

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

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## EDITORIAL.

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*Statistics.*—Owing to an imperfect knowledge of the use of statistics even erudite thinkers have in the past characterised them as lies, but the steady and slow progress made by workers in the line has established beyond doubt the great advantages that will accrue by a careful, honest and intelligent collection of statistics on a well devised plan, wheather such statistics relate to tests made on school going children of divers classes or on inheritence of characters by the offspring of graduate scholars or the correlation oi weather conditions and spread of malaria. Statistics thus have become an important source of knowledge and the degree of perfection attained by a nation in this activity is one sure test of its progress in civilisation for example two countries, England and China or India may be compared with each other in regard to their collection of statistics. While England with a keen sense of the value of figures is able in the course of one day to collect statistics of population and publish them, the other two countries are

clumsy in their methods and lack organisation, perception and almost close with inexactitude. It is not sufficient however that one country attains anything like perfection in the methods it adopts. Other countries must come into line with it for in the common feeling that may arise between such countries lies the peace and contentment of the human race. For every nation must feel that unless it is in a position to gauge its production, its wants, and the advantages it enjoys or the disadvantages it suffers from, it will incur serious trouble itself and bring misery to other nations; for example when Cuba realises over production of sugar it curtails the acreage. With no such information a country like India may grope in the dark and suffer. What applies to sugar applies equally to sundry other products and it is therefore well of the International Institute of Rome to have taken early steps for an agricultural census of agreed countries in 1930. What may be accomplished in the field of agriculture should be feasible in other departments and it is hoped that the League of Nations as they have already undertaken to collect statistics for several things will systematically attempt at inducing nations to collect statistics in all matters affecting the world at large. For it is that institution alone that is in a position and fit to move in this direction and realise tangible and useful results. Yet Co-operation of all countries and of individuals in each nation is absolutely necessary for the attainment of this object and may we appeal to all in this country to help the international institute in this gigantic but very noble task it has undertaken.

*Union Rules.*—As a supplement to this issue we publish the rules now in force and a draft of the proposed revision for the consideration at the General Body Meeting in July. Members who wish to propose amendments may kindly communicate to the Secretary before the 30th June.

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## A Note on Hagari Cottons.

By V. SUBBANNACHAR, L. Ag.

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The most important item of agricultural improvement which has been successfully attempted by the Madras Agricultural Department in the Bellary District, is the improvement of local cottons of indigenous origin. These were found to be for the most part of poor yielding capacity and of low ginning percentage, while the lint was fairly rough and short. The problem, at first, was to find out a type of cotton better adapted to the needs of the grower and the spinner alike. With this end in view, the department carried out at the Hagari Experimental Station, near Bellary, a series of trials on both exotic and extra-provincial types of cotton for about four to five seasons from 1907. Egyptian, Afghan, Broach, Surat and Kumpta were the important ones that were tried here. Due to one reason or other, the attempt at acclimatization of exotic and extra-provincial varieties ended in a failure. As a result of this experience and knowledge, it was decided to concentrate effort upon the improvement of the existing indigenous varieties for the production of a long stapled cotton, suitable to the black cotton soils of the Bellary district.

Selection and hybridization are the two methods, generally employed by Scientists, to improve the quantity and the quality of the produce of plants. With a view to get immediate results of considerable economic importance, the former method was employed at the Hagari Experimental Station to isolate a Homozygous type with superior qualities of lint, from the Hetrozygous mixture of local cotton. The first attempt in selection work on Hingari or late-sown local cotton, which is commonly termed "javari pathi" in Telugu, was made in the year 1908-09 and it consisted in raising pure lines, in making a comparative study of the selected types of plants and in eliminating inferior types till only a small number of promising types remained, from which a final selection was made for comparative trials with the local cotton. As a result of

careful and diligent search, many types of cotton were, within a short period of time, evolved for distribution to ryots.

A beginning was made in the year 1912-13 by the distribution of Hagari types 1 and 2, which except for the purity of seed, were in no way decidedly better than locals. These were later on replaced by the types of Hagari 43 and Bellary 5. These too had their own draw-backs. The former had a longer staple with a better quality of lint than locals, but it, being a low ginner, was not popular with the tillers of the soil. The latter (Bellary 5) possessing a good yielding capacity and a high ginning percentage became the favourite of the cultivating class, but it, being a short stapled variety found no favour with the spinner. It was in the year 1917-18 what a really good material in the shape of Hagari 25 was developed by selection to the satisfaction of both the grower and the spinner.

This improved strain of Hagari 25, commonly termed as Farm or Sircar Cotton, is now very popular among the agriculturists of this tract. Its superiority over locals consists in the quantity and the quality of the produce. The yield of this improved strain is higher than locals by about 38% and the percentage of lint to seed-cotton by about 2%. Its staple is nearly an inch in length and fairly uniform. The fibres are pretty strong and can be easily detached from the seed, a good asset from the ginner's view-point. The pure white colour of its lint has got a magnetic attraction in the cotton market. In addition to these, the early and uniform maturity of the cotton with its facility for easy gathering of kapas from burst bolls and its better drought resisting nature than locals and the ready willingness of the buyers to purchase this cotton at a premium, make this strain a real favourite of the peasantry of the regada soils.

Further work in selection has resulted in the evolution of a better strain viz., Hagari 62 (which is renamed as Hagari 1) than Hagari 25. A brief review of the methods adopted in its evolution at the Hagari Experimental Station, is given below.

Hagari 1 is a pure strain, isolated by means of single plant cultures, the most simple method in plant breeding. Five hundred single plants were in 1920-21, selected at random from a bulk field of Hagari 25. They were selfed against cross fertilisation. Individual pickings were done. A good many of the plants among them were discarded by empirical examination of lint and only the few plants, possessing very fine lint, were examined for lint-length and lint and seed weights. Only three plants viz., Hagari 25 (a), Hagari 25 (b) and Hagari 25 (c), withstood the test and were the best of the lot. Individuals of Hagari 25 (c) were sown in a separate plot in the following season 1921-22. Variations in vegetative characters were studied in the field and they were examined in the laboratory for the important lint and seed characters. The results of the laboratory examination were very encouraging. The plant Hagari 62 (which is now renamed as Hagari 1), was the most promising and had 30.80 ginning percentage. It was therefore decided to scrutinize this selection from all aspects. All its selfed seeds were sown in separate plot in the year 1922-23 for further trial. The plants of this selection were examined in detail in the field and in the laboratory for all the important vegetative and laboratory characters respectively; and in fact, regular and systematic work was commenced. It was gratifying to note that in the third generation the selection was pure to the majority of characters, frequency arrays of the important characters were normal and in all cases, the modes coincided with the means. This strain was not only pure to the economic characters but also superior to Hagari 25 in its lint and seed weights. It was therefore considered advisable to test this strain for yield. A small plot was sown with the selfed seeds during the year 1923-24 to get a sufficient quantity of seed for conducting comparative trials in the following season. The plot yielded 340 lbs. of seed-cotton per acre. For corroboration of the results of the previous seasons, two single plants were also selected. The field and the laboratory characters proved once again the purity of the strain.

The strain Hagari 1, being superior to Hagari 25 in the three most important characters, was compared with the strain Hagari 25 and local cotton during the season

1924-25. The results of the comparative trials were positive, the difference in favour of Hagari 1 over Hagari 25, being 2.6 times the probable error. The yield of Hagari 1 in the bulk plot was 501 lb per acre on 1.90 acres against 207 lb of Hagari 25, the highest yield in the latter being 310½ lb per acre on 2.80 acres. Comparative trials of Hagari 1 and Hagari 25 were continued in the following seasons, viz., 1925-26, 1926-27 and 1927-28, to eliminate the effect due to seasonal variations. The comparative trial results of all these years showed that Hagari 1 was decidedly a better yielder than Hagari 25 as shown below:—

Season.	Average yield in ounces		Percentage of increase in the yield of H. 1. over H. 25.	No. of times of increase over the probable error in favour of H. 1.
	H. 1	H. 25		
1924-25	49	44	11.40	2.60
1925-26	62	56	10.70	4.20
1926-27	86	80	7.83	4.16
1927-28	102	90	13.30	4.28

The above figures in combination with the figures given in the Table below, clearly prove the superiority of the strain Hagari 25.

Maximum Yields and Ginning percentage of strains  
Hagari 1 and 25 for five seasons.

Season.	Hagri 1.		Hagari 25.	
	Yield in lbs.	Ginning %	Yield in lbs.	Ginning %
1923-24	340	30.00	....	crop failure.
1924-25	613	27.00	207	23.00
1925-26	335	26.70	195	23.50
1926-27	377	29.40	239	25.30
1927-28	520	28.92	311	25.63

H. 1 cotton has successively shown its superiority over H. 25 cotton in yield and ginning percentage, while the quality of the lint of the two strains is the same. The Director of Technological laboratory of the Indian Central Cotton Committee, Bombay, to whom the lint of these two strains were sent for spinning tests, reports thus:—"There is practically no difference between the two Hagari cottons (Hagari 62 and Hagari 25), the slightly higher strength results obtained for Hagari 62 being associated with rather higher actual twists. Both are suitable for warp yarn of moderate twists up to 30s." In short, Hagari 1 cotton is an improvement over the old popular strain Hagari 25 and is better than it by about 15% from the point of yield of lint per acre, while the commercial value of its lint is equal to that of Hagari 25 cotton. Hence, from the current season, Hagari 1 strain is being distributed to replace Hagari 25 cotton. The average characters of Hagari 1 and Hagari 25 cottons for five seasons are given in the following table.

#### Strain Hagari. 1.

Season.	Yield.	Length of Staple.	Seed weight.	Lint weight.	Ginning percentage.	First symprocial.	No. of days for 1st flowering.	Maturation period of bolls.
1922-23	12	26	62	28	31	10	115	...
1923-24	40	27	65	28	30	7	68	52
1924-25	30	26	53	21	29	9	100	51
1925-26	17	20	43	16	27	8	130	34
1926-27	24	25	63	27	30	8	90	48

#### Strain Hagari 25.

1922-23	16	24	49	16	25	9	110	...
1923-24	35	26	59	22	27	7	75	56
1924-25	25	25	51	18	26	9	106	55
1925-26	10	20	44	15	25	9	140	36
1926-27	25	25	53	30	27	9	91	49

The next stage in the "cotton Improvement" work in the Bellary centre, consists in the production of large quantities of cotton seed of the improved strain, Hagari 1,

without impairing the standard of its purity, for distribution to cultivators for whose benefit the strain has been evolved by the plant breeder. It is needless to emphasise the importance of this problem, especially in cotton, in which cross fertilisation is very common and the causes for the mixing of seed of different types and for making the strain to rapidly lose its distinctive qualities (and fall to the level of the variety of cotton it is hoped to displace, are many.

As a matter of fact, much of the cotton grown in this tract, is even now raised from mixed seeds of various types creating a situation under which the question of purity entirely disappears. The standard of improvement is permanently injured in the field, due to the natural cross fertilisation which goes on freely between the local and the improved varieties through the agency of wind and insects; and no amount of "roguing" for any number of years can bring it back to its original condition. Deterioration in such cases can only be prevented by the continuous renewal of pure seed from the original stock or by the evolution of a fresh strain. As this is more or less a recurring phenomenon, there can be no finality in selection work for building the stock of seed for multiplication.

The actual multiplication of the small stock of pure Hagari 1 cotton seed, grown on the Hagari Experimental Station, into a quantity sufficient for distribution to the farming community, is being done in this locality in what are commonly known as "Seed-Farms", which are the nuclei of the seed-distribution organisation of the agricultural department. The Agricultural Demonstrator, with the previous consent of the cultivators, selects a consolidated block in the typical black cotton soil area, suitable to the successful cultivation of Hagari 1 cotton. Compactness of the seed-farm area of cotton, in which cross fertilisation is very common, is essential, if the work of the breeder is not to be nullified. The actual cultivation of the crop is, from start to finish, carried on by the ryots themselves; but "roguing" in the seed-farm area is done under the supervision of the Demonstrator at the cost of the Department



of Agriculture. The percentage of "rogues" in any one year has, so far, not exceeded more than 0.1. At the time of sowings, H. 1 cotton seed is lent to the seed-farm ryots on the condition that it should be repaid in kind after their kapas is ginned. The seed-farm ryots are further bound by the agreement taken in writing, to sow H. 1 cotton unmixed with other cottons, to cultivate their lands clean and to attend to the clean picking and proper storage of the produce. After cotton-pickings are over, kapas is brought by them to the Government Ginning Factory at Hagari, where it is ginned under the careful supervision of the Demonstrator. With the previous approval of the Deputy Director of Agriculture, 111 Circle, Bellary, the Demonstrator purchases this seed at a rate which is slightly above the ruling market rate. The seed of the improved strain Hagari 1, propagated on these seed-farms and purchased by the department, is then stored in the departmental seed-depots at Hagari and Bellary. This process takes place year after year, fresh seed from the seed-farms continually replacing that of the previous year to avoid the danger of growing hybrid seed. The acreages of seed farms located in the Bellary centre during the past seven seasons are given in the table below :—

Season.	Area under H.25 cotton in acres.	Area under H.1 cotton in acres.
1922-23	500	....
1923-24	600	....
1924-25	906	....
1925-26	1,101	45
1926-27	427	1,068 $\frac{3}{4}$
1927-28	...	3,311
1928-28	...	2,971

The next step in the "cotton improvement" work here is the distribution of the improved seed of Hagari 1 cotton to cotton-growers. Owing to the paucity of seed merchants of proved integrity and enterprise, the distribution of this seed is almost entirely controlled by the Department of Agriculture, to prevent the sale of seed of doubtful quality

as "departmental seed". Successful attempts were, however made now and then to sell the departmental seed to the cultivators through private as well as co-operative agencies. During the current season 1,01,836½ lbs. of H. 1 cotton seed valued at Rs. 4,736-9-0, has been sold to farmers on a cash basis through the Bellary Co-operative Loan and Sale Society limited, Bellary. Here it may be said without any fear of contradiction that the burden on the agricultural department, which the work of the seed distribution involves, has become an unduly heavy one and that the co-operative department is, at present, the only agency which can materially lighten this load which is so far borne entirely by the Department of Agriculture. The quantities of improved seeds of Hagari 1 and 25 cottons, issued to the cultivating class for sowing purposes in the Bellary centre during the past seven seasons, are given in the sub-joined table:—

Season.	H. 25 cotton seed in lbs.	H. 1 cotton seed in lbs.
1922-23	84,367½	...
1923-24	1,60,116	...
1924-25	91,098	...
1925-26	77,535 1/6	400
1926-27	1,24,742½	8,720
1927-28	7,047	33,429½
1928-29	...	2,22,446½

In addition to 7,047 lbs. of Hagari 25 cotton seed and 33,329½ lbs. of Hagari 1 cotton seed mentioned in the above table, 1,16,100 lbs. of Kumpta cotton seed, specially purchased by the department, were sold for sowing purposes through the Co-operative Loan and sale society, Bellary, during the season 1227-28.

The final stage in the "cotton improvement" work consists in ginning and marketing of cotton. Before entering into detail as to what the agricultural department has done in this direction, it may be well to review briefly the system in vogue, under which cotton is marketed in Bellary.

The Bellary cotton market is more or less an unorganised one, having no market committee to regulate the system of its working. Cultivators and village merchants are the two classes of sellers who bring their produce for sale to this market where it is stocked in the godowns of dalalidars who act for them on a commission basis. Though nothing prevents them from effecting direct sales in the market, they are invariably compelled to employ these dalalidars in the disposal of their produce. Due to many handicaps under which the cultivators labour in this tract, they are not free to dispose of their produce as they please. Prominent among them are heavy indebtedness, low standard of literacy, unsatisfactory communications, the absence of properly regulated market, the lack of co-operative spirit among the peasantry and to a certain extent, the unwillingness on the part of the buyers to purchase cotton in small quantities. Small cultivators with a view to avoid the dangers attending the sale of their cotton in the market, especially in regard to the loss in weighing and deductions in kind as well as in cash, against which they have no effective means of protest, prefer, however, to sell their cotton in the shape of kapas in the villages themselves to village traders who are often financed by the dalalidars at Bellary. Besides the deductions both in kind and in cash, attending on the sale of cotton in the Bellary market, which are given in the statement below large samples of produce, varying from 1.62 lbs. to 3.24 lbs. for every docra of lint and 3.24 lb. to 6.48 lbs. for every docra of kapas or unginned cotton, are taken for which the owners of the produce are not paid even when no sale is effected.

### Customary deductions in the Bellary Market.

	On a naga (311.04 lbs.) of unginned cotton.		On a naga (311.04 lbs.) of ginned cotton.		Remarks.
	In kind lbs.	In cash.	In kind lbs.	In cash.	
Pechu for the loss in bailing cotton.	4.87	...	4.87	...	Customary & claimed on gross weight.
Massala or sam- ple.	...	...	0.27	...	Customary & claimed on net weight.
Allowance,	3.24 to 19.14	***	1.62 to 6.48	***	Claimed when cotton is not up to the sample or is damp etc.
Dalali or Commission*	...	4 pies per Re.	...	Rs. 2	
Weighment charges*	...	2 to 4 as. per docra	...	2 to 4 as. per docra	
Charity pur- poses*	...	1 to 1½ as per Rs. 100.	...	1 to 1½ as per docra	
Gorakshanas*	...	3 pies per docra.	...	6 pies per docra	
Insurance charges @	...	4 as. per 100 Rs.	...	4 as. per 100 Rs.	
Godown rent @	...	4 as. per docra.	...	4 as. per docra.	
Staking char- ges @	...	1 to 1½ as per docra	...	1 to 1½ as per docra	

N. B — Items marked thus  $\dots$ , are claimed by all dalalidars  
and items marked thus @, by a few.

The village traders seldom purchase the ginned cotton; but on the other hand, they buy kapas of various types, grown in different villages, and cart the same to the nearest convenient ginnery where all these different types are, in spite of the "Ginning and Pressing Factories Act," mixed so ingeniously as to defy detection by even a critical eye. The result of this vicious practice of deliberate mixing of all types before ginning, to suit their personal immediate profits, needs no elaborate telling. Suffice it to say that it causes serious admixture of foreign seed with that of the Sircar strain, resulting finally in the ruination of the quality of the latter which has been evolved and made popular by the department by overcoming many obstacles. The same method is also employed by the cotton dealers who do both buying and selling in the Bellary cotton market. The owners of the ginning factories are also responsible to a certain extent for the existence of such a state of affairs in this tract, for it is they who allow these middlemen to mix the various grades of cotton in the premises of their factories before their very eyes just before the kapas is put through the gins, using at the same time certain contrivances to increase the outturn of lint for the benefit of both. This indiscriminate mixing is, in short, due to commercial rather than agricultural conditions for which cotton-growers are not responsible.

The system of sale in the Bellary market is generally conducted by open auctions in the case of kapas or unginced cotton; but in the case of lint or ginned cotton such open auctions are not held. The buyer who is in need of ginned cotton, makes a private visit to the dalalidar's shop and strikes a bargain with the dalalidar in secret for the quality and the quantity of cotton he is in need of, when the demand for cotton is keen and the supply is less in the market. But when the market is dull and the demand for cotton is less but the supply is great, their position is reversed. The dalalidar goes to the buyer for striking a bargain with him for his clients' cotton. Any how, the produce is generally sold in the absence of the cultivator. The real price at which it is sold is only known to the dalalidar and the farmer is simply to take his word. Hence there is in this system much scope for unscrupulous men to curtail the profit for the man who has produced the crop.

Grading and stapling of cotton in this locality are almost unknown both to farmers and merchants. This is unfortunate in that the grower gets the impression that all cottons fetch approximately the same price. In other words, the slovenly grower and producer of short and dirty cotton realises the same price for his product as the grower of good cotton. The result is that no attempt is made by the growers of cotton to pick cotton clean.

So far as the seed-farm cotton is concerned, the department arranges to have the cotton ginned under its supervision and assists the cultivators in the sale of their lint in the Bellary cotton market at a premium ranging from Rs. 12 to Rs. 22 per bale of 400 lbs. lint. For the past three seasons, cotton is however sold through the co-operative Loan and Sale Society, Bellary, which came into being on 29-6-1925. Last year an attempt was made by this society to sell cotton by open auctions under the supervision of the Department of Agriculture. These auction sales were not only successful but also provided a useful means of securing to the farmers an adequate premium for the superior quality of the new strain of Hagari 1, grown by them. The following table will serve to indicate the quantity of cotton sold and the premium obtained for it during the past seven seasons.

Seasons.	Cotton sold in bales of 400 lbs.	Premium obtained on a bale of cotton of 400 lbs.			Remarks.
		Rs.	A.	P.	
1922-23	255	15	6	7	
1923-24	337	14	1	8	
1924-25	60	12	12	10	
1925-26	51	20	8	2	
1926-27	128	22	0	0	
1927-28	236	18	4	3	on 173 bales sold on 30-4-28
		20	3	1	on 63 bales sold on 20-5-28.

The difficulty in this market is that the exporting firms, both foreign and Indian, sell their cotton on types prepared by their own admixture of different varieties of high and low grades of cotton. This practice acts as a check on the onward march of the "Cotton Improvement" work of this centre. The quality of cotton, grown in this tract, is sure to improve rapidly, provided these exporting firms sell the cotton pure by its local name instead of their type numbers.

With a view to check some of the evils connected with the marketing of cotton, to maintain the reputation of the departmental strain and to secure for its producer fair weighment, fair dealing and a fair price, the Bellary Co-operative Loan and Sale Society, Ltd., Bellary, was formed on 29-6-25 by the joint efforts of the Agricultural and Co-operative departments. The area of its operation extends to two taluks of the Bellary district, viz., Bellary and Rayadrug. The membership is composed of both individuals and primary societies. Agricultural produce notably cotton, is sold for members and non-members of the cultivating class. The produce to be sold is concentrated at its head quarters, where alone sale is effected. The produce handed by the society is not bought outright by it, but sale on commission is under taken by it. The produce for sale is brought direct to the Society's rented godowns by the producers themselves. If the market happens to be dull and if the owner of the produce is in need of money, an advance, not exceeding 60 percent of the value of the produce stored in its godowns, is given to him by the Society. Cotton with the Society is graded by the Agricultural Department before it is sold in lots at auction sales held periodically. Grading and the sale of cotton in bulk fetched, last year, higher prices for the members' improved type of Hagari I cotton. Such is the history of the Society's work in brief.

Before concluding this note on Hagari cottons, I wish to review in brief the success achieved by the Department of Agriculture in its policy on the improvement and spread of improved types of cotton, evolved by the departmental cotton breeder at the Hagari Experimental Station,

near Bellary When attempts of acclimatization of exotic and extra-provincial varieties of cotton ended in a failure, the department took to the method of selection to obtain types of cotton superior to those ordinarily grown in respect of quantity and quality. The latter attempt was crowned with success in the year 1917-18, when our popular strain, H. 25, came into existence. Since then, it is extensively cropped by the tillers of the soil. Its popularity reached its zenith during the year 1924-1925, when it covered an area of about 1,80,000 acres, representing approximately one-third of the total cotton area of the district. The giant strides made by this strain, year after year, are given in the sub-joined statement:—

Season.	Area under H-25 cotton in acres
1918—19	113
1919—20	1,794
1920—21	12,000
1921—22	12,800
1922—23	25,600
1923—24	81,100
1924—25	1,79,570
1925—26	1,67,963
1926—27	1,45,286
1927—28	1,19,232

It may be exaggerating too much to describe only the good points of this popular strain without touching on its disadvantages, which are fortunately not many. The only one which is worth mentioning here is its low ginning percentage. The popularity of this strain gave, however, a great impetus for further selections to eliminate this factor also. Hagari 62, which is now designated as Hagari 1, with a higher ginning percentage than the old strain Hagari 25, was isolated in the year 1921 to 1922. After submitting it to severe tests on the Hagari Experimental Station for a period of seven years, it was, for the first time, allowed to enter the arena of competition with the old but popular strain, Hagari 25, in the year 1928-1929, with a view to replace the latter strain with redoubled popularity ere long, for the recently evolved strain of



Hagari 1 is more remunerative to grow than Hagari 25 by at least 15% from the point of yield of lint per acre and it is at least equal to Hagari 25 in point of quality of lint. The acreage under Hagari 1 cotton in the current season (1928-29), is expected to be over 25,000 acres.

In fine, let me be permitted to express that the general public have begun to appreciate the intrinsic value of the departmental strains, but the time has not come to them as yet to appreciate the necessity for the classing of cotton on a rational basis.

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## EXTRACT.

**The Reform in Indian Land Tenure.**

BY RADHA KAMAL MUKERJEE.

*Cultivator's Right Sanctioned by Ancient Custom.—*

The present distribution of land in India is fraught with great economic and social danger. Throughout India the ancient custom and tradition laid down that the cultivator had a right to retain his holding so long as he paid a definite share of the harvest or the tax demandable from him. In Southern India, where most of the land is held by petty occupiers direct from the State, this custom has been respected from the beginning of the British rule. In the *ryotwari* areas in Madras the registered occupant of each field is entitled to hold the land for ever, so long as he pays his land revenue; and inheritance, transfer, mortgages, sale and lease are without restriction. Similarly in Bombay, as in Madras, a ryot is secure in possession of his holding, so long as he regularly pays the instalments of his land revenue and the right of occupancy, in the case of the ordinary survey tenure, is transferable by inheritance, sale, gift or mortgage without restriction.

*Its Denial in the Zamindari Tracts.—*But in Northern India, in both the permanently and temporarily settled districts, the tenants or ryots still lack complete protection. The zamindars being declared to be "Proprietors of the soil," landholders, land owners, in the legislation of 1793 it follows as a natural consequence from this and from the introduction of English ideas that the ryots have come to be looked upon as their tenants. Every prejudice arising out of Western notions of property and the relations of landlord and tenant in Great Britain was entirely on the side of the *zamindari*. There cannot be the least doubt that even in Bengal every settled cultivator formerly was entitled to be maintained in the quiet occupation of the land he tilled, so long as he paid the established quota of

land tax to the zamindar. This was a right inherent in the cultivator as sanctioned in the traditional land law, and did not in any way emanate from the zamindar as *sudder malguzar*. It was unfortunate that at the time of the Permanent Settlement the rights of the ryot were not defined at all. The Government was unable to ascertain them fully and accurately. Even Shore, in Minute of 1789, remarked :—“ With respect to the ryots, their rights appear very uncertain and indefinite.” The Government was also apprehensive lest enquiries into these rights should excite suspicion in the minds of the zamindars that the assessment of the revenue was not really meant to be permanent and it indulged a strong hope that zamindars and ryots would, as did landlords and tenants in England, adjust all matters of dispute between them by contract. Unfortunately, the subsequent regulations of 1799 and 1812, instead of conferring security of tenurs upon the tenant, left him practically at the mercy of the zamindar. His property was rendered liable to distraint and his person to imprisonment if he failed to pay his rent however extortionate it might be. It was only in 1859, that we witness the enactment of a law restricting the zamindar’s power of enhancement in certain cases. The landlords of Bengal profiting by special rules made in favour of auction purchasers and devised to protect the Government revenue, persistently and with the sanction of the courts enhanced rents and ejected tenants arbitrarily, thus denying to the ryots the security which they enjoyed according to ancient custom and which it never was the intention of the Government to abrogate at the time of the Permanent Settlement.

*Stages of Tenant Protection in the Provinces:*—Tenant protection is now sought after the model of the Bengal Tenancy Act, 1885, which secured the status and privileges of all classes of tenants in Bengal, including Bihar and Orissa. This act provides that every ryot who has held any land in a village for twelve years acquires thereby a right of occupancy, and 80 or 90 per cent of the occupants have such right. The non-occupancy tenants cannot be ejected excepting in execution of the decree of a competent court nor can their rents be enhanced at

shorter intervals than 5 years. In the province of Agra, the 12 year period of continued possession formerly constituted the basis of the acquisition of occupancy accrued without any trouble or harassment. In Agra the increase of occupancy areas was slow and uncertain, and was accompanied by chronic litigation.

In the new Tenancy Act for Agra, the 12 year rule has been abrogated and for non-occupancy tenants a life interest has been granted with a succession of 5 years, as in the case of statutory tenants of Oudh. The position of tenants in Oudh is exceptionally weak though there is no doubt that the recent Oudh Rent Act contributed largely to ameliorate their condition. This accounts for a chronic discontent among the peasantry which lies below the surface. The British Settlement officers feel that the rights and privileges which have now proved inconvenient for land reform. There cannot be any doubt whatsoever that the landowning classes of Oudh will find it to their interest to give adequate protection to the tenants. As time elapses, the so-called statutory tenant will claim and be granted occupancy rights by prescription, perhaps a beginning in this direction will be represented by the principle that a statutory tenant may acquire occupancy rights in land cultivated year to year without a lease for at least 12 years. Similarly in the case of nonoccupancy tenants in Agra, permanence and heritability are the incidents to which the present life tenure will assimilate itself sooner or later as a result either of enlightenment among the landlords or of acute discontent among the tenantry.

Another direction of reform lies in the restriction of accrual of *sir* rights for the landlord both in Agra and Oudh. The justification of *sir* rights mainly lies in the advantages of superior cultivation by the landlord who commands larger capital and shows greater initiative, Thus *sir* rights ought not to be allowed to accrue beyond the extent to which the landlord's family can cultivate the holding without importing into it permanent outside labor. On a similar principle there are graver objections to the letting of *sir* land. *Sir* rights are incompatible with the lease of the land. The same principle will apply in the case of zamindars of Madras presidency who usually have

home-farm lands over which they possess complete rights. As regards the rent rates, the principles now adopted in the recent tenancy legislation of Agra and Oudh are sound. Rents are now fixed at Settlement, the periods of which differs in various provinces, and the Settlement or Ryot-year officer has power to reduce exorbitant rents. The rents can be enhanced at fixed intervals and the rates fixed by the Roaster-year officer govern all the rent suits for the determination of rents. There is little doubt that the special machinery devised in Agra and Oudh will be in closer touch with the local economic data on which alone fair soil rates, district by district, should be based.

*Arbitration of Rent Disputes:*—The great disadvantage of State machinery for the adjustment of rents, however, is its inelasticity and complexity of procedure. Perhaps a move in the right direction will be represented by the formation of arbitration tribunals whose procedure will be much simpler and whose decisions will be quicker and more acceptable than the decisions of courts and revenue authorities. Japan, by law passed in 1924, has laid down regulations for arbitration in the matter of tenancy which may be adopted with excellent results in the permanently and temporarily settled tracts in India. In Japan, when a dispute arises on the subject of the amount or of other questions connected with rent the parties may present a request for arbitration to the provincial tribunal, which can deal directly with the question, submit it to an arbitral commission, the latter to be composed of a president and of at least two arbitrators. If on the day of hearing the parties have not come to an agreement, the tribunal or commission as the case may be, must pronounce its decision; when this decision comes from the commission, it must be submitted to the tribunal for ratification.

In Bengal, Bihar and Orissa, the disposal of rent suits is left in the hands of the civil courts. Now the number of rent suits filed each year in many districts is increasing considerably. In one district as many as 17,565 rent suits

were filed in 1918, in almost every case for three years' rent of holding. It means that every year the rent of 50000 tenancies fall into arrear and ultimately has to be realised by the civil courts. On the whole, the number of tenancies in the district the rent of which may be expected to be realised by suit if it falls in arrear has been estimated at rather under 3 lakhs. The civil court procedure is both expensive and dilatory and the tenants also put forward every device they know to gain time. An alternative method is necessary. Whether the matter should be left in the hands of the revenue officers or to special land courts depends upon local conditions, the character of the landlords and the degree of education of the tenants.

#### *Advantages and Drawbacks of Produce—Sharing.*

Similarly, the produce-rent system which is now everywhere discouraged in India as being an engine of oppression of the tenantry, need not be discountenanced altogether. In Bihar the produce rent system is more prevalent than else where because the zamindars have played their due part in the construction and maintenance of private canals, channels and embankments. Moreover, the produce rent represents an automatic adjustment to rural economic conditions. From 1859 the enhancement of existing cash rents in Bengal and Bihar was not so easily affected as hitherto, and since 1885 it has been comparatively difficult. Since the Bengal Tenancy Act become law, Bihar zamindars generally have been endeavouring to obtain producerent for as much land as possible. There is no necessity here for the institution of suits for the enhancement on the ground of rise in prices and to the full extent of the rise. The tenants however, generally detest the appraisement system which gives at each harvest occasion for friction with landlords; among the petty estates the system does not work as great hardship as in the larger ones, The system undeniably gives opportunities to speculative purchasers in Bihar to annul for practical purposes all the protection which agrarian legislation has afforded to occupancy ryots, of which advantage sometimes has been taken. Apart from this, the inter dependence of irrigation and produce rents in many cases produces a happy result.\* Where rent is paid in kind the land-

lord who neglects his liabilities in respect ~~of irrigation~~ works will at once feel the result in his pocket; these high rents do give him a direct inducement to do his duty. In fact the introduction of commutation has in many areas led to the neglect of irrigation works and the ryots are now beginning to realise that the conversion of produce rents into money rents has not been altogether beneficial. Although there is a stipulation that the landlord can realise the fixed money rent only as long as he maintains the irrigation system in order the result in practice has been that he seldom does this. Thus the benevolent intention of the Government is a pious wish because the ryots are unable to seek the remedy in the court. There is doubt that the prosperity of large tracts in Tuscany and Southern France are due to *Metayage*. Share Tenancy agreements in Italy testify to the close economic partnership between the landlord and tenant assured thereby; the landlord supplying the machines, livestock and an adequate working capital in conformity with the requirements of scientific agriculture, while the tenant supplies adequate agricultural labour. The produce is divided usually in exactly equal shares as in India. The produce rent system assures to the tenant better protection against the uncertainties to which Indian agriculture is particularly liable. It may be conducive to greater co-operation between the landlord and the tenant if only there is organisation to protect share tenancy. Thus when the landlord gets a money rent instead of his share of produce, he absolves himself of all risk and trouble which are shifted to the tenant. Absenteeism then follows as the next step. Recently Portugal has passed a law which deals with the form of payment of rent for rural lands. It lays down that in the case of those contracts for the letting of rural lands, for which it is stipulated that the rent must be paid in cash whatever the duration, from and title of the lease, one moiety of the rent shall be paid on the respective dates of expiry in cash and the other in kind if the lesser or the lessee should so demand. It is laid down that the commodities contemplated are those which are derived from the cultivation usually predominant on the lands leased; and their value unless it is otherwise agreed up on by the parties, shall be calculated on the basis of the year in which the lease was concluded.

**Rent On Uneconomic Holdings:**—In the congested parts of Bengal, Bihar and the United provinces the section of the Tenancy or Rent Acts which gives the ground for an enhancement of rent by the landlord due to a rise of prices also needs amendment. Population has multiplied and the holdings owing to continuous fractionalisation, have become uneconomic. Tenants therefore, who have no surplus agricultural produce for sale do not benefit from a rise of prices. At the same time the competition for land tends continually to raise rent to a higher level than the holdings can pay. There is need accordingly for some discrimination between economic and uneconomic holdings in the assessment of rent by the Settlement or the Roaster-year officer, Obviously the ground for an enhancement of rent due to rise of the price-level is not applicable to uneconomic holdings.

**Legal and Economic Measures of Consolidation.**—Intensive enquires in the villages of the Indo-Gangetic Plain indicate that this problem is very serious. Nearly half of the tenant population in villages possess holdings whose size is below the subsistence limit of three acres. Again the unprotected tenant occupies everywhere smaller-sized plots and pays higher rent than the protected tenant. Naturally most of these unprotected tenants belong to the fluctuating class, tenants one year and laborers the next. The holdings are too small and the rents too high to retain permanent tenants. Hence the question of fair rents is closely related to the problem of economic family holdings. We have already discussed the need of tentative legislation in this direction which would compel all villagers to accept restripment when a majority desires it. On the death of the cultivator, a preferred heir could succeed as in Germany and compensate to the other heirs. The introduction of economic holdings is however impossible so long as there are protected and unprotected grades of tenants or again, where agriculture is so much dependent upon rainfall that holdings have to be scattered in different soil areas to minimise the risk of agriculture. In densely populated regions a forward scheme of consolidation would also involve expropriation and widespread distress in the



absence of better opportunities of emigration and industrialism. Thus the whole problem of consolidation is connected with the reform, not merely of the land and revenue but also of the present day practice of Indian farming.

The maintenance of the small family holding however no longer can be left either to voluntary mutual transfer or to cooperative consolidation, but must be tackled by legislation. Throughout the country wherever the land is fertile the constant subdivision of the property that takes place tends to make the income derived from the holding less and less adequate for the needs of the family. The climax of absurdity has been reached in many districts of the Punjab, the United Provinces, Bengal Bihar, Orissa and the Madras Presidency where the average size of the holding is hardly more than an acre or two. A forward scheme of consolidation is the crying necessity of Indian agriculture. First the economic cultivation unit must be determined region by region, and the law should protect this unit against further subdivision. The extent must be such that a family of medium size can cultivate it effectively and in any case it must not be less than three acres. There will be enormous social and legal difficulties to overcome before an economic family holding of this size can be constituted. But if such difficulties cannot be faced today they may be overcome a few decades hence. Sooner or later the country must adopt compulsory restripping operations so as to establish an area suitable for normal small cultivation. The incredibly small scale in which cultivation is now carried on can hardly be called normal farming. Therefore the amalgamation of small holdings, provided the total area does not exceed the size of economic cultivation unit, must be deemed a necessary return to the normal. Each cultivator participating in the restripping might receive, out of the regrouped area in exchange for his old property an area of land of equal value and equal quality with that which he possessed before the exchange. At the time of restripping, the law might also affect the liquidation of all easements and the regulation of roads and paths as well as the provision of a general constructive plan for the rural unit created by the restripping of the land.

*Purchase of Zamindari Rights on Behalf of Tenantry*:—To secure land and provide money for such a programme legislation might also be necessary for dividing portions of zamindaries or great estates among peasants and landless men. Agrarian reforms on such lines has been effected by drastic legislation in most countries in Central and Eastern Europe. In Ireland and Scotland such reform was made at an earlier date by a series of cautious landlaws. The Irish Land Act of 1909 and the Scottish Small Holders Act of 1911 have a compulsory clause authorising compulsory acquisition of land for the purpose of constituting small holdings. In Ireland the Act allows the landlords to sell their rights in land held by the tenants for a guaranteed price paid by the government, and the tenants to buy their farms, paying for them by easy instalments. If the owner does not accept the final offer of the Estate Commissioners the land is acquired compulsorily. Similarly land in West and South Ireland may be requisitioned by the Congested Districts Board.

In Bengal and Bihar expropriated zamindars might be compensated in a similar manner while the new small owners could be allowed to pay by easy instalments at least part of the price of the land they needed, The Government would advance the amount for the expropriation and be repaid by the purchaser by means of annual repayments to include interest and a quota of the repayment of the principal. Easy and cheap facilities of the credit should also be supplied by the State, so that the tenant might start work on his newly acquired holding without any handicap of indebtedness. The problem is very urgent and an early solution is imperative. If the experience of small agricultural countries of Europe is to have any lessons for us, the solution lies in legislation aiming at the preservation of the greatest possible number of independent holdings; first, by preventing any land belonging to the peasantry being added to the landlord's estate; secondly by providing against holdings being reduced by the detachment of parcels, below the limit which in existing circumstances must be considered necessary to ensure that a family shall find a full occupation upon them; and thirdly, by compulsorily acquiring land from landlords or under-

tenure-holders who hold large estates and who would be compensated by the State. The State should obtain a portion of the compensation cost from the new owners in easy instalments.

In Madras and in Bombay the introduction of special legislation to promote restripment and consolidation should be least difficult, because questions of tenancy right do not there complicate the situation as they do in the North. Indeed, preliminary experiments in restripping and amalgamation should meet hardly any difficulties at all in Bombay and Madras where even now the village panchayats have kept alive the tradition of mutual transfer of holdings. The assessment of a fair land revenue which does not encroach upon cultivator's standard of life and comfort would thus be facilitated. It should be determined by the same principles which govern fair rents in the permanently and temporarily settled tracts. The State in estimating the net produce should make a liberal allowance for the true and full expenses of cultivation, the labour of the cultivator and his family, depreciation of agricultural capital and insurance against the inevitable risks of agriculture in the Indian climate; it also should return the land revenue in the form of benefits which may increase the efficiency as well as the comfort and amenities of life of the cultivator.

(From Indian Journal of Economics January 1929).

*To be continued.*

## Chemical Alarm Clocks Arouse Sleepy Plants.

[*Tubers, shrubs and flowers begin their natural activity ahead of Nature's schedule in response to chemical accelerators.*]

BY A. E. BUCHANAN, JR.

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"Beautiful Spring" has long been credited with a mysterious vital force which annually awakens dormant plants, inspires the sap to flow with fresh vigor, and clothes the drab winter world in a new dress of tender green. Leaving this phase of seasonal change to the poets, science has turned its searching scrutiny on the flowers that bloom in the spring, tries to seek the *modus operandi* of spring's miracle and has found that certain chemical substances possess the remarkable property of awakening dormant plants and stimulating very appreciably their early development.

So effectively does the chemical alarm clock cut short the rest period prescribed by Nature that lilac can be made to bloom at Christmas time, and potatoes, exposed to vapors of ethylene chlorohydrin gain from two weeks to two months growth on the untreated tubers planted at the same time. The discovery is an eye-opener for potatoes, of course, but none the less for horticulturists and scientists who see great possibilities in its commercial development, as in forcing the early blooming of certain potted plants which are favorites in the florist's trade.

Chemistry has played an important role in the production of artificial fertilizers which supply plant food in readily assimilable form. This new application of chemicals to the initiation of growth, however, has no direct relationship to fertilizers, for the substances employed are apparently not utilized directly as food and produce results seemingly out of proportion to the energy they could furnish even if they were absorbed and oxidised. The how and why of this synthetic springtime is thus far limited to the general hypothesis that the chemical treatment induces some internal physiological condition which leads to the renewal of growth,

As far back as 1896, botanists have known that chemical treatment of certain dormant plants induces growth, but it is only recently that the phenomenon has been elevated by intensive research from the status of a scientific curiosity to that of a commercial process. Lemons, for example, are now quite generally subjected to ethylene gas to hasten the development of the desired yellow color.

Although the fruit is commercially mature when harvested, it may have considerable amounts of green color in the rind which is gradually replaced by yellow, if stored under favourable conditions. Concentrations of ethylene at as low as one part to 1000000 parts of air hasten the coloration, although one part in 5,000 is generally used commercially in order to make up for loss of the gas by diffusion. While the mechanism of this phenomenon is not understood, it has been found that the presence of ethylene stimulates the life process of the fruit, the rate of production of carbon dioxide from the respiration of the fruit being doubled and even tripled in 48 hours by exposure to air containing ethylene.

The latest and most spectacular results in this unique field have been achieved by Dr. F. E. Denny, botanist of the Boyce Thomson Institute for Plant Research of Yonkers New York. Approaching the study with the thoroughness and care of the true research worker and armed with a broad background in botany and chemistry, he has accomplished wonders in the artificial stimulation of growth.

Potato growers know that good seed potatoes are those which have been stored for several months. Freshly harvested tubers germinate slowly and produce inferior stands, even if climatic conditions are favorable because such tubers are in the "rest period". After experimenting with 250 different chemicals two substances were found which effectively curtail this period of dormancy-sodium thiocyanate and ethylene chlorohydrin. Two methods of treatment with ethylene chlorohydrin have proved successful application in solution and as a gas.

In the first method, or chlorohydrin dip, the cut pieces are dipped into a solution made by mixing 30 cubic centimetres of 40 per cent ethylene chlorohydrin and 970 cubic

centimetres of water; then storing them in closed containers for 24 hours and planting.

The vapor treatment may be used on the whole potato by placing the seed potatoes in slatted crates in a room that is approximately air-tight. From one quarter to one gallon of 40 per cent ethylene chlorohydrin per 1000 cubic feet of space is evaporated into the room by means of an electric fan, and the potatoes are allowed to remain in contact with the vapors for 24 to 28 hours. Potatoes thus treated when removed from the gas room and allowed to stand in air at ordinary temperature will develop sprouts in 7 to 10 days.

As far as the cost of treatment by either method is concerned, this should not exceed five or ten cents per bushel of potatoes. Although sodium thiocyanate is poisonous, its handling involves no more danger than the handling of poisonous insecticides and if the treated tubers are protected from animals and the left over solution promptly disposed of there should be no hazard in its use.

Another remarkable effect in the germination of potatoes is that of greatly increasing the number of sprouts per seedpiece by soaking the pieces for one hour in a 2 per cent solution of thiourea. This results in a larger number of smaller potatoes per hill, which is desirable in raising tubers for seed.

Ethylene chlorohydrin and ethylene dichloride have been found to awaken such woody plants as lilac, crab-apple, Deutzia, et cetera, from the rest period that ordinarily postpones their flowering in hot houses until February, so that they bloom before Christmas. The plants are placed for about 24 hours in a closed chamber in which a measured amount of the chemical is evaporated by means of an electric fan. About 10 cubic centimeters of 40 per cent ethylene chlorohydrin solution per 100 liters of space give favourable results with most species, although some species respond to as little as 0.75 cubic centimeters. Ethylene dichloride in like amounts is equally effective. Strong concentrations of vapor cause the buds to develop more leaves but fewer flowers while low concentrations seem to produce flowers at the expense of the leaves.

(From Scientific American for February 1929).

## STUDENTS ACTIVITIES.

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Games occupied a lion's share of students' attention this term, nay even eclipsed completely their literary side, due to the half-finished and impending tournaments that were booked for this term.

Our first year friends have to be congratulated on the strenuous fight they had put forth in winning the Interclass Parnell cup Hockey tournament. The third year friends are also to be equally commended on their success in the All-Round Interclass tournament. The Intertutorial Krishnamurthi Rao Memorial Hockey tournament Cup opened this year in memory of the late lamented Krishnamurthi Rao of our college was carried away by Mr. H. Siva Rao's wards after a well contested final against Mr. Ramachandra Rao's wards. The Cecilwood Tennis Singles tournament was well contested till the finals in which Mr. C N. Subramanyam of 2nd year had a easy walk over his opponent Mr. Ramdass who got the Runners up Cup. Mr. N. S. Vaidyanathan and his partner Mr. N. G. Narayanan won the laurels in the 'Tennis Doubles Handicap tournament which formed a new feature of this year's tennis activity. What with the fast approaching examination scare and what with the time already spent in active participation in games the literary aspect of our activity is a great disappointment, which, we hope, will not recur in coming years.

Another important feature of this term is the large toll of students that were booked for mumps which kept them away throughout, originating from the second years' tour at Nagercoil. The only relief afforded by it was the freedom from examination bother for some of our first year friends, who had a very mild attack of it—which relief is insignificant when compared with the trick it had played with second year students who suffered much—and to add to their pain and suffering, confined them to their rooms.

## APPENDIX.

## Departmental Notifications.

GAZETTED:—Mr. A. C. Edmonds, Deputy Director, extension of leave on half-average pay for 14 days from 21st February. Mr. Rao Sahib Y. Ramachandra Rao, Entomologist leave on average pay for 18 days from 11-2-29. Mr. M. Kantiraj Nayadu, M. A., B. Sc., to be Personal Assistant to the Director of Agriculture in the Madras Provincial Service from 1-4-29.

NON-GAZETTED:—Transfers and Postings:—Mr. S. Ramachandran, demonstrator, on relief by Mr. M. K. Swaminatha Ayyar is posted to Tirupattur sub-circle. Mr. P. S. Atmarama Ayyar, demonstrator is posted to Kumbakonum from 15th April. On relief, Mr. M. P. Gowrisankara Ayyar, demonstrator is posted to Papanasam sub circle. Mr. L. K. Narayana Ayyar, assistant demonstrator, after a months training at Tiruvalur from 15-4-29, will join duty at Shiyali. Mr. A. R. Krishnamurthi Ayyar, assistant demonstrator is posted to Mannargudi from 1st May.

LEAVE:—III Circle Mr. V. N. Subbana Acharya, demonstrator, Bellary leave on average pay for one month from 1-3-29. Mr. K. T. Bhandary, demonstrator Hospet, leave on average pay for two months from 22-4-29. Mr. K. L. Ramakrishna Rao, Cotton assistant, extension of leave on average pay for two days from 5-3-29. Mr. K. Raghavachari, manager, leave on average pay for 10 days from 3-4-29 in continuation of Easter. Mr. M. Krishnaswami Ayyangar, assistant manager, leave on average pay for one month from 3-4-29 in continuation of Easter. Mr. B. Venkataraman, assistant demonstrator, leave on average pay for 15 days from 26-3-29.

SIXTH CIRCLE:—Mr. C. S. Sankaranarayanan Ayyar demonstrator, leave on average pay for one month on medical certificate from date of relief.

SEVENTH CIRCLE:—Mr. M. K. Nambiyar, demonstrator, leave on average pay for one month and 15 days from the date of relief. Mr. P. A. Venkateswaran, demonstrator, leave on average pay for 10 days from 18-3-29. Mr. K. W. Chakrapani Marar, Manager, leave on average pay for one month from 15th April.

LIVE-STOCK:—Mr. M. C. Menon, Manager, leave on average pay for 18 days from 25th March.



(ii)

**CURATOR'S SECTION:—**Mr. K. Govindan Nambiyar, assistant manager, leave on average pay for 15 days from 4-4-29.

**G. A. C'S SECTION:—**Mr. S. Kasinatha Ayyar assistant leave on average pay for 10 days from 3-4-29.

**P. S'S SECTION:—**Mr. C. V. Sankaranarayana Ayyar, sub-assistant, leave on average pay for 3 weeks from 7-3-29. Mr. C. Rajasekhara Mudaliyar, assistant leave on average pay for 3 weeks from 3-4-29. Mr. M. Ramaswami Pillai subassistant leave on average pay for 13 days from 15th March. Mr. S. Venkataraman assistant manager Aduthurai, leave on average pay for one month in continuation of Easter. Mr. S. Ramanujam Ayyanger, assistant leave on average pay for 2 weeks from 3-4-29.

**PRINCIPAL'S SECTION:—**Mr. K. M. Jacob, manager, leave on average pay for one month and 25 days from date of relief.

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## The Ramasastrulu-Munagala Prize 1929.

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1. The Prize will be awarded in July 1929.
  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 15th May 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 1st June 1929, with a covering letter showing full name and address of the sender. The authors 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
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## The Cardamom Planter

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