for 1920-21. No further work was done till January 1923 when, following upon a very heavy attack of "Pollu" on an otherwise satisfactory pepper crop, the thread of investigation was taken up once again at the desire of Mr. R. D. Anstead—Director of Agriculture and it is the object of the present paper to give a general account of the results obtained so far.

"*What is Pollu*"? Even at the outset of the investigation of this disease it was realised that the "Pollu" trouble was no simple affair. It appeared in reality to signify the aggregate loss of crop brought about by two or three distinct causes, of which the presence of the Flea beetle larvae causing the destruction of some of the green berries is but one. Besides the Fleabeetle, there is a Cecidomyiid or gall-fly, the maggots of which attack young berries and convert them into galls. There are, in addition, cases of individual berries either becoming entirely rotten or showing fairly deep cracks on the skin. There is, moreover, a very large number of spikes lost by a premature fall of spikes. All these cases proved to be caused by a Fungus—"Colletotrichum necator,"—as a result of an investigation by the Government Mycologist.

Furthermore, an examination showed that there were always a fair number of pepper spikes in which berries remained undeveloped and this caused the existence of numerous gaps. This was evidently due to want of proper fertilisation of the flowers and as it was mainly a botanical problem the Government Economic Botanist kindly arranged for the investigation of this part of the subject.

As the aggregate loss of crop may be influenced (1) partly by the absence of the right conditions of fertilisation (2), partly by the enormous volume of spike-fall or by the loss of individual berries caused by the activities of a fungus, or (3) partly by the causation of hollow berries due to insect agency, the necessity of the co-operation of three different sciences was felt and the necessary team work was kindly arranged by the Director of Agriculture and, in reviewing the work of the past two seasons, a fair amount of progress may, on the whole, be conceded to have been made.

Nature and Extent of Loss.

1. *Insect damage.* There are two insects damaging the berries: One is a Cecidomyiid maggot which burrows into tender berries and causes the formation of a gall which arrests all further growth. The lifehistory of this pest has not yet been fully investigated. The other is the grub of a Flea beetle—*Longitarsus nigripennis*. The beetle bites small shallow circular holes in the rind of the berry and lays a tiny elongate oval egg therein, after which it covers the egg up with its excreta. The egg hatches in about 5 days into a grub which burrows into the kernel and destroys it. The grub, thereupon, enters a neighbouring berry which is similarly hollowed out. One grub is in this way able to destroy 3 to 4 berries. Ultimately the grub drops to the ground, turns into a pupa at a depth of 2 to 3 inches and emerges as a beetle in about 10 days.

2. *The Fungus—Colletotrichum necator* is a fungus that is found living on the leaves, stems and spikes and berries. The damage caused to leaves, stems and individual berries is not of any serious character, but the loss sustained by the fall of entire spikes is not so negligible. In rainy weather the spores are washed down from the leaves and stems on to the petiole of the spike and if these spores happen to germinate at the origin of the petiole and the fungus penetrates into the tissues of the petiole, an abscission is formed at the point of origin and the spike falls of its own accord. The fall of spikes increases proportionately if the weather proves to be unusually moist and rainy.

It is rather a difficult matter to find out in the harvested crop the relative percentage of infestation of "Insect" and "Fungus" Pollu. At the time of harvest all ripe spikes are picked and heaped on the threshing floor, and at the same time such of the fallen spikes as appear to be likely to contain sound berries are collected and all these are thrashed together usually by trampling. Hence fragile bodies such as the hollow "Pollu" berries are reduced to powder and have no chance of surviving. What is usually called "Pollu" at the time of harvest has been on examination found to consist of such berries as have been partially damaged by the grub or have been attacked by the Fungus, and it is clear, therefore, that the quantity of such "Pollu" recorded year after year on the Farm is only a partial measure of the actual loss sustained by the cultivator, which is really much larger.

In December 1923, an attempt was made to arrive at an approximate estimate of the relative percentage of "Pollu" caused by insect agency and by Fungus. 50 spikes selected at random were taken from individual vines and figures were worked out for more than 30 vines conjointly by the Government Mycologist.—Mr. S. Sundararama Ayyar—and the writer. Insect "Pollu" was found to vary from 0.5% to 24 % while the Fungus "Pollu" varied from 0.5 % to 13 per cent. The year 1923, however, was an abnormal one there being little of the N. E. Monsoon rain and pepper was reported to be free from "Pollu" throughout the tract. Despite this fact, however, 208 Madras measures of "Pollu" (as against 1264 Madras measures of dry sound berries) were recorded at the Taliparamba Farm and the percentage of "Pollu" to sound berries worked out at 16.4 per cent.

An examination of the crop during the time of its maturity would clearly show that the main portion of the loss is occasioned not by individual berries becoming damaged by insect or Fungus attack but by the enormous amount of spike-fall that occurs at this time mainly through Fungus agency. As the activities of the Fungus are mostly

dependent on the amount of moisture prevalent at this part of the year, it naturally follows that there will be a heavier loss from "Pollu" in years of heavy precipitation at the time of the N. E. Monsoon.

Remedial measures. With the object of preventing such heavy loss from spike-fall, Bordeaux mixture, at strengths varying $\frac{1}{2}$ to 2 per cent and mixed with various adhesives, such as Casein, Resin-soda and Fish oil rosin soap, was tried by the Government Mycologist on many of the vines in August-September 1923. The results of the spraying were found to be little short of the marvellous. Daily counts taken of certain treated and control vines showed that there was a very great diminution in the fall of spikes, while there was a conspicuous absence of insect or Fungus "Pollu" in the spikes of vines thus treated. The difference between treated vines was distinctly recognisable even to a casual observer.

The Bordeaux mixture had not only checked the activities of the Fungus but also had functioned as a repellent to the Pollu Fleabeetle and prevented it from laying eggs. Moreover the berries of spikes on treated vines were also found to be distinctly larger in size than those on untreated vines. The situation thus appeared to be very satisfactory, and it looked as if one might congratulate one self on having hit upon the right method of fighting the "Pollu" malady.

Later experience, however, showed that Bordeaux mixture was not an unmixed good. The berries on treated vines were found to require a longer time to come to maturity and the harvest time was therefore abnormally prolonged. Again, most of the treated vines were found to be specially attacked by mealy bugs (*Pseudococcus virgatus* and *Chionaspis aspidistrae*). While neighbouring untreated vines were free, sprayed vines were found specially subject to the mealy bugs, which gradually multiplied after the harvest until in April—May they were present in such abundance as to kill many of the runners. Sprayed vines were found therefore to have had a definite set-back by the beginning of the current season. The same experience appears likely to be repeated during the present year's spraying too, for mealy bugs were found to be prominently present on sprayed vines even at the beginning of October. It has thus become evident that, unless something can be done to check the progress of the mealy bug, spraying with Bordeaux mixture cannot be recommended to the public.

As to why Bordeaux mixture should have the effect of encouraging mealy bugs no positive reasons have yet been detected, but it is surmised that the mealy bugs have increased on sprayed vines because Bordeaux mixture kills certain Fungoid enemies of the bug which usually keep it under control. This supposition is strengthened by the experience of various observers in other countries as to an exactly similar effect on the increase of Scale insects by a spray of Bordeaux mixture. For instance, Withycombe in an article on "Recent progress with insecticides"—*Tropical Agriculture*, Vol. 1 No. 8 August 1924—makes the following remarks regarding Bordeaux mixture: "*Bordeaux mixture* is commonly considered as a sovereign remedy for all evil . . . The correct application is against rots, mildews and other Fungi. Against insects it has little or no killing power and it may sometimes even favour an increase of the pest. Such frequently appears when scale-infested trees are sprayed with this mixture. The scale insects increase instead of decreasing in number . . . The probable reason of failure is not far to seek. Scale insects are controlled in nature to a large extent by certain insect—destroying fungi and especially in humid climates, are these beneficial fungi of importance. Bordeaux mixture by virtue of its fungicidal properties, arrests further spread of the insecticidal fungi and thus scale insects are allowed to multiply unmolested by their fungal enemies. . . ."

It is proposed to pursue the subject further during the coming season and devote some attention to find out how exactly the Bordeaux mixture favours the increase of the Mealy Bug.

Further progress in regard to control methods against the 'Pollu' Fleabeetle would thus appear to pivot on the question of the control of the Mealy Bug and the problem on hand serves to show how complicated the question of remedies really is and how interdependent the various factors in any problem are.

EXTRACTS.

Agriculture in Czechoslovakia.

BY DR. VLAD BRDLIK.

A 6 year old republic. The present country of Czechoslovakia was carved out of the old Austro-Hungarian Empire when it broke up in 1918. This republic has an area of 54,240 square miles and contains a population of 13,612,172 souls. In the eastern provinces of Slovakia and Carpathian Ruthenia, 62 per cent of the population is agricultural while in the western industrialised provinces of

Bohemia, Moravia and Silesia, the agricultural population is only 31 per cent. Agricultural production per unit of area is lower in Slovakia than in the western provinces where agriculture is more extensive but per capita production is higher. On the other hand, Slovakia and Ruthenia are an important market for the industrial products of the other provinces. During the war, little Chili saltpetre or superphosphate was imported and supply of stable manure became short due to the military requisition of cattle. The biological potency of the soil and the animals was reduced, so much so that in 1918-19 the decline in agricultural production compared with the pre-war returns was estimated at 40 per cent. The Republic had to face enormous difficulties at the outset—inflated currency, necessity for protection against aggressive neighbours and for opening of new schools, budgetary deficits, disorganised financial administration, exhaustion of agriculture necessitating large borrowings abroad for purchase of food stuffs, loans for equipment of army, obligations imposed as the result of peace treaties, absence of a currency of its own.

But during the short five years since, a good deal has been achieved. The progress of the country was made possible not only by its natural resources but by the industry, thrift and sober sense of the people. The farmers, in spite of the eight-hour law, have continued to work from morning till sundown and the support which agriculture gave to the distressed industries after the war, was the salvation of the country.

Effect of decontrol. As soon as military requisition ceased the farmers enlarged their herds by raising or importing cattle which ensured the supply of stable manure and when the Government provided fertilisers at a low price and withdrew their control the situation was considerably improved.

The exchange value of the Crown in 1922 depressed agriculture in spite of which, however, the farming population very largely contributed to the consolidation of social and political conditions and with success, because more than four-fifths of the farming land is cultivated after the manner of family holdings by the members of the family. Healthy family life develops industry, thrift and firmness of character which are the agricultural virtues of the Czechoslovakian farmer.

How the Czechoslovakian farmer has survived disaster. The Czechoslovakian farmer has strenuously preserved national culture. It was the isolated farming village that remained Bohemian with its tradition its songs, its customs, and costumes, though the nation lost its independence in 1621 i. e. 300 years ago.

The Czechoslovakian still holds that, no matter in what way the forms of the economic and social order of Government may change the land with its natural laws of eternal continuity will always be a safe basis of national existence. From the relation of his family to the land the farmer has derived the idea of a fatherland and the idea of the freedom of a nation. He thinks a nation is not free if its farmers are not free men and the nation will rise again and again as long as it remains essentially agricultural.

Physical conditions. The climate of this country is midway between the mild littoral and the severe continental climate. The average annual rainfall is only 25.2 inches (about the same as Coimbatore—Editor) but the rain falls at an opportune time nearly two thirds coming in spring and summer months, thus assuming the same advantage of a relative humidity as the littoral. This is partly due to the mountain ranges enclosing the country on the west, north and east, where the forests act as the natural reservoirs.

The soils are of four types, named according to their characteristic products. These are:—(1) The sugar beet region of fertile low lands of less than 1150 feet elevation (2) the region of cereals—1150-1500 feet elevation the largest area; (3) the region of cereals and potatoes 1500-2000 feet elevation; (4) the region of forage crops and pastures lands exceeding 2100 feet in altitude. Most of the soils are heavy. Certain districts owing to their possession of soils with special chemical and physical properties and of favourable climatic conditions, cultivate special plants noted for their quality as barley in the Hana valley, tobacco in South Slovakia, cucumbers in Znanu, horse-radish in Malin, fruits and grape vine in Bohemia and Slovakia. In the high elevations where field culture ends, the forest begins.

How are difficulties overcome. The elongated shape of the Republic has its disadvantages but the differences in climatic and natural conditions of the several regions make possible a variety of crops, save the republic from becoming a one crop country and make itself sufficient in good stuffs. The railways built in the administration of the Hapsburgs run north to south and transportation charges of articles between the easternmost and westernmost points which are as distant as between Chicago and New York swallow up a large part of the selling price. And the waterways are of little consequence for inland communications, though facilitating foreign trade. These disadvantages are counterbalanced by the conversion of the farm produce into commodities of higher value through agricultural industries

by the close connexion of the farms with these industries and by the intensive rearing of cattle. The annual field harvest amounts to 40 million tons but only 10 per cent is shipped to foreign markets. Nearly one fourth is taken by the industries, 60 per cent is fed to domestic animals, 4 per cent used for sowing and 3 per cent consumed by the producer. The intensive rearing of cattle is carried on chiefly on small and medium sized farms (which form five-sixths of the farming land) and depends on the domestic market. And the manufacturing establishments have to depend on the farmer, as more than two-thirds of the industries in the former monarchy were constructed here and their ability to compete in the world market is affected by distance from the sea coast as well as by the necessity to import cotton, wool, ores, and other raw materials. Thus a closer economic union of the agrarian east with the industrial west is necessary and is hastened, leading to the political consolidation of the republic.

At present the implements of production which the farmer buys have increased in price from $\frac{1}{4}$ to one-third more than the produce he sells. Annually agriculture imports about half a million tons of raw materials and exports about 5 million tons of farm produce and products of agricultural industries.

According to the 1921 census, Czechoslovakia had only 7.02 per cent of illiterates and much less than France or the U. S. A.

The larger amount of illiteracy in Slovakia and Ruthenia is due to the policy of Magyarization and lack of schools under the old Hungarian regime and the "Zadruha" system of farming in vogue. Under this system the parents retain ownership of land and management for life, though the family may be increasing tending to the diminution of interest in the work on the part of other members.

One cause however was lack of land as most of the fertile lands were held by large landowners. The land could not support the natural increase of population and large numbers emigrated chiefly to the U. S. A.

(A summary of an article published in the "Young Men of India" September and October 1925.)

To be continued.

The Real Secret.

In an editorial in the June issue of Sugar entitled: "The Labor Problem," the following statement was made: "In whatever other respect the problems of the sugar industry in various parts of the world differ, there is one universal problem, that of labour." The suggestion was made that the problem might be worked out by meeting the necessities of the workman: namely, provision for steady employment the year round and the establishment of conditions which would make life at least bearable for him. This month a concrete example of the successful working out of this problem is given. In the article entitled "Hacienda Elpotrero Celebrates," on page 333, is given an account of the fiesta held on the Mexican sugar plantation on the occasion of the completion of the harvesting and grinding of the annual crop of sugar cane. A photograph is reproduced showing the last car of cane, decorated with flowers, and taking its place as the center of gala day of festivities which bring master and servant, employer and employee together in a real holiday. This is the secret, this is life.

Modern industrial relations have multiplied the artificial factors in living conditions until the human being is swamped in the mire of conformity with certain necessities which exclude all spontaneous outbursts and tie him down to conformity with certain established rules and regulations fixed as inexorably for employee. In many respects the life of the slave on old Southern plantations of the U.S.A. before the civil war was ideal. He had few cares or responsibilities. All his wants were foreseen and provided for by the master. He had abundance of leisure and could cultivate his little garden patch and play the banjo for the pickaninnies to dance in the sunset glow. The Master rode over his broad acres, made his contracts for the sale of his crops, hunted and danced and liked the care free life of the rural gentleman. The great scourge of slavery was the blot on the escutcheon however and when this was removed the worker, freed from the bondage which had restrained him and his ancestor immediately sought other fields and broke the ties which had bound him to his master. So also the Russian millions when freed from the iron rule of the Czarist regime broke all bonds and sought a wild freedom. No artificial compulsory restraint such as existed in the cases cited is satisfactory. A relation must be produced in which employer and employee are bound together in a mutual self-interest which is more than work performed and wages paid. Such a condition is said to prevail at Hacienda El Potrero. Payment of wages is supplemented by a kindly interest of employer which provides good living conditions, supplies at reasonable prices, good housing quarters, recreation, and the opportunity for those social activities which are a necessary part of the life of every normal human being.

In the accomplishment of this result, no substitute can be found for a sincere feeling of interest on the part of the employer for the welfare of those who are performing the necessary tasks without which his sugar plantation enterprise would be a failure. The worker will respond to this kindly sentiment, always provided that it be not too paternalistic. It is the genuine feeling of friendship on both sides which counts the most, and this seems to have been achieved at Hacienda El Potrero.

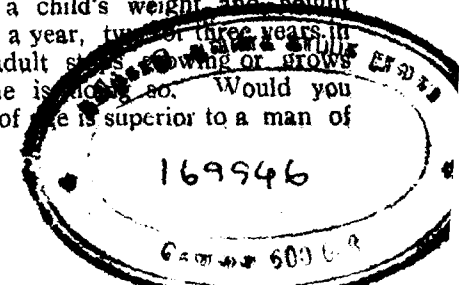
The history of the sugar industry is full of romance and adventure of great projects and of human interest. In the disorganization incident to the great war, however, industrial conditions have grown more and more unsatisfactory. Workers have become restless, employers have been so engrossed in profit getting that they have overlooked the essential factor into gaining success of their enterprise. Would it not be well for labourer and employer alike to follow the example at Hacienda El Potrero and start over again on the old road of mutual respect and friendship?

S. S. P. (from the Journal 'SUGAR' Volume 26, No. 7)

Progress of the Raw Sugar Industry.

By W. VAN DUKE.

Thirtythree years ago the world's sugar production was 600,000 tons. Cuba's production was 675,000 tons; Java's 370,000; Philippines' 160,000; and Hawaii's 130,000. For the crop 1923-24 (the nearest estimate at this time) the world's production is 20,000,000 tons. Cuba's sugar production is 4,200,000 tons; Java's 1,830,000; Philippines' 525,000; and Hawaii's 678,000. In addition to this, I submit the following statistics, while I would venture to remind those who doubt if we make progress at all, that a developing industry has much in common with that of a human life; a child's weight and height double themselves every six months, a year, two or three years in the first years of its life, while, an adult grows or grows so slowly as to be hardly aware that he is doing so. Would you deduce from this that a boy of 6 years of age is superior to a man of forty?



Production of sugar by islands in periods of 10 years each:

	Hawaii	Maui	Oahu	Kauai	Total
1894-1904 ...	1,120,524	478,188	563,083	576,623	2,738,418 tons
1904-1914 ...	1,643,021	1,195,807	1,289,294	874,077	4,945,199 "
1914-1924 ...	2,059,257	1,362,645	1,417,560	1,093,251	5,932,715 "

In analysing what has caused this rapid development we find that cooperation of capital and science are the very foundation. As early as 1883, the sugar planters combined in their effort to secure suitable labour supply, which combination later developed into the Hawaiian Sugar Planters' Association with its many and ever increasing number of fields of activity.

In 1895, the Experiment station was organised and from that time on dates the more tangible development of the technical side of the industry. Studying the past records, we find a worthy list of inventions to the credit of progressively spirited local sugar men who have in no small measure been instrumental in making the industry what it is today.

We have 14 locally developed labour-saving devices which have proven their worth.

The chemical division of the association is, of course, primarily interested in the question of recovering the largest quantity of sugar out of the cane at the lowest possible cost. Taking as the basis the average per cent sucrose recovery for the period of the years 1909 to and including 1913, we find this at 85.46 per cent. The average total recovery of sucrose during the period of the next 10 years is 87.558 per cent. During the period (1914 to 1923) 6,545,297 tons sucrose were delivered in the cane to the factories. If the percentage sucrose recovery had remained at the average figure for 5 years-1909 to 1913, 5,791,151 tons sugar (at 96.6 Pol.) would have been the out put. Due to the application of technical knowledge and the improvement of equipment 5,932,715 tons sugar at 96.6 Pol. were marketed or 141,564 tons more. At a moderate valuation of 75 dollars per ton this has meant an additional 10,617,300 dollars for the 10 years.

Two factors have been at work to make such an accomplishment possible; first of all, the period of increased efficiency and standardization, which period I should like to call the Gartley period, since he was the man who succeeded in arousing the necessary interest and enthusiasm; and secondly, the exchange of mill data and the annual synopsis thereof. To those who depend in their judgment upon

information contained in these data this synopsis or study of factory accomplishment is of the greatest value. As an illustration of what has been accomplished in a group of factories not so much by any radical change of equipment, but by a systematic and sustained effort of the plantation management in cooperation with those immediately in charge of operation, I quote the following:—

Factory losses expressed in per cent sucrose recovered on sucrose in Cane.

	Waiakea Mill Co.	Launohoe Sugar Co.	Kaiwiki Sugar Co. Limited	Hamakua Mill Co.	Hanokaa Sugar Co.	Niuli Mill & Plantation	Halawa plan- tation (Ld)	Union Mill Company.
1920	82.8	88.3	85.9	79.0	84.5	74.0	76.5	77.3
1921	83.6	86.3	85.7	78.6	81.6	80.0	71.7	74.4
1922	85.3	87.4	86.0	80.3	85.3	81.8	78.0	80.0
1923	86.6	87.7	86.5	86.2	86.6	81.8	78.8	82.6
1924	86.8	88.2	87.2	86.7	87.4	82.6	83.7	83.2

However great and remarkable as the technical development of our industry has been in the past 20 years I believe that from now on our greatest gain must come from a further improvement in the quality of the cane as we receive it at the mills, since our records show clearly that no factory improvement is able to recover the losses due to the deterioration of the raw material itself. In a broad sense, the development of sugar industry is practically unlimited. The consumption of sugar in the United States in 1922 was 112 lbs. per capita. In 1900, it was 70 lbs. In Europe, the per capita consumption is less but upto the outbreak of the war it was increasing rapidly and the increase is certain to be resumed as pre-war conditions are re-established. The world's supply of sugar for the year 1924 is estimated at 20 million tons. The consumption will about equal the supply, but if the per capita consumption of the world's total population were equal to that of United States 80 million tons will be required to supply the demand.

According to evolutionists, it took millions of years to form a tadpole and other millions of years before the tadpole dropped its tail and crawled out to live on land. Growth is slow. This is one scientific principle that has never been disputed, though it is little recognised in the modern world.

Great problems are immediately ahead of us, well worth the study and thought of every one connected with the technical development of the industry. Eliminating the refinery operations and making refined sugar direct from the cane is one of them; recovering the sucrose now lost in our final molasses and amounting to from 6 to 8 per cent of the total supplied to us by nature is another. (Extract from the Planter and Sugar Manufacturer 17-10-25.)

The Arts of Husbandry.

Mr. Clement Heigham's review on Malden's book on "Actual Farming." 1925

Mr. Malden's view of the relation of the farmer to the rest of the community is one that is not uncommon among farmers, but is seldom adequately expressed. He says that "the farmer has every one as a critic", and that he has to carry on an extremely complex business and an unending war with the climate, in face of the freely expressed opinions of the mass of his uninstructed fellow-countrymen. Open criticism, even when it is ill-informed, matters very little when it is not accompanied by power of one sort or another. In this case of the farmer, the critics represent that urban majority which must influence the political views of any government to a very great degree. Farming and politics are widely removed from each other in most respects, but political neglect or misunderstanding can make the farmer's task very much more difficult than it need be.

The attitude of farmers towards change and so-called agricultural progress is very generally misunderstood, and Mr. Malden finds space to express a view which will gain support among those who have some knowledge of farming conditions, and of the ill-conceived and expensive reforms which are sometimes urged upon agriculturists. The history of agricultural development in Great Britain during the past fifty or sixty years shows that great progress has been made in the application of the sciences to the business of farming, and that the farmer of today is in a far better position to solve his problems of crop and animal husbandry than was his great-grand-father. Unfortunately, a closer study of the course of progress reveals the fact that this advance has been made at very great cost and that a larger number of individuals have been ruined in the process. So many well-meaning but unwise people, and so many interested rogues, have set out to advise farmers in the development of their business; so much incomplete discovery and unbalanced recommendation has been lavished upon agriculture, that the sturdy conservatism of the farmers might very well have become hardened to an incredulous contempt for all new ideas. That this has not happened is well known by the

present development of agricultural education and research, which depends upon the support of the farmers all over the kingdom. Mr. Malden quotes from Wren Hoskyns to show that real progress finds a welcome on the farm as elsewhere, and that apparent lack of enterprise is often only wise caution on the part of the farmer. (Extract from "Nature" dated 26th December, 1925)

REVIEWS.

The Madras Bulletin of Co-operation (Dec. 1925.)

In his interesting note on the co-operative sale of cotton in Bombay, Mr. S. H. Acharya admirably sums up his views on conditions which affect the progress of the movement in that Presidency. "The cultivator should be given all the facilities and all his requirements should be satisfied through co-operation and co-operation only. The supplying him with one of his requirements and leaving him for the others to the open world would not bring him that good for which he is asked to labour. His difficulties in times of famine should also be redressed, for in the whole history of Banking restrictive method has always failed and the expansive has succeeded. Writing on the co-operative movement in Bombay and Madras, Bhisma observes that Madras employs a huge but poorly paid staff, while Bombay pins its faith on a small but highly paid staff commanding influence by reason of their capacity and position. Non-credit work is under the Agricultural department in Bombay and seven agricultural organizers work under this department, while in Madras the agricultural department is not charged with the work of developing agricultural co-operation. There are Taluk development associations in Bombay consisting of individuals and societies subsidised by the agricultural department to a maximum of Rs. 2000, employing agricultural demonstrators and aiding the agricultural officers in non-credit co-operative work. They are recognised as agents for propaganda and supervision of non-credit societies. In Madras, the local unions should learn to utilise the services of agricultural officers and be subsidised by Government for appointing agricultural demonstrators and spreading agricultural improvements.

The Tanjore District Co-operative Manure Society Limited No. 1885.

NIDAMANGALAM.

The annual report on the working of the Society for the year ended 30-6-1925, together with the audit report of the Deputy Registrar of Co-operative Societies has just been received.

This society which came into being in 1915 through the zeal and indefatigable efforts of Mr. Rao Sahib A. Sethurama Ayyar—an old agricultural student—and the whole-hearted support of the leading land owners of the District has shown steady progress and proved that co-operation in the field of securing raw materials for supplying the manurial needs and other requisites of the cultivators in the Tanjore delta will more than repay the time and labour spent on it.

It is wise of the Directorate that the energies of the society, are not frittered away in unfruitful channels but that their activities are confined to the purchase and sale to the members, of tried implements, green manure, paddy, cotton seeds, cakes, fish-guano and bone meal. We are gratified to note that a handsome profit of Rs. 718-5-4 was earned during the year on a total sale value of Rs. 10,147-1-6, which works out at over 7 per cent on the sales effected. During the past 9 years, the number of members has risen from 44 to 126, paid-up share capital, Rs. 445 to Rs. 1112, sales from Rs. 920 to Rs. 718.

We congratulate the secretary Rao Sahib A. Sethurama Ayyar and the Directorate on the successful working of the society during the year.

We heartily commend the progress of the society to the countless mirasdars in the district and would appeal to them to join the society or start similar societies to better enrich themselves and the district—a not unpatriotic act indeed in our opinion.

Notes.

Transplanting Crop Plants. In the United States, the annual value of crops which are usually transplanted amounts to nearly 200,000,000 dollars, grown on an area of 1,289,000 acres representing 57 per cent of the acreage and 63 per cent of the value of all vegetables other than potatoes. This renders the work of Loomis (Memoir 87, Cornell Experiment Station) on the value or otherwise of transplanting, of great commercial value. Transplanting is becoming recognised as an economic expedient not directly promoting the development of the plant. Experiments indicated that in the early seedling stages all vegetables could be transplanted with little or no injury, but with advancing maturity the injury increased in all cases, but more in some crops than others. The roots of transplanted plants were more branched than those not moved, but the general effect of the process was to retard development the degree of retardation depending upon the plant, its age and the conditions of transplanting; to some extent, also, the total yield was reduced. All crops seemed to be equally resistant to rapid wilting at the time of transplanting,

but they varied in their ability to withstand unfavourable conditions afterwards, presumably due to differences in the rate of reestablishment of roots. The effects of hardening off seedlings were investigated by transpiration studies before and after transplanting, which showed a more rapid recovery of the normal rate in plants, previously hardened, this recovery being apparently associated with quicker root development. A clear correlation has been established between ease of transplanting and rate of new root formation, plants seriously injured by transplanting showing normally rapid top growth and slow root replacement. Root replacement seems to be the largest single factor concerned in transplanting, though the age at which suberisation of the older roots occurs may also have some bearing upon the matter in its relation to their power of absorbing water immediately after the root tips have been broken off when the plants are disturbed.

(Nature dated 31-10-25.)

Maynard Ganga Ram Prize. Sir. Ganga Ram Kt. C. I., E. M. V. O. R. B., Lahore, has handed over to the Punjab Government a sum of Rs. 25,000 for the endowment of a prize known as the Maynard Ganga Ram prize to be awarded every three years for "a discovery or invention or a new practical method which will tend to increase the agricultural production in the Punjab on a paying basis."

It will be of the value of Rs. 3000 approximately and the competition will be open to the world.

Applications should be sent to the Director of agriculture, Punjab by the 1st January 1929 and the managing committee reserves the right of withholding or postponing the prize if no satisfactory achievement is reported. Government officials are not excluded from the competition for the prize.

We feel very grateful to our patriotic countryman, Sir Ganga Ram for his extreme generosity and correct discernment of the duties of a rich landholder in furthering research, but feel constrained to state that the limited scope of the problem cannot attract a very large number of competitions, though Sir Ganga Ram's outlook is not confined to the territorial limits of the Punjab.

Landlords leaving the land. Lord Middleton, speaking at the annual dinner of the Driffield branch of the National Farmers' Union, referred to the heavy Death Duties, and said that at every time he returned to Birdsall House, he was confronted by a long row of boxes which used to house Shire horses and mares, and by empty cowsheds, because of the necessity of being compelled to meet obligations under

Death Duties and enormous taxation. He was of opinion that most landlords who depended for their income on land were cleaned out, and only those kept on who had capital apart and separate from the land. He did not know how much longer they could carry on, for the land was bringing in next to nothing. Unless taxation was reduced they would be squeezed out.

(From Farmer and stock Breeder 18th January 1926.)

Tightening the Belt. Major Buxton said there was now not nearly so great a demand for agricultural land as formerly, intending buyers being afraid of the risk, for the purchase of land was not now a sound investment. People said that farmers must be making money because, whenever there was a farm in the market, scores of applications for tenantry were forthcoming.

That was because the farmer, who had had experience, was not very suited for any other occupation, and he preferred to keep on farming even at a loss rather than be idle. "Without question we love the land, and the pleasure of owing of some land counterbalances the worry," he said.

(From Farmer and stock Breeder, 18th January 1926.)

A recent memoir by P. H. Sanyal Pusa examines the results of trials in storing canes and states:—

(1) That the deterioration of sugarcane kept stored in such a way that the stems of unstripped canes of one set are covered with the leaves of the tops of the other is effected by the enzymes present in it;

(2) That the enzyme activity can be efficiently checked and the cane kept in good condition if it is kept well covered in a dry place so as to avoid rapid evaporation of moisture from the cane;

(3) When rain falls, water enters through the nodes where the invertase concentration is much more than at the internodes.

(4) The inversion passes into the internodes and causes deterioration;

(5) When deterioration goes on, the reducing sugar disappears and forms the new tissue of germinating plants and

(6) Spontaneous deterioration of stand cane is due to rapid evaporation of moisture which helps diffusion of invertase from nodes to internodes.

A new use for the stone roller. The Mysore Agricultural calendar for 1926 mentions a new use for the stone roller in that territory which is capable of wider application than in Mysore. Groundnuts are very largely grown in that State and often it happens that during the harvesting season no rain falls and the ground gets hard. The primary need in groundnut harvesting is the softening and loosening of the soil. This is secured by drawing the stone roller over the groundnut field. On redsoils of the kind predominant in Mysore the effect is remarkable and the relief afforded is very material. The small hand hoe is used in digging the ground only where the roller has been passed.

Sandalwood oil industry in India. This industry is confined to Mysore and has been of recent growth. With Coimbatore and Coorg up to 1916 Mysore was exporting 2000 tons of sandalwood chiefly to Germany. Coimbatore and Coorg supplied 500 tons and India consumed 1000 tons.

The principal uses for the oil are for perfumery, medicines and the manufacture of soaps.

During the war export to Germany was stopped and Mysore got no revenue and put up in 1916 two factories for manufacturing oil one at Mysore and the other at Bangalore City. Their total annual output is 200,000 pounds of oil.

Indian oil is the best and is now exported to Japan, Australia and the Netherlands. East Indies manufacture a lower grade of oil and export to America in large quantities.

(Abstracted from the Journal of Royal Society of Arts, Dec. 18.)

Chilean Nitrate. World consumption in 1923 was 2.17 million metric tons. This was 15 per cent below the total for 1913. While in post-war period consumption in Germany shrank considerably, the U. S. A. went in largely for this fertilizer and broke all records for 1923. Consumption outside Europe and U. S. also shows increase. Increased production has followed the improved position of the industry.

Mungo. In the Philippines there are three varieties—the black, the yellow and the green but yellow is the variety raised for the market.

The young pods and seeds are used for food and the fresh plants as fodder for being ploughed in. Any land fit for rice and corn is suitable.

At high elevations it is sown in the late rainy season in September or October and in paddy lands in February when it is harvested in April.

The seeds are planted in small mounds 3-5 to each mound, in higher lands in furrows 50 centimes apart to 20 centimes apart. They are broadcasted in paddy lands. In paddy lands the straw is burnt in the field, the surface is allowed to crack for a few days, the field irrigated and drained and seeds at 20 gantas to one cavan per hectare broadcast on wet surface and harrow passed over. The crop is ready in 80 to 90 days.

Handpicking is the only method of harvesting. In Pangasinan district, the crop is harvested in shares from one-eighth to one-fifth being given to the harvester. Usually one crop is taken in a year. The harvested pods are dried in the sun and are trodden or beaten out.

5 to 6 cavans are obtained from one hectare of land, which at harvesting time sells at 6 per cavan.

A simple one year plan suggested in paddy land is to plant rice in June and harvest in November, sow mungo in November and harvest in March, plant corn in March and cut in May. In Pangasinan, rice is planted in low lands in June, cut in November-December, Mungo sown in February and cut in late April.

Twelfth Indian Science Congress 1925:—Proceedings of—the—A bird's view.

The total number of papers given in different sections was 434 including those read at the joint meetings of sections. In agriculture, there were 63 papers and papers of agricultural interest that were read in other sections numbered no less than 36. Thus agriculture accounts for 23 per cent of the total papers and it is fitting that in an agricultural country like India agriculture should occupy first attention. The sectional President for agriculture was Mr. R. S. Finlow and in his address reviewed the work that had been done and of the progress which was being made in the improvement of Indian agriculture.

Experiments made in the Indian Institute, Bangalore with *Ajwan* and *Mohua* cakes which are industrial waste products in many districts have, as shown in a recent issue of the Journal of that Institute, proved that (1) the ajwan cake does not diminish the activity of micro-soil organisms while its nitrogen appears to be in a form readily available to the plant, and (2) the mohua cake as a fertilizer is hardly practicable owing to the presence of saponin which inhibits the formation of nitrates.

Between 1789 and 1889 the area of *wheat in France* rose from 18 millions to 17 million acres and the yield per acre from 9 to 10 bushels per acre.

(Scottish Farmer, 3-10-25.)

Statistics.

Agricultural Co-operation in the United States on 1st. January 1925.—By W. O. Hedriek.

Two and one-half million members is the estimate for the ten thousand active farmers' business organisations reporting to the U. S. Department of Agriculture, upon the date named above.

Marketing Grain, 509,000; Marketing Dairy produce, 360,000; Marketing Cotton, 320,000; Marketing Livestock, 300,000; Marketing Fruits and Vegetables 210,000, Marketing Poultry Products. 45,000; Marketing Tobacco, 300,000; Marketing Wool, 45,000; Marketing Nuts, 23,000

The associations handling a miscellaneous line of products and performing miscellaneous functions had an estimated membership of 397,000.

Nearly one half (46.50%) of the membership named above was in the twelve North Central States. Slightly over 23% of the total membership was in the eight South Central States. Between 13% and 14% of the total number of members were in the South Atlantic States stretching from Delaware to Florida. Less than three % were in the Mountain States and a trifle over 2% in the New England group of states. (From Michigan Agri. Experiment Sin. Bull, Vol. 8 No. 1).

Industries in India. The total output of coal in India in 1924 was 21,176,606 tons, the greatest in any year except 1919. The exports which were mainly to Ceylon were 206,483 tons about a quarter of the prewar figure. The imports were chiefly from South Africa, the United Kingdom and Australia and amounted to 463,716 tons. The net amount of coal left over in excess of local consumption and exports led to a depression. Average price per ton in the pit's mouth in India proper varied from Rs. 5-13 in Central India to Rs. 10 in Punjab. The total number of persons employed daily in India proper was 203,331 and output per person varied from 47.4 tons in Hyderabad to 1.823 in Rajaputana.

The production of Iron increased from 823,053 tons in 1923 to 1,445,000 tons in 1924. The Tata Iron and Steel Co. was chiefly responsible for such increase. Steel melting capacity and internal requirements in India for iron castings being very much less than the blast furnace capacity large export of pig-iron has become inevitable and stood at 341,326 tons with a value of Rs. 217 lakhs. Owing to a world wide slump in the iron and steel trade the importation of Indian pig-iron into the U. S. A. led to complaints from American producers and even anti-dumping notices seem to have been issued against certain cargoes.

Petroleum :—Production amounted to 294½ million gallons in 1924 and kerosine oil 71,807,575 gallons and of fuel oils 89,152,952 gallons valued at Rs. 651 lakhs of rupees while paraffin wax exports aggregate 29407 tons valued at 135 lakhs.

Salt.—Ordinary salt 1,623,475 tons; rock salt 189,237 tons. Total value is 108 lakhs. Imports 595,666 tons valued at 139 lakhs.

Saltpetre.—Production 8,543 tons valued at 25 lakhs; exports 8,385 tons valued at 28 lakhs.

(From the Records of the Geological Survey of India Vol. LVIII Pt. 3)

EDITORIAL NOTES.

The Royal Agricultural Commission. With pleasure we note the announcement of the constitution of the Royal Commission to investigate agricultural problems in India. It is opportune that the advent of the Agricultural Commission should synchronise with the celebration, in July 1926, of the Golden Jubilee of the introduction of Agricultural Education in India, by the Madras Agricultural Students' Union, as this occasion will be utilized to review the progress during the past 50 years. It is a happy sign of the times that during the past two or three years, every section of opinion should profess to speak for the masses, for the man in the street, for the toiling peasant. Should this turn in the wheel inaugurate a new era in the development of the natural resources and proper adjustment of society, all efforts the country has put forth will not be in vain.

In certain quarters a sharp distinction is made between the agriculture and the agriculturist and the critic would look upon the commission with certain misgivings, as in his opinion, its labours may be directed towards suggesting ways and means of increasing production without any thought for the well being of the ryot. This, in our opinion, certainly overlooks an important correlation between the worker and his work. You cannot improve the work without advancing the status of the worker, and he would be a simpleton indeed who will in these days of lock-outs and strikes, try to stem the raging tide of democracy and be drowned in the attempt. After all, the Royal Commission is out to make recommendations and these can only be based on the materials placed before them. Should the country decide on improvement nothing can resist her will.

Agricultural account test for lower Subordinates. Agricultural officers of all grades are, under existing orders, required to pass an agricultural account test before they are confirmed. At present there is no distinction made between officers and officers, one in the Imperial Grade has to sit for the same examination and answer the same papers as a lower subordinate. With a good deal of difference in the mental equipment and in the prospects in after life, it would seem hard that certificate holders should be made to pass this test. The matter is, however, different when they are promoted as Upper subordinates in which case they can be obliged to pass the test within two years of such promotion. In this connexion, it is well to consider whether agricultural officers may not more usefully be made to pass vernacular tests specially instituted for this purpose than to undergo the Deputy Collectors' test, which, in most instances, does not deal with agricultural matters.

Indian Economic Conference. This conference met this month in Madras about the same time as the Indian Science Congress did at Bombay. Professor C. J. Hamilton presided over the full proceedings. Several papers were read, mostly dealing with matters pertaining to land and the ryot. "Agricultural Production" "Agricultural Indebtedness" and such like are a few samples of subjects on which papers were given and discussions took place. May we appeal to our countrymen to look more at the economic side of undertakings than be carried away by the dazzling show which often heralds such undertakings if they mean to lay sure foundations for the future steady development of the country, as figures and facts are very hard to beat in the solution of any problem, economic or otherwise.

DEPARTMENTAL NOTIFICATIONS.

Appointments and Transfers.—

Messrs. E. K. Govindan Nambiar, S. Krishna Nayak, G. Sakharam Rao, V. K. Kunhunni Nambiar, and K. S. Ramanna Rai are confirmed as Upper subordinates.

Mr. K. S. Krishnamurthi Ayyar transferred as Farm Manager Palakuppam groundnut station from 27th January 1926.

Mr. A. Gopalakrishnayya, Farm Manager, on return from leave is posted to the Cattle Farm Hosur.

Mr. K. Raghavachariar, Demonstrator transferred to Second circle Guntur on expiry of leave.

Mr. Kurma Rao Assistant Demonstrator, transferred to First Circle.
Leave: etc., Second Circle:—

Mr. V. Achyutam Pantulu, Assistant Demonstrator, Ongole. leave on average pay for 20 days from or after 5-1-26.

Mr. K. Hanumantha Rao, Assistant Demonstrator, Kudligi, leave on average pay for 21 days from 3-12-1925, with permission to avail himself of the Xmas holidays.

Third Circle:—

Mr. M. Viraraghava Rao, Demonstrator extension of leave for one month and eight days.

Mr. B. Venkataramana, Assistant Manager, Hagari, leave on average pay for 15 days from 6-1-26.

Fourth Circle:—

Mr. P. Janakirama Ayyar, Assistant Demonstrator, Mailpatti, leave on average pay for one month from 11-1-26.

Mr. P. Kannan Nambiar, Assistant Manager, Palur, leave on average pay for 12 days from 4-1-26 in continuation of the Xmas and New year holidays.

Fifth Circle:—

Mr. T. V. Srinivasachari, Assistant Demonstrator, Kumbakonam, leave on average pay for 20 days from 6-1-26.

Sixth Circle:—

Mr. T. S. Venkataraman, Demonstrator, leave on average pay for four months from 7th November.

Mr. L. Sankarakumara Pillai, Demonstrator, extension of leave for 10 days.

Mr. C. S. Namasivayam Pillai, Assistant Demonstrator, Melur, leave on average pay for 5 days from 22-1-26.

Mr. V. Chidambaram Pillai, Demonstrator, extension of leave on half average pay for one month.

Seventh Circle:—

Mr. M. P. Sankaran Nambiar, 2nd Agricultural Teacher, Taliparamba, leave on average pay for 18 days from 4-1-26 in continuation of the Xmas and New year holidays.

Eighth Circle:—

Mr. V. S. Ramaswami Ayyar, Demonstrator, leave on average pay for two months from or after 15-2-1926.

Live Stock:—

Mr. V. Suryanarayana, Farm Manager, extension of leave without allowances for 18 days.

Mr. T. Budhavidheya Rao, Farm Manager, leave on average pay for 20 days from 12-1-26.

Mr. M. P. Kunhikutty, Farm Manager, leave on average pay for 21 days from 15-1-26.

Mr. S. P. Fernando, Assistant Manager, leave on average pay on medical certificate for 3 months from 5-1-26.

Cotton Specialist's Section:—

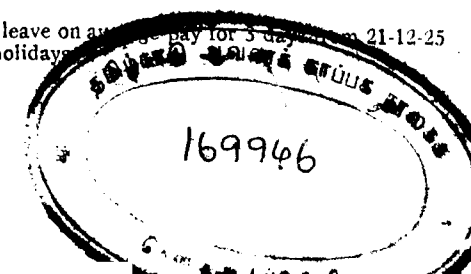
Three days unexpired portion of leave granted to Assistant Mr. P. Narayanan Nayar is cancelled.

Superintendent's Section:—

Mr. N. Narayana Ayyar, Assistant Manager, leave on average pay for one month from 1-2-1926.

Govt. Agri. Chemists Section:—

Mr. P. Satyanarayana, Assistant, leave on average pay for 5 days from 21-12-25 with permission to affix the Xmas holidays.



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(viii)

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