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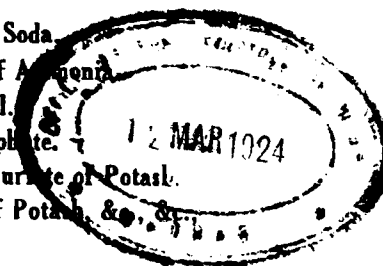
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Tobacco in Guntur District.

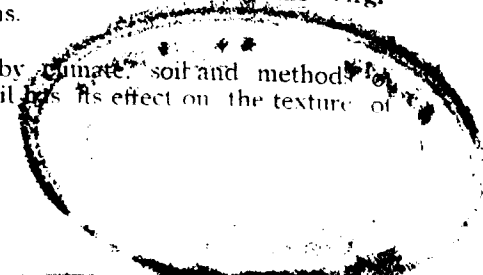
K. SANKARAN PILLAI.

Introduction.

The cigarette is one of the many creations of the nineteenth century. Its powerful aid in developing the sociable qualities of men has won popularity for it wherever it has reached, so that it is now no exaggeration to state that it has over-run the whole world. The invention of the cigarette-making machine has enabled the production of the cigarette in its tens and hundreds of thousands and has led to the flooding of the markets of the world with its various brands.

Cigarette manufacture was first tried in India with the local varieties, but it resulted merely in the production of low-grade ones, so that it was found necessary to import from America the bright yellow, mild Virginian tobacco for making the high grade brands. This naturally increased the cost of production with the result that a competition with the imported cigarettes became impossible. Hence one of the Indian cigarette concerns formed the idea of growing American tobacco in India and utilising the produce. The following is an account of the attempts made in growing the Virginian variety under Indian conditions.

No plant is so easily affected by climate, soil and method of cultivation as the tobacco. The soil has its effect on the texture of



tobacco, the climate imparts the flavour, and the methods of cultivation determine the colour, strength, elasticity and body of the cured leaf. The soil considered best for bright-coloured tobacco is a good retentive black soil with a fair proportion of sand and with a whitish tinge in it. Heavy clayey soils produce dark leaves.

After a careful study of tobacco growing tracts all over India, the Guntur tract was selected as the best for the trial of Virginian tobacco. There are other tracts also which produce fairly bright-coloured tobacco, but the soil condition of Guntur is such that it retains moisture for a very long period and tobacco can be grown as a dry crop. Generally under dry conditions, we get a bright coloured leaf. Moreover, the climate of Guntur is peculiarly suited for the adoption of the air-and-sun-curing system, on account of the extreme dryness of the atmosphere during the period from January to May, for then there is no fear of damage from rains while the curing of a large quantity of leaf is in progress in the open air. Yet another reason for selecting Guntur is that this district alone is responsible for the production of nearly half the quantity of tobacco that Madras Presidency produces. During 1920 a small beginning was made near Guntur and two acres of Virginian tobacco was grown with very great success. In 1921 its cultivation was extended to 40 acres.

Preliminary Cultivation:—This consists in giving deep ploughing during June after the first rain, followed by another ploughing. This practice was adopted in order to make the soil absorb as much water as possible during the heavy rains of July and August. Then a third ploughing is given after the heavy rains are over by about the middle of September and two more ploughings follow. By about the first week of October, the fields are ready with lines marked 2' 9" apart lengthwise and breadthwise to receive the seedlings at the junction.

Manuring:—Tobacco is a heavy feeder hence the question of its manuring is of vital importance as the quality of cured leaf depends on the form, quantity and quality of manure applied. It is important to avoid applying to the soil substances which might injure any desirable quality in the leaf. It is better to avoid the use of chlorides which injure the burning quality of the leaf. From last year's experience of manuring we learn that in plots where some coarse form of nitrogenous manures such as castor cake, and municipal manure (rubbish mixed with night soil) was applied, the quality of cured leaf was not affected. It strikes one that when such manures are applied they decompose with excess of fermentation. But soda and sulphate of ammonia may be used with advantage for the following reasons: (i) they are very costly: (ii) they

are very easily soluble and as such they are liable to leaching; (iii) they are found always mixed with a certain quantity of common salt which is quite objectionable as it develops chlorine and thus spoils the burning quality of the leaf. For the same reasons potash salts and fish guano are not used. Large quantities of tobacco waste were applied to a major portion of my tobacco farm, individual plants being manured with the finest powder made out of these wastes. The result was very well seen in the crop. The plants grew and cured exceedingly well and surpassed all other plots. Now every effect is being made to preserve all available tobacco waste products for manure. Usually after the tobacco leaves are stripped for curing, the stems are pulled out and used as fuel. This year a compost was made of all these green tobacco stems. Stems were pulled and put into pits with a little water and covered with soil, layer after layer, and the material used after a period of about one year. The excellent manurial value of tobacco waste is known everywhere now and there is a good demand. The waste that could be bought at Rs. 2 a candy of 500 lbs. is now offered for sale at Rs. 10 a candy. Tobacco waste has been found good even for chillies.

Seedbeds:—No operation in the culture of tobacco is more important than that of the preparation of seedbeds and the sowing of seeds. Producing plenty of good, strong and healthy seedlings is the surest foundation for a good crop of tobacco. A plot with a slight slope, to ensure free drainage, free from trees within a circumference of 50 feet, and with a rich, friable, black, loamy soil forms the best place for raising seedlings. The selected plot is thoroughly ploughed many times until the soil is pulverised into an impalpable powder. When the soil is thus brought into this happy condition, beds are marked 5 feet wide and 30 yards long with footpaths 1 foot broad all round. Well-rotten cattle manure is spread over the beds, stones and roots are brushed and removed completely. The proper time for sowing seed is about the middle of August. Tobacco seedlings feed very well on manure and unless we apply a heavy dressing of manure, the young seedlings may not grow with vigour. Being small the seeds are sown at the rate of one table-spoonful for every 40 sq. yds. of seedbed. This gives enough seedlings to plant two acres. Before sowing it is usual to mix the seeds with a large quantity of very fine sand to secure even seeding and perfect sowing. After sowing it is not necessary to work the seed into the soil, if this is done, it will cover the seed too much, and the result is poor germination. After sowing the beds are best pressed with a board or with the feet until the entire surface is smooth and compact. Firming the soil is very essential as the compact surface retains the moisture which mainly assists the germination of the seeds and gives a firm footing

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to the tiny seedlings. Generally a mistake is made in sowing too much seed. It is better to err by using too little. In the latter case, the plants will be large, healthy, low and stocky, and as such, they will withstand a very hot sun and can be set with very little moisture in the soil. When plants are crowded in the beds, the stems grow small, delicate and white, and perish in large numbers after transplantation. The few that survive take a very long time to show a healthy growth. After the soil is made compact, the beds are watered gently with a rose-can and the surface is not allowed to dry. Virginia seeds germinate on the 8th day whereas the local tobacco seeds germinate 2 days earlier, which is perhaps due to their bigger size. After germination, watering is regulated with great care, because with a slight excess of moisture in the bed, the seedlings perish all on a sudden. The nursery is weeded with great care and carefully watched from the attack of grasshoppers, flea-beetles etc. In about 45 days the seedlings are ready for planting. One important operation to be attended to during the growth of the seedlings is that of giving shade to protect the tender seedlings from the hot sun between 10 a. m. and 4 p. m. and also to keep away insects and prevent the accumulation of drifted leaves or trash in the beds. In America, costly muslins or canvas are used for this purpose, but in Guntur where bamboos or very cheap thatties were used with great advantage. These thatties were supported on pegs driven on the sides of the beds. Unprotected beds lost nearly 60 percent of the seedlings.

Transplanting, Watering and Cultivating:—After having prepared the field properly to receive the plants, the work of transplanting requires utmost care. Carelessness and neglect in transplanting tell seriously on the growth of the crop. Early planting is always good as it provides a long period of growth which gives tobacco ample time for the elaboration in its vesicular system of the oils, waxes and gums that contribute to its sweetness and fragrance. The usual time of planting country tobacco is about the middle of October, but Virginian tobacco was planted in the 1st week of October. Before the seedlings are pulled out, the seedbeds are thoroughly watered. They should be drawn one at a time so as to leave the smaller ones uninjured and so as not to injure the rootlets of the seedlings taken. The seedlings are kept in specially made well ventilated baskets and taken to the field for planting. A dropper with the basket containing the seedlings goes in advance dropping the seedlings in required places in 4 or 5 rows. A fairly long, smooth round peg about 2" in diameter, is used for making holes. The land is soft and moist as the planting time falls in the middle of the rainy season. Watering is however necessary just before planting in each hole and the plants

which are then placed in position are pressed compactly. As planting is done in the rainy season, the sun is not severe and no shading is necessary; but it is better to plant always in the evenings. If the weather is cloudy, planting may be done throughout the day. Careful planting is essential to ensure a good stand. The plants wilt down during the day, but if they look fresh in the morning it is a sign of perfect setting. Further watering should be done for 2 or 3 days after planting, in the early mornings when the plants are rigid. If watering is done late in the day or in the evening while the plants show a wilting, the result is that mud will cover the leaves and buds and the seedlings die without setting. If it rains soon after the plants are set, they will soon strike root and commence growing and a good stand will be ensured. In this case there will be no need for pot watering on the 2nd and the 3rd day. Much depends upon having a good setting. Replanting of missing holes ought to be done as early as possible. Good seedlings should be used for this purpose and great effort made to give every plant an even start. As the soil in this tract is very retentive, the crop grows luxuriantly despite changes in the weather. Cigarette tobacco should be grown only as a dry crop in order to preserve the colour. Irrigation makes the leaf darker and heavier, injuring its burning qualities as well as its flavour and aroma. In this district the rains cease in November and from December a kind of sea-breeze known as "*Payiragali*" blows in the evenings. This breeze acts like a magic wand and produces a marked change in the progress of the crop. The plants grow vigorously and healthily. As a matter of fact last year, i. e., in 1921, there was practically no rain from the middle of October and yet the plants grew high and measured after topping nearly 5 to 5½ feet with 15 to 18 leaves (average size 30" x 15") in each. A fortnight after the plants have been set, intercultivation is commenced and continued as long as the size of the plants permits. This operation is done by the bullock hoe. The implements used are known as "Potti gorru" and "Potti guntaka". The former is a wooden implement with 3 tyres which exactly fits the interspace between rows, and is worked lengthwise and breadthwise. Subsequently, the potti guntaka, a wooden implement having with an iron blade is worked and this levels the stirred soil and removes weeds. This kind of cultivation is repeated twice or thrice as the case may be. Cultivation should be shallow especially in the later stages of growth to avoid injury to the plant. Ordinary surface cultivation to maintain a fine mulch about the plant with frequent hoeings to keep down weeds as described above is quite essential.

Topping and Suckering:—When about 50% of the plants in the field have developed flower heads, and before these have bloomed, topping is done. It is done by nipping off the terminal buds leaving a certain number of leaves say 15 to 18 in number, so as to allow the

plant to develop more fully the lower leaves. Carelessness in topping impairs the value of the crop, for if more leaves are left on one plant than on another, plants will ripen unevenly, which is bad. The topping operation should be so skilfully performed as to enable all the plants to ripen uniformly, and thus secure a uniform quality in the cured product. When the seedheads are topped, the plant makes vigorous efforts to reproduce itself and every bud at the axils of the leaves begins to produce subsidiary branches. These branches must be diligently removed; otherwise, the development of the leaves will be retarded.

Diseases:—Grasshoppers attack this crop both in the nursery and in the full-grown stage. In the nursery the top coverings protect the seedlings to a great extent. The grasshoppers that attack this crop are sluggish in their movements, handpicking and destroying is very effective. Soon after planting, a black beetle known as 'mahila' cuts the plant at the junction of the root and the shoot. The attack is not very severe and such plants can be easily replaced. Tobacco worm (a sphinx? caterpillar) appeared last year in our crop. These are voracious feeders which devour the tobacco leaf in no time. These caterpillars are also very sluggish and hence hand-picking and destroying is the best method. Brown rust and a mildew appear in stray plants. The attack is not severe and the affected plants can be easily pulled out and destroyed. The parasite (*Orobanchenicoliana*) appears in badly cultivated fields and the shooting inflorescences may be pulled out whenever they make their appearance. By a regular rotation the attack may be completely prevented.

Harvesting and curing.—Nearly a month after topping, i. e., by about the beginning of February, the plants are ready for harvesting. Locally tobacco is harvested from top to bottom with a curved knife in one and the same day with a little stem also attached to the leaves and then stringed. But in the case of Virginian tobacco the leaves are stripped from below as they mature, first the bottom 8 to 10 leaves and after a week or 10 days, the top leaves; thus a uniform quality in the cured leaf is secured. The stringing in three-ply jute twine measuring 7 feet long should be done thinly in the case of Virginian tobacco as this requires free ventilation for its proper curing. If this is done closely, it badly affects the colour of the cured product. Another important point to be considered in harvesting is that, unlike the country tobacco, this variety should not be exposed to the sun soon after harvest even for a few minutes. If this is done, the leaf being very thin and delicate turns dark and becomes unfit. The method of curing varies with the kind of leaf grown and the object for which it is used. Different types of tobacco are differently cured, but I confine myself to the curing of

yellow tobacco suitable for cigarettes. Curing of yellow tobacco requires very good judgment. Slow curing develops colour and rapid process destroys it. There are 4 different methods of curing in the case of yellow tobacco. (1) By means of flues in timber houses. The temperature is so adjusted that the whole curing is finished in about 5 or 6 days. The leaves cured in this way are considered to be very good and they fetch a very high price; but the process is very costly. (2) By means of open fire. In this case the pores of the leaf are filled with carbonaceous matter which preserves all the good qualities in the leaves. As the porous system is filled with creosotic compounds the absorptive capacity of the leaf when artificial flavours are added, is very much diminished. Hence this system has very little following. (3) The tobacco ropes are tied firmly to the tier poles and then arranged in racks inside open sheds with free ventilation and cured. All the above three systems of curing are never tried in Guntur tract with country tobacco as they are too costly for the Guntur ryot to follow. (4) The sun curing method. In this case the whole process is done in the open field under the direct influence of the sun. This is cheap and hence this system is the only system followed by all the ryots of the Guntur tract. In both the air and sun cured tobacco the natural flavour of the leaf is better preserved and its porous system is greatly developed to absorb artificial flavourings with which it is treated in the process of manufacturing. But Virginian tobacco was cured by the combination of the air and sun curing methods and the following are the details of the process:—The stringed ropes 7 feet long are tied to a tier pole 9 feet long leaving 1 foot on either side. The tier pole is a thin bamboo to which the tobacco rope is tied and kept well stretched without hanging in the middle. These ropes on the tier poles are taken and arranged on racks inside the sheds closely. In this manner it is kept for nearly 24 hours and the leaves turn yellow after that period. This process is called 'the yellowing process.' After this the tier poles are arranged on racks 6 inches apart so as to allow free ventilation and kept in this manner exposed to the sun for nearly 48 hours. This fixes the yellow colour. The racks are covered with mats during nights to prevent the leaves from the attack of dew which affects the colour of the leaves. In this way it is kept exposed to the sun for nearly a fortnight. The moisture from the leaves and midribs will gradually pass away and then the ropes are subjected to the bleaching process. This is done by spreading the ropes on the floor and allowing the rays of the sun to have full play on the leaves for nearly 36 hours. This process improves the colour considerably. After this process on a fine morning the ropes are removed when they are soft, folded and bulked in an ill-ventilated room. The bulks are shifted very often, say once in 2 days, for nearly a month, and only during this process the tobacco develops its maximum colour, aroma and all the other good qualities

chiefly due to the action of bacteria. This bulking requires good judgment and only expert hands should attempt this work. Carelessness in bulking will bring in disastrous results. After a month's bulking the tobacco is ready for use. The leaves are removed from the strings and graded according to size and colour and then pressed into bales weighing 200 to 250 lbs. in hand presses inlaid with mat and covered with gunnies. These bales are sent to the factory for being manufactured into cigarettes. Last year on an average 800 lbs. of cured, butted and picked leaf was obtained per acre. The cost of cultivation amounted to 5 annas per lb. and even valuing this Guntur grown Virginia at Re. 1 per lb. it gives a nett profit of nearly 11 annas per lb. or in other words Rs. 550 an acre.

This experiment has proved a big success. The opinions of the manufacturers are favourable. They have reported that the sample of tobacco sent to them looked exceedingly good, that the cigarettes made out of the Virginian tobacco grown in Guntur were exceedingly nice, and that the colour as well as the taste of the tobacco were excellent. This achievement will, it is hoped, revolutionise the tobacco industry of this tract and ultimately it may also help the cigarette trade of India to develop in the course of a few years.

Random Thoughts.

Patience is holding on, perseverance is holding out, faith is holding up.

How may a man attain to self-knowledge? By contemplation? Certainly not; but by action. Try to do your duty and you will find what you are fit for. But what is your duty? The demand of the hour.

Goethe.

Charity:-

Never to despise, never to judge rashly, never to interpret other men's actions in an ill sense; but to compassionate their infirmities, bear their burdens, excuse their weaknesses, make up and consolidate the breaches of charity happened by their fault, to hate imperfections, and ever to love men, yea, even your enemies; therein the touchstone of true charity is known.

Caussin.

(From Great Thoughts.)

Agricultural Holdings - Their Disintegration and Re-union into Economic Units.

By

D. BALAKRISHNAMURTHI.

Professor of Agriculture and Superintendent, Central Farm, Coimbatore.

The desire to possess land is one of the most ancient and deep-rooted instincts of mankind. It can be traced back to days when primitive man was a cave-dweller and possessed a small patch of land near by on which he perhaps grew a small patch of grain to support himself. As he advanced in civilisation and went through the pastoral and then the agricultural stages, the passion for the possession of land also became deeper and deeper. Till a settled Government under a strong chief developed and laws were evolved to keep order between man and man, this land hunger often proved to be the cause of strife between individuals and sometimes between neighbouring tribes. In fact the history of mankind is in great part a record of a series of conflicts of nations warring for the possession of land. Till recent times in new countries like Australia, Canada or the United States of America vast stretches of land lay unexplored and unoccupied so that men with a spirit of adventure and enterprise were free to enclose and own as much land as they could cultivate without hindrance save when their activities came into clash with those of their neighbours. In old established countries, however, this impelling force has suffered a strong check, since population has increased and all land has been occupied. In fact, by reason of the development of a surplus population and owing to the fact there are no other channels or occupations into which the attention of this surplus could be diverted from land, a disintegration has naturally set in. This is most in evidence in old non-industrialised countries like India where agriculture is still considered the premier industry.

Several factors contribute to the parcelling out of existing areas. Some of these physical, religious, social or economic, operate as a check to a greater extent in certain countries than in others. Nevertheless, trouble arises when a nation becomes too large for the area it commands. It is then driven to exercise its brain better, to become more resourceful, to overcome obstacles. It then puts forth efforts to expand beyond its confines in various ways, viz., commerce, peaceful penetration, spheres of influence, lowering of its standards

A paper contributed to the Agricultural section of the Indian Sc. Congress at Bangalore in January 1924.

of living, exploitation, emigration, colonisation, diplomacy or war. Else it has to perish in the struggle; it gets wiped out of existence. One or more of these causes may singly or in combination be at work in any one country during a given period. Most economists are now veering round to the view that the last world war which killed ten million souls and crippled several millions more, was really brought about by problems of over-population and not by the assassination of the Austrian prince at Serajevo, nor through the perfidy of the German Emperor.

In agricultural countries, as local conditions permit, all land under occupation is divided up among actual workers or those who make investments towards reclamation. Modern Russia is an instance in point. In that country, since the extinction of the Romanoffs, the land owners have had bad days and the proletariat has ruthlessly split up the land. A worker in the above circumstances would be naturally content with the area he has reclaimed or can possibly work singly. This would be his holding. This is in the main the underlying frame work of every holding. Yet, in particular tracts other causes supervene and invest a holding with definite distinguishing characters. An economic holding may therefore be defined as the extent of land which enables the operator to make a living out of it, which enables him to keep his family, his children and himself in comfort, in any event, above want. This of course implies that he would find enough work for his animals and keep the machinery, if any, in working order and good repair. The size of such an economic holding will vary with the conditions obtaining in any particular tract, and with the skill and the status of the operator.

A few illustrations will make our meaning clear.

(a) The area covered by the Ceded Districts in the Madras Presidency is several millions of acres. This area receives comparatively little rainfall, the average never exceeds 20 to 25 inches in any year. Very often it fails. More often there is scarcity. Cotton alternates with grains. The acre yield of the latter oscillates somewhere about 500 lbs. The country is sparsely populated and the average area a ryot cultivates is about 47 acres.

(b) Take again another instance. Towns like Madras, Trichinopoly, Madura, Tanjore, Tinnevely, Calicut, Cuddapah and Bellary now boast of a large urban population. They are characterised by higher standards of living and need very large amounts of milk, butter and ghee, tons and tons of vegetables, fodder and flowers, and carloads of fruits and grains and thousands of unskilled labourers.

The lands in the immediate vicinity, therefore, are devoted to the production or supply of these requirements. Intensive cultivation becomes the rule, and very small areas do service. An acre or two are more than sufficient to keep the cultivator engaged.

(c) Cultivation in the deltaic tract is an example of a third type. Take any village in the deltas of the Godavari, the Cauveri or the Tambraparani. Here there is very little of dry land and still less of garden land. Whichever side you turn you see only wet lands. These grow mostly one crop a year and that, the very same crop throughout. It is sown, transplanted and harvested almost the same time over the whole village. At other periods of the year, the land is idle, the animals are idle and the men are idle. In these circumstances an average farmer can cultivate no more than 3 or 4 acres.

(d) In the Noyyal valley of the Coimbatore District, for example—a valley not blessed with a wide expanse of wet lands,—dry, garden and wet lands are contiguous to each other. Here a ryot can own all the three classes of land and work from block to block throughout the year as season permits and his cropping needs. An average ryot can deal with ten to twelve acres, which he finds ample. In a similar way, sugar-cane, betelvine, plantains, turmeric and jute (local) would reduce the area to which a man can turn his attention without any deterioration in the standard of living.

Jack gives an apt illustration in his "Economic life of Bengal District" page 85. He observes "50 years ago the cultivator in Eastern Bengal grew the whole of his food upon his own land and if his land was not adequate for this purpose worked as a hired labourer in harvesting for others and obtained his wages in kind. Since the introduction of jute, some of the cultivators have given up the growing of their whole food on a calculation that it would be profitable to grow jute and buy grain."

These are examples from our own country. Other circumstances necessitate other treatment. An American farmer generally keeps a tractor, a drill, a harvester, a thresher and other agricultural machinery. For, there, human labour is scarce and animal labour is costly. The tractor ploughs 5 to 10 acres a day. He can use the drill and sow fifteen to twenty acres daily. Corn on an area of ten to fifteen acres can be cut with the harvester and his thresher at comparatively less expense, separates out the corn from the straw, winnows and bags the grain and in fact deals with the produce of large areas cultivated in the season, in a very short time. This equipment renders the cultivation of large extents of land possible and is necessary if his

crops should pay for the expenses. Any thing less than sixty to one hundred acres would not be economical in his case. In Madras a few jacks, mangoes, oranges and limes gladden the heart of a cultivator but often bring him sorrow if the blossoms happen to fall or the fruits are damaged. When an insect attacks them he gives it up in despair, and the pest continues to thrive, whereas an Australian or American fruit grower will not rest content with less than one hundred acres of orchards and his equipment to destroy pests may be with power-driven sprayers or with insecticide-broadcasting aeroplanes. The outlay involved in the two cases and the profits expected determine the extent of the garden each owner can operate.

The extent given above of an economic holding is, it is fair to assume, only ideal. The actualities are different.

Table No. 1.

Country.	No. of occupiers of 50 acres and less in lakhs.	No. of occupiers of land over 50 acres in lakhs.
Germany. 1904.	45.2	2.8
Austria.	26.9	1.7
United States of America.	19.3	38.0
Great Britain.	3.4	1.7
Ireland.	5.1	0.9
Belgium.	8.1	0.2

From the above it will be seen that the number of occupiers of land cultivating areas falling far short of what would be an economic holding, varies in different countries.

The case is infinitely worse in our country. Over 80 per cent of the population depend upon land. We have very few industries to boast of. Every census shows an increase in population. There is no outlet for the surplus. The small number of emigrants to the colonies and other parts of the Empire are but a mere fleabite compared to the total population.

Further disadvantages arise when the area cultivated by one man is not all in one block but is scattered all over the locality. This is not an evil peculiar to India alone. It is in existence in all old countries, but tends to accentuate when no remedial measures have been taken. In India, the law of inheritance which is in vogue amongst the Hindus who form the bulk of the inhabitants is tending

to accentuate the evil. In other countries the process of division of land does not go so rapidly as here where the legal right to equal division of property amongst the sons of the same father has tended to hasten disruption almost beyond repair. Mr. Orwin, the noted Agricultural Economist has in this wise calculated the waste involved in human labour alone in farms of different size.

Table No. 2.

Groups in acres.	Average size of farm in acres.	Average men per acre.
0 - 50.	39	7.1
50 - 100.	78	6.4
100 - 150.	138	4.2
150 - 250.	201	3.3
Over 250.	356	2.6

The above decrease in labour with the increase in size of farms adds to the difficulties of an owner of bits of land distributed in several places. It has been recorded that in one village Vengampatti, Salem District a seven-acre field was sub-divided into eighteen pieces and owned by five pattadars. One pattadar owns 42 cents in five places and another 1.78 acres in nine places. In Mukuthapalayam 37 pattadars own amongst themselves 166 cents of land with an assessment of only Rs. 4-10-0. In Pimplasavadagar in the Poona District for a total area of 787 acres of land the number of plots is 729. Of these 463 are below one acre and 148 are between one and two acres. It is manifest that cultivation on such small areas would not be profitable. It entails considerable waste of time, lack of efficient supervision or the employment of more hands. Digging of wells is not possible; a conversion of dry into garden lands is unthinkable nor an increase in production. It implies the existence of innumerable bunds, waste of much land for carrying channels to several plots. It necessitates the creation of facilities for passage for owners to different plots. It brings on constant disputes about the location or shifting of boundaries. It increases the number and cost of boundary stones, length and maintenance of fences. Inability to introduce improvements by carting silt, enclosure, or draining, results. No change of crops can be contemplated unless all the owners agree. Rotation is impossible nor are improvements of any kind in the shape of growing a green manure crop, like daincha, a money crop like sugar-cane, turmeric or cotton, a fodder crop like lucerne or Guinea grass. Either the whole village has to take it up or the innovation fails. This leads to stagnation in agricultural practices even when

considered desirable and no improvement is adopted. With a full knowledge of the circumstances the farming community suffers and the country does not prosper. If, on the other hand, small packets of land instead of being maintained intact amongst several hundreds of cultivators, be clubbed together into bigger lots, the same number of occupiers would find them more profitable and less expensive. More land will be brought under cultivation. There will be fewer bunds, fewer channels, less litigation, better manuring more crops and diversified cropping. This would result in greater production, and efficiency in production. Serious thinkers and statesmen in all countries have devoted their attention to the solution of this pestering problem and adopted several ways. In America, it has not reached an acute stage though there are indications tending in that direction. In Europe since the time of Napoleon, attempts have been made to bring about wholesome changes. To point out one instance, Sweden took up the question of the re-union of lands into larger lots several years ago and has been steadily working at it with the following result.

Table No. 3.

Revision of lands in periods of ten years.

Year.	Landholders.		Lots of land		Reconstituted Hectare per holder.
	Residing in valley.	Compelled to quit.	Total.	Average	
1841 - 1850	35,668	19,830	113,624	2	52
1891 - 1900	14,126	3,374	34,095	1.9	149
1828 - 1905	178,541	80,444	436,178	2	71
(Hectare equals 2.47 acres.)					

Nearly one-third or 80,000 peasants with their families quitted the village to go and live on the lands re-united in larger lots. In the East, Japan also has taken up this question seriously and we may expect similar results to follow. In India the very unsatisfactory nature of the division of land was first brought to the notice of the public and Government by the Famine Commission and more recently in a very forcible form by Dr. Keatinge about 1910 when he was the Director of Agriculture, Bombay. This subject was discussed by the Board of Agriculture more than once and formed subject of serious consi-

deration, by the Governments of Madras and Bombay where the evil is most acute. In India besides the law of inheritance and other natural causes which are at work elsewhere, several other factors contribute to the perpetuation of this evil and its further accentuation. (a) Construction of rail roads and canals and distributaries divides up plots of individual owners and throws them on opposite sides. (b) During the past quarter of a century or two owing to the rapid communication and dispersal of world ideas, labour has become restless, demands better comforts, less working hours, higher wages and greater freedom from control. A tendency has thus become manifest in certain important localities like Anakapalle, Katpadi, Cuddalore and Tuticorin where a fairly large amount of labour has accumulated for it to give up cultivation of land as such but take it up as an adjunct with other occupations. Small tenants approach land owners with requests for parcelling out small lots for cultivation and pay higher rentals. Under this system they become their own labourers, and realise in the produce obtained the accumulated wages of idle days. - In their spare time they take up small contracts, work as labourers when wages are high. I have known several instances at Anakapalle in Vizagapatam District and Amalapur in Godavari District where this condition has accelerated the process of sub-division of land. In Anakapalle which is a busy commercial centre there are several small owners of land round about the Government Farm. They cultivate generally half acre lots dividing them up into plots for sugar-cane, root crops, sweet potato, vegetables, etc. These they cultivate in their spare time and they otherwise busy themselves with small contracts on rail roads, in the local jaggery market and in the factory. At Amalapur there are several small cultivators who, in spite of paying high rentals on small paddy fields, are satisfied with their production; for they get enough grain for food and fodder for an animal or two they maintain which they utilise for running single-bullock carts for hire which pays for the rental and their other expenses for clothing, festivals, etc. Yet others in the Godavari delta engage themselves in purchasing grain and other articles of merchandise, transporting them in boats on the canals, selling them in Rajahmundry and other towns and in bringing back necessities of life saleable in villages. Similar circumstances are, I am sure, not uncommon in most other parts in this country.

Land tenures in India are peculiar and have produced their effects on the sub-division of land. The Zamindar in the permanently settled tracts and the absentee landlord under the ryotwari tenure are not interested in consolidation of holdings. The small tenant and the labourer are equally indifferent because of the advantages of terms they are likely to wring out from the owner or employer. The owner-occupier is the real sufferer. Perhaps he is not found in same numbers in all the districts; but the State is the worst affected as the

total production of the country suffers considerable diminution through the wasteful methods of agriculture and impediments to improvements in the agricultural condition of the people. An insect pest or fungoid disease may devastate hundreds and thousands of acres while both the producer and the consumer simply look on with dismay and find no solution.

Elsewhere various methods have been suggested or adopted to bring about improvements in re-union or consolidation of existing lands. Some of these are the following :—

(a) The State engages the staff employed to re-unite lands and pays them.

(b) Transactions in connection with the transfer and re-alignment of lands are in several countries exempt from stamp duties.

(c) When a substantial majority varying with local conditions express a desire to have consolidation introduced into their village, a refractory minority or group of individuals is through a legislative enactment compelled to yield to the course suggested by the majority.

(d) Prior encumbrances, mortgages etc., are through legislation equitably adjusted without any hardship to the parties even when the lands concerned are re-stripped.

In the Madras presidency voluntary exchange of lands and the consequent alterations of entries in registers permitted by Government in Trichinopoly District at the time of the last settlement proved a failure as parties could not come to any satisfactory settlement. In the Punjab Mr. Calvert reports that satisfactory results have been achieved in his attempts at consolidation in 1920-21. The practice now exists that Government under the land Acquisition Act in this country purchases lands for Municipal corporations, important industrial concerns and such like bodies and hands them over at almost the nominal cost. These are again sold for house sites, factories are built on them and thus the fabulous prices which will be put up by individual owners at the start disappear to the general good of the community. In the same way it would be advantageous in addition to the four circumstances above named, if Government would exercise its powers under the Land Acquisition Act, buy and hand over to people, desirous of consolidating their holdings, small plots which are located in their midst and owned by people who are troublesome. It is not of course meant that this benevolent provision should be extended in the case of absentee landlords or Zamindars.

I have in the short sketch given above purposely refrained from entering into details which are of a purely local nature. Conditions are bound to vary from country to country and from tract to tract. I have therefore attempted a general indication of the malady and of its manifold ill-consequences tending to arrest the progress of the country, solely with a view to focus your attention on it. I have considered it enough to bring this subject to this enlightened body of Scientific Agriculturists though it has been discussed in the press and on the platform by several persons on previous occasions.

But I am not so vain as to think that the results can be achieved in a day or even in the lifetime of this generation. It is true, I dream of what may be possible in the future, but at the same time I feel I do not dream hopelessly though I am aware that "farming is anything but a get-rich-quick occupation. It is physically hard work for most, brain work for all and a constant source of anxiety" and farmers themselves who are directly concerned are not so impractical as to hope for quick results.

EXTRACT.

Health in the Milk-Can.

(By Professor J. ARTHUR THOMSON,)

Milk is an almost perfect food, especially for those of tender years. Its perfection lies in the facts that it is readily digestible, that there is almost no waste, that it conduces to gastric education, and that it contains all the different kinds of food—namely, proteins, carbo—hydrates, and fats, plus a little pinch of salts and a great deal of water.

The limits to its perfection are two-fold; there is nothing to chew and milk is a good culture-fluid for various kinds of microbes, which are sometimes deadly. If we give a dog all the kinds of food that are theoretically necessary, but all in liquid form, the dog will die. The dog requires something to chew and enough solid stuff to keep the muscles of the food-canal in good tone. So, if we give our dog protein food in the form of raw white of egg, carbohydrate food in the form of syrup, and fatty food in the form of oil, and if we add some water, salts in solution, and necessary food-stuffs or vitamins, we are giving the creature all that its living matter theoretically

requires for sustenance, and yet sooner or later we kill our dog. Yet we know that in its early days the puppy flourished on its mother's milk and doubled its weight in the first nine days. The milk diet is almost perfect for early growth and development but it does not work well when the strenuous business of life begins and high explosives are required.

Milk as a Factor in Evolution. The necessity for milk among mammals requires thinking over. There are some precocious birds, like chicks that run about and pick up food on the day of their hatching. This implies either a valuable legacy of ready-made nutritive instincts, or very rapid learning under parental tuition. But mammals are on a somewhat different track; in the majority of cases they are born very helpless. Apart from the reflex action of sucking, they have to begin with, few capacities for getting food; the kitten's instinct to catch mice is not usually liberated before the second month. The young mammal is born with a very unprejudiced brain, very quick to learn, and with considerable capacities for new departure.

Brain Development. It is important to prolong the period of brain-development after, as well as before, birth; and to extend the time of *learning*, before responsibilities begin to press: and *hence the importance of milk*. It is a handy form of food; it can be had at frequent intervals; it suits the still tender food-canal. In the case of carnivores and insectivores in particular, the supply of the characteristic flesh and insects is precarious and young mammals must be fed often. Moreover, in many cases, the young mammal remains for a while in such a helpless state that it could not easily tackle, even with the mother's help, the kind of food that is characteristic of the adult. We must remember that the new born kangaroo or other marsupial within its mother's pouch cannot even suck. The milk has to be forced down its gullet. They say that young otters have to be taught to like fish and they have to feed for a long time on milk before they touch flesh. We begin to see that milk has been an important factor in the evolution of the clever mammals. It made the prolongation of infancy possible.

But we must look more closely into the physiology of milk if we are to understand its singular perfection as a food for the young mammal. All living matter is a mixture of proteins in a colloid state, and the only kinds of food that afford materials for building-up and sustaining the living tissues of the body are proteins. Now cow's milk contains 3-4 per cent of proteins, such as casein and the proteins of milk are the very best that young mammals can get. For it has been shown that 63 per cent of milk proteins are retained for

growth, whereas, if we take the very valuable protein of wheat, only 25 per cent can be utilized for growth. It is important to notice that surplus protein materials can hardly be said to be storable in the body, except as part of the living tissue. So it will not do to give the young mammal, say a human baby, a generous supply of milk one day and none the next. A daily supply of protein food is essential.

The Perfect Food. Besides the proteins there is milk-sugar, which supplies energy for muscular activity and heat for maintaining the temperature of the body. What is not used at once can be stored in the form of animal starch or fat. But there is fat in the milk itself, and its *role* is like that of the sugar. There are likewise salts that are necessary for bone-making and for keeping up a proper balance in the fluids of the body. There are also some white blood corpuscles in a living condition in fresh milk. Last but not least, there are the accessory food substances of vitamins which are apparently indispensable to health—the gilt that seems essential to the gingerbread. We repeat. *milk is a perfect food*.

Varieties of Milk. The question arises at once, how such a perfect food has come into existence; and the answer must be that milk is the long result of time. Mammals have a monopoly of milk giving, but we know that the milk glands are specializations of the more ordinary skin glands, like the sebaceous-glands which keep the fur sleek and the sweat glands that have mainly to do with regulating the temperature of the body. It is very interesting to go back as near the beginning of mammals as we can go, to the egg-laying Monotremes of Australia, Tasmania and New Guinea. In the Duck-mole the milk oozes out by numerous pores on a patch of the mother's skin, and the young one licks this. There is nothing to suck.

In the Spiny Anteater, the openings of the milk-glands are enclosed within a temporary pocket where the egg is placed by the mother and where it hatches. In this case, the milk has been studied and it is interesting to find that while it is very rich in proteins, it has little or no sugar, and it has no phosphate salts. In other words it is very different from ordinary milk and it gives us an indication of secretion that came before milk and that was not up to the level of milk. Those mammals succeeded whose milky secretion was effective in supplying the wants of the young ones, and those that did not supply effective milk doomed their race to extinction.

It is noteworthy that the milk of mammals is very individual or specific, being suited to particular needs. Thus the dolphin's

milk has 43.8 per cent. of fat as against the cow's 4, and abundance of warmth-giving fat is obviously very appropriate for a mammal born and suckled in the cold sea. It is interesting also that the first milk the new born mammal gets is much richer than the ordinary milk and this is also as it should be. We must not think of milk as perfect from the first; it is like everything else, the outcome of changing and sifting, trying and testing.

Fluctuations in Cow's milk. Just as man has reared breeds of poultry that lay throughout a great part of the year and produce a number of eggs that would surprise the ancestral Jungle Fowl from which all our poultry have sprung, so man has reared cows that give large quantities of milk throughout long periods, after a fashion unknown in wild Nature. The cow's prolonged lactation is "unnatural" and the outcome of man's selective breeding. It depends on an inborn or constitutional quality, but it is modifiable by nutritive and environmental conditions. The fluctuations in the yield have been the subject of much study and they require it.

But besides the fluctuations in yield there are fluctuations in the composition of the milk; and this is a matter of great importance. It has been proved up to the hilt that the young children of Britain are not at present obtaining the quantity of milk that they require, and it is all the more important that in its making its *quality* should be good. The value of cow's milk for young children depends on its having the proper proportions of proteins, sugar, fat and other constituents. So, human nature being what it is, there have arisen legal standards, deviations from which are punishable. Thus saleable milk must contain 3 per cent of fat and 8.5 per cent of solids not fat.

Hard on the honest dealer. The question is an intricate one, but we must remember the warning against those through whom offences come. It is possible to push somewhat theoretical considerations too far, with the result that a dealer in milk may be made an offender in spite of his thoroughly honest intentions. Milk is a variable secretion, changing with time of milking, with the age of the cow, with the time of year, with the treatment of the commodity, and so on. In bulked milk from large herds the variations tend to cancel one another but it may be quite otherwise in a small herd. For this reason some authorities hold that 8.25 per cent. for solids not fat would be a more practical and fairer limit than 8.50. But it is only with the general idea of allowing for normal variability that we are much concerned.

[Extract from the *Journal of the Board of Agriculture of British Guiana*, Vol. XVI No. 3, of July 1923.]

REVIEW.

Arokiya Deepika.—A Tamil medical monthly edited by Dr. U. Rama Rao.

Health is a primary consideration with all individuals and it is common knowledge that agriculturists in this country in spite of open air, fresh food and invigorating work suffer equally with the urban population from maladies which are preventable. It is essential that they should be made fully aware of the conditions which can maintain people in health and keep them free from diseases. We therefore welcome the publication in Tamil of a monthly journal known as "Arokiya Deepika" by Dr. U. Rama Rao, M. L. C., Madras. We are glad to know that with a view "to afford an opportunity even to the poorest to subscribe for it," the annual subscription has been fixed at Rs. 1-8-0 and remittance should be made to the Manager, 'Arokiya Deepika' 323, Thambuchetty street, Post Box 166, George Town, Madras. We congratulate the doctor on his patriotic effort. This is not his first attempt. His English monthly "Health" which is about a year old is already very popular amongst the English knowing public. We hope that, under his Editorship, the "Arokiya Deepika" which supplies a distinct want will flourish and continue to serve the public, the promotion of whose welfare has been his chief concern, since the days of his collaboration with the late lamented Dr. T. M. Nair, in the publication of the "Antiseptic".

GLEANINGS.

Banana Coffee.—A scheme for the development of Norfolk Island by growing bananas and turning them into coffee has been brought to Sydney by an American dehydration expert. "Banana Coffee" is simply the banana dried, roasted, and ground. It smells just like ordinary coffee. The fruit must be well matured and of good flavour.

Tropical Life JUN. 24.

Catching Cold. You never catch cold through the nose, though this organ is most demonstrative once you catch cold. You catch cold—or the cold catches you to be more correct—through the body.

T. S. V.

Some Curious Tit-bits regarding Sugarcane Cultivation. There are three things that are said to delight in an excess of water—the Buffalo, Sugarcane and Paddy.

A man who does not possess 7 sons and 12 grandsons should not engage in sugarcane cultivation.

On the day of sowing, cultivators in certain parts do not use salt in their food for fear the juice of the crop may become saltish to taste.

In some places women are not allowed to walk across the freshly sown fields, as it is supposed that the weaker sex might induce the production of a weak crop.

K. K. RAO.

Experiments with Indian Raw Cotton in the United States of America.

The following is an Extract from the *New York Journal of Commerce* (dated 17th October, 1923):—

In quarters where Indian Cotton is being imported into the United States interest is described as having increased 100 per cent, since the 1922—23 season. A large number of mills making coarse cotton goods are conducting experiments, many of them having ordered 25 to 50 bales for delivery in March, 1924.

Altogether approximately 8,000,000 pounds, or 16,000 bales were imported during the current year. Of this amount, rightly 60 per cent was cotton for imitation wool in cotton blankets. The balance represents cotton intended for consumption in spinning plants. The quantity is negligible but the subject commands interest because an increasing number of spinners and cotton mills are giving the subject their attention.

Indian Cotton staple varies between $\frac{3}{8}$ and $1\frac{1}{8}$ inches in length. The latest quotation for $\frac{3}{8}$ to $\frac{1}{2}$ inch short was 20.50 cents landed at the mill, or approximately 8 cents below the cost of the identical length American staple. Ordinarily the price differential would be 5 cents to 6 cents, but the elimination of Japan as a consuming factor, due to the earthquake, limited the market for the product.

The Indian Trade Journal Vol. LXXII No. 916 of Jan. 10th, 1924.

SUMMARY OF CROP FORECASTS.

INDIA.

The following is a summary of the various crop forecasts relating to the season 1923-24, published in the *Indian Trade Journal* on various dates:—

Crop	Tracts comprised in the figures and percentage of total Indian crop represented by them.	Estimated area in acres.	Estimated outturn.
Jute	Bengal, Bihar and Orissa and Assam (100 per cent of the total Jute area in India).	2,313,000	8,996,000
Sugarcane	United Provinces, * Punjab, Bihar & Orissa, Bengal, Madras, Bombay and Sind, * Assam, North West Frontier Province, Central Provinces and Berar, Delhi, and Baroda (99 per cent of total sugarcane area of British India).	2,787,000	(a)
Cotton	All cotton-growing tracts.	21,845,000	4,913,000 bales
Sesamum	Burma, Madras, Central Provinces and Berar, Bengal, Bihar and Orissa Bombay and Sind, Punjab Ajmir-Merwara, Kotah (Rajputana).	3,016,000	(a)
Indigo	Madras, United Provinces, Bihar and Orissa, Punjab, Bombay, and Sind* and Bengal (containing practically the whole area under indigo in British India).	185,400	36,100 cwts.
Rice	Bengal, Bihar and Orissa, Madras, Burma, United Provinces, * Central Provinces & Berar, * Assam, Bombay and Sind * Hyderabad and Baroda (99 per cent of total rice area of British India.)	75,454,000	(a)
Groundnut	Madras, Burma, and Bombay (*99 per cent of total groundnut area of British India).	1,687,000	(a)

Crop	Tracts comprised in the figures and percentage of total Indian crop represented by them.	Estimated area in acres.	Estimated outturn.
Linseed	Central Provinces and Berar * United Provinces, Bihar and Orissa, Bengal Bombay * Punjab, Kotah (Rajputana) and Hyderabad (99.1 per cent of the total linseed area of British India)	2,575,000	(a)
Rape and Mustard	United Provinces, Bengal, Punjab Bihar and Orissa, Assam, Bombay and Sind * North West Frontier Province Delhi, Baroda, Alwar (Rajputana) and Hyderabad (98.7 per cent of the total area under rape and mustard in British India.)	3,357,000	(a)

*Including Indian States.

(a) Not yet available.

(The Indian Trade Journal Vol. LXXII No. 916 of 10th January 1924.)

Sugarcane Crop of 1923-24—Third Report (Final).

[On an average of the five years ending 1921-22, the area under sugarcane in the Madras Presidency has represented some 4.3 per cent of the total area under sugarcane in British India.]

The area planted with sugarcane up to the end of December 1923 is estimated at 121,600 acres against an estimate of 132,200 acres made at the corresponding date last year or a decrease of 8 per cent.

2. The area is either the same as or less than in the last year in all districts except Vizagapatam and Cuddapah. The reduction is most marked in Bellary, Anantapur, South Arcot, Trichinopoly, and Madura.

3. The crop in the Coastal taluks of Ganjam and Vizagapatam was damaged by the cyclone in November. The cane lodged badly in parts and had to be repped. The crop in South Kanara was affected by the abnormal rains and floods in the period of early growth and the subsequent drought. The harvest has commenced and yields are comparatively low. Elsewhere the crop suffered from

drought during the south-west monsoon but improved with the general rainfall in September and October. The north-east monsoon has been poor since November but yields will not be much below normal except in Anantapur, where the crop is largely dependent on rainfed tanks, Chittoor, North Arcot, and Salem where both monsoons have failed and South Arcot. Red rot has affected the crop to some extent in parts of Bellary and Coimbatore and shootborer in parts of North Arcot.

4. The yield is estimated at 308,200 tons of jaggery.

5. Figures are given in the appended statement.

Area in hundreds of acres, i. e., 00 being omitted; yield in hundreds of tons of jaggery, i. e., 00 being omitted.

Group.	Estimate of area planted with sugarcane up to the end of			Estimated yield of the area in	
	Sep. 1923.	Dec. 1923.	Dec. 1922.	Column (3)	Column (4)
(1)	(2)	(3)	(4)	(5)	(6)
Circars	53.9	54.3	54.4	129.8	151.3
Deccan	11.9	12.4	14.8	30.6	32.4
Carnatic	8.7	7.4	9.6	19.4	25.0
Central	38.1	39.8	43.9	110.3	124.0
South	3.7	4.0	5.8	10.0	15.0
West Coast	3.7	3.7	3.7	8.1	9.0
	120.0	121.6	132.2	308.2	356.7

(Department of Agriculture Madras)

Castor Crop of 1923. The area under castor in 1923 is estimated at 389,500 acres. There is an increase of about 44 per cent over last year in the upland portion of Kistna, Bellary, and Anantapur Districts due to the favourable early rainfall which was, however, insufficient for food crops. Elsewhere, except in Godavari and Salem, there is a general reduction in area which is greatest in Guutur, Kurnool, Cuddapah, Nellore, Chittoor, Coimbatore, and Trichinopoly.

2. The crop in parts of Ganjam and Vizagapatam was affected by the cyclone in November. Very low yields are reported from Anantapur on account of the drought in July-August. The season was slightly better in Kurnool and Bellary, but the crop in Bellary was damaged to some extent by caterpillars. The Crop in Cuddapah

and Nellore recovered with the September–October rains and yielded nearly up to the average. The yield in Chittoor, North Arcot, and Salem districts was reduced by the unfavourable season. Elsewhere fairly good yields are reported.

3. Figures by districts are given below:—

Are in hundreds of acres, *i. e.*, 00 being omitted, yield in hundreds of tons, *i. e.*, 00 being omitted.

Group.	Estimate of the area sown with castor up to the end of November 1923.	Estimated yield of the area in column 2.
Circars ...	88,7	9,9
Deccan ...	160,4	8,2
Carnatic ...	27,9	3,1
Central ...	51,9	7,2
South ...	9,8	1,8
West Coast ...	8	1
	339,5	30,3

Department of Agriculture, Madras.

The British Empire Exhibition. Among the various exhibits those of the most direct interest to the trade will be the Australian display of food products, including dried fruit and cereals; the Canadian array of fresh and preserved fruits and agricultural products; the teas and spices of India; the canned and dried fruits in the South Africa Pavillion; bananas from the West Indies; rice from Burma; Ceylon teas; Palestine wines; fresh and preserved fruit, jams and honey, the products of new Zealand. Besides all these, a general summary of the trade and activities of the Empire will be shown in the British Government Pavilion by means of numerated maps and charts.

"The grounds at Wembley will reproduce in miniature the entire resources of the British Empire. There the visitor will be able to inspect the Empire from end to end. From Canada it is but a stone's throw to Australia, from Australia a short step to India and the Far East, from Hong Kong a few minutes' walk to New Zealand or Malaya. In a single day he will be able to learn more geography than a year or hard study would teach him. And he will be able to see in each case the conditions of life of the country he is visiting. That is the importance of the British Empire Exhibition. It is a stock-taking of the whole of the resources of the Empire."—*The Produce Markets Review*.

(The Planters' Chronicle, Dated 26th Jan. 24.)

U. P. A. S. I. Statistics of Shipment of South Indian Produce upto 1st Dec. 1923.

(The Planters' Chronicle, December 29, 1923.)

Article.	Ports.	Period	Total Shipment.	To other Indian ports.	Ceylon.	United Kingdom.	Other countries.
		From.					Chiefly.
Tea (lbs.)	Madras ports.	1—1—1923.	24,213,664	476,312	2,347,726	21,333,305	77,656
							(America.)
Coffee (cwts)	"	1—1—1923	173,807	16,785	82	62,736	60,365
							(Europe)
Rubber	"	"	6,996,634	285,418	2,763,135	2,738,185	1,126,006
							(America)
							53290
							(Europe)

V. M. A.

Wheat in Foreign Countries.

Year.	Country.	Extent in 1000 acres.	Yield in 1,000 tons
1923	Canada.	...	12,702
"	United States of America	... 58,308	21,047
1923-24	Australia	... 10,000	3,214
"	Argentina	... 17,216	6,932
1923	France	... 13,656	7,781
"	Italy	... 11,555	6,022
"	Spain	... 10,489	4,208
"	Roumania	... 6,648	2,746
"	Germany	... 3,653	2,775
"	Hungary	... 3,411	1,813
"	Poland	... 2,514	1,293

(Indian Trade Journal, 31st January 1924.)

DEPARTMENTAL NEWS.

A Conference of Mirasdars at the Paddy Breeding Station Aduturai, on 5-1-24. As an outcome of the suggestions made at the Agricultural Demonstrators' Conference held at Tanjore in October 23, a conference of the Mirasdars of Tanjore and Trichinopoly districts was arranged to be held at the Paddy Breeding Station, Aduturai with the object both of demonstrating the lines of work pursued at Aduturai and of having an exchange of views and experience with the landholders on the recommendations made by the department on various Agricultural matters. The 5th of January was fixed for the Conference as that was the best time to visit the Farm, the paddy varieties being then expected to be fully in ears. Most of the leading Mirasdars were invited to take part in the Conference and in response more than 150 attended it inspite of adverse weather.

During the forenoon the visitors were taken round the farm in batches by the staff of the station who explained to them the various lines of research pursued to get a good and useful strain, the progeny of artificial crosses and the subsequent selections, trial of varieties imported for main and second crops and numerous other objects of interest. Many of the paddy varieties were appreciated and individual experiences on these points exchanged. On returning from the fields, the visitors were taken to the Laboratory where the Assistant Economist Botanist explained with the help of charts and paddy

exhibits the various lines of work done at the station, Cheap model sheds had been put up demonstrating the preservation of cattle manure by the loose box and dry earth systems which attracted the attention of the visitors. In one of the farm fields there was a ploughing demonstration with the Meston and Kong ploughs, side by side with the country plough, which was much appreciated.

At 3 p. m. all the visitors took their seats in the large conference pandal erected in front of the laboratory. A large number of the actual cultivators mustered strong from the neighbouring villages to witness the proceedings of the Conference. The special feature of the Conference was that the proceedings were all in Vernacular Tamil and everybody was able to follow and take part.

After the President-elect M. R. Ry, Rao Bahadur K. S. Venkatarama Ayyar, Avl., had been formally proposed to the chair M. R. Ry. N. S. Kulundaisami Pillai Avl., Deputy Director of Agriculture, V circle, opened the proceedings by welcoming the visitors in a short speech. In the course of it, he regretted that in Tanjore progress made in scientific agriculture was very slow and said that many mirasdars had not taken as keen an interest in the improvement of agriculture as could be desired. He emphasised the point that the root of all trouble lay in absentee landlordism. To remedy the defect it was urged a system of the proprietor working with the tenants as existed in some of the European countries could easily be copied.

In an extempore speech, the President said among other things "the ryots and departmental officers had met there for mutual discussion and exchange of views based on actual experiences. It was gratifying to see the Aduturai Breeding Station had begun to show some improvements in the proper direction. He regretted to note that very many restrictions had been placed on the demonstrators. He said that the department's foremost duty was to educate the villagers in the latest methods of agriculture, and since this task chiefly fell on the demonstrators, any expenditure to cover the travelling expenses of these useful men of the department should be generally provided for in the annual budget. The very little advantage so far secured he added, had been entirely due to the ungrudging services of the hard working but poorly paid demonstrators.

The President then in view of the need of phosphatic manures for the Tanjore soils spoke on the urgency of the Government taking steps to prevent the exports of bones, oil cakes, &c., to foreign countries. A manure society he said had been started recently at Shivali on a co-operative basis. It was upto every mirasdar present

then to take as many shares as possible. Bones, rock phosphate, oil cake, etc., could be powdered, mixed and supplied to the members at a very cheap rate.

Another factor to be considered was in his opinion, the reduction in the railway freight for transport of manures, etc., for agricultural purposes. In England and other countries railways allowed concession rates for transport of milk, vegetables and other perishables.

The President further suggested that the Government as in all other countries should come forward to help the poor ryots by granting subsidies for agricultural improvements adopted as result of the teachings of the department.

M. R. Ry. K. Ramiah Ayl., Assistant Economic Botanist explained the origin and development of the Aduturai farm and how it differed from other farms like the one at Manganallur, closed two years back. He dwelt at length on the work done so far on Kuruvai, White Sirumani, Red Sirumani and Nellore Samba.* He concluded by pointing out the benefits the mirasdars could derive and the care they have to bestow towards every operation in gaining the highest return.

At the request of the President, several mirasdars spoke at length in appreciative terms on the good results and benefits they had derived in following the several recommendations of the department. They exhorted their co-mirasdars to follow their examples.

The President in bringing the proceedings to a close appreciated and certified to the 20% increase in yield he had obtained from his lands by using Aduturai No. 1—Red Sirumani Strain No. 76—on of the farm strains, and the following resolutions were moved from the chair and carried unanimously :—

It was resolved to request the Government to provide larger allotment in the coming budget towards the improvements of the Agricultural Department and agriculturists to take to improvements by granting subsidies.

To prohibit exports of oil cakes, bones, etc.

To encourage earnest and well-to-do agriculturists by appointing them Honorary Assistant Directors as in the case of Co-operative Department.

To address Railway Companies to grant concession rates to the transport of manures and seeds.

To maintain breeding buils at the Aduturai farm.

At the close of the proceedings Mr. K. Ramiah, proposed a hearty vote of thanks to the chair and to the various landholders and visitors who had come from distant places in spite of the inclement weather.

There was an exhibition of magic lantern slides, in the course of which, short speeches were delivered for the benefit of those present. With this the Conference came to a happy close at 7-30 p. m.

T. K. BALAJI RAO.

Mr. B. Ramiah, B. Sc., Acting Deputy Director of Agriculture under training at the Central Farm, left Coimbatore on the 10th instant on transfer to Guntur as Acting Deputy Director of Agriculture, II Circle.

Mr. F. R. Parnell, M. A., Govt. Economic Botanist and Principal is going to South Africa as Cotton Specialist under the Empire Cotton Growing Corporation.

We all understand that Mr. G. R. Hilson, B. Sc., Cotton Specialist will leave in March for Bombay to act as Secretary, Central Indian Cotton Committee in place of Mr. B. C. Burt, proceeding on leave to England. It is believed Mr. R. C. Broadfoot will officiate as Cotton Specialist.

Cotton Pest Act Conference. On the 23rd instant the Honourable the Minister for Development, Dewan Bahadur T. N. Sivagnanam Pillai in company with Mr. F. Novce, Secretary for Development and R. D. Anstead, the Director of Agriculture held a conference at the Agricultural College in connection with fixing of the date of the enforcement of the Pest Act for Cambodia Cotton Pests which a large number of Coimbatore Ryots attended. Among the Officials were Mr. H. A. B. Vernon, Collector, Mr. G. R. Hilson, Cotton Specialist, Mr. C. Narayanayyar, Dy. Director of Agriculture, VIII Circle, Rao Sahib Y. Ramachandra Rao, Govt. Entomologist, Mr. Loveband, Sub Collector, Messrs. C. V. Venkataramanayyengar,

M. L. C., Rao Bahadur T. A. Ramalingam Chettiar, M. L. C., Mr. Vellingiri Goundar, M. L. C., Rao Sahab C. S. Ratnasabhapathi Mudaliar, Rao Sahab A. Vittal Das Sait of Tirupur attended on behalf of the ryots. Mr. C. V. Venkataramanyangar spoke at length on the position of the ryot as regards the date of enforcement and urged its permanent change from August 1st to September 15th or at least to September 1st. There was much discussion and the Honourable Minister after taking note of the salient points promised to give the question his careful attention.

ESTATE NEWS

Officers' Club.—On the 2nd Instant the Officers' Club organised a tea in honour of Mr. P. Susainathan who left to join his appointment as Assistant Entomologist, Agricultural Department, Basrah.

On the 10th Instant there was a gathering at the Club to bid goodbye to Mr. B. Ramiah on his transfer to Guntur as officiating Dy. Director. On the 9th Instant the Agricultural Section was "at Home" to Mr. B. Ramiah.

On the 7th Instant Rev. H. A. Popley gave a very interesting conversation at the club on the "Excellences of Tiru-Kural", the well-known ancient Tamil classic.

Visitors. Mr. C. V. Sane, Director of Agriculture, Baroda, visited the Farm, College and the Research Institute.

Mr. Aitchison visited the Estate in connection with the Serum simultaneous inoculation of cattle on the Farm.

The Hon' Rajah Vasudeva Rajah of Kollengode paid a hurried private visit to the College and Farm.

M. Petiot of French Indo China visited the College and Research Institute in connection with an enquiry regarding the cultivation of cotton in South India.

Mr. C. B. Francis, Supt. of Plantations, Messrs Parry & Co. Nellikuppam visited the College and Research Institute and the Chettipalayam Cane Breeding Station.

On the 23rd, at 6-30 p. m. the officers' club was "At Home" to the Hon' the Minister for Development. Messrs F. Noyce and R. D. Anstead and C. V. Venkataramanyangar were present. This is the second time a Minister has graced the Club with his presence—the first time being in 1921 when Sir K. V. Reddi visited the College as Minister.

CORRESPONDENCE.

TO THE EDITOR M. A. S. U. JOURNAL, COIMBATORE.

A copy of the letter with its enclosures received from the Director of Agriculture, Dar-es-Salaam, Tanganyika Territory is forwarded herewith for favour of publication in the next issue of the Madras Agricultural Students' Union Journal.

2. A note may also be made that intending applicants should submit their application in the proper form to the Director of Agriculture, Madras, through their superior officers not later than 1st April 1924.

M. V. VELLODI,
for Director of Agriculture.

Read the following letter Reference No. 140/355, dated the 11th January 1924 from the Director of Agriculture, Dar-es-Salaam, Tanganyika Territory, East Africa, addressed to the Director of Agriculture, Madras.

I have the honour to inform you that there are four vacancies in this Department for Overseers of Experimental Stations, and that it is desired to fill these as soon as particulars of suitable applicants are received.

2. The appointments will be for three years in each case, at a salary of shillings 333 per month. (£ 200/- per annum), rising upon satisfactory service by shillings 25 to a maximum of shillings 500 per month (£300 per annum); and free quarters and medical attendance will be provided. Information regarding these and similar matters is contained in the attached draft agreement, of which six copies are enclosed for your use for information.

3. It is preferable for candidates to be unmarried, in the first instance.

4. The posts are intended to be filled by persons of native birth. The duties attached to them will be concerned chiefly with the conduct of the work of agricultural stations; particularly the carrying out of schemes of experimentation and the overseeing of labour required therefor, together with the making of the necessary records. The Overseers will be under the direct supervision of European District Agricultural Officers; and as the latter will be often absent temporarily from station for district work, the persons selected will be required to be those possessing a sense of responsibility.

5. All applications must be addressed to this office in Triplicate, and must give full information under the heads detailed in the accompanying form of application.

6. The Person or persons vouching for the candidate should append his signature or their signatures to the form, under the declaration that the above particulars are true to the best of his (their) knowledge and belief. Copies of testimonials, similarly vouched for, may be appended if desired.

7. I shall be obliged if you can kindly give your assistance in the finding of suitable candidates for these posts: and shall be glad to give you any further information regarding them that you may desire.

An Agreement made this.....day of.....
one thousand nine hundred and twenty three at.....between
the.....on behalf of the Civil Adminis-
tration of the Tanganyika Territory (hereinafter referred to as the
Government) of the one part, and (herein-
after referred to as the Employee) of the other part.

Whereas the Government has agreed to engage the employee, and the employee has agreed to serve the Government upon the terms and conditions hereinafter specified:

The employee agrees and binds himself as follows:—

1. That he will diligently, faithfully, and to the best of his ability obey all such orders, carry out all such work, perform all such duties and functions and fulfil all such obligations' appertaining to his profession, trade or calling of as may be required of him by any person under whose authority he may be placed during the currency of this agreement.

2. That he will serve at any place within the Administration of Tanganyika Territory as the exigencies of the service may require. The Government agrees as follows:—

3. That the employee shall be provided by the Government with free class passage with food to provided as follows:

The return passage shall be forfeited absolutely:—

(1) If the employee after being discharged fails without reasonable cause (of the reasonableness of which in case of dispute the Governor for the time being shall be the final and conclusive judge) to avail himself of the opportunity to return offered to him,

(2) If the employee after duly completing this engagement fails to claim his return passage within six calendar months of the termination of this engagement.

(3) If he be dismissed under the operation of article No. 7 of this agreement.

The parties here to further agree as follows:—

4. That this engagement shall, unless sooner determined as hereinafter provided, continue for 3 years from the day on which the employee lands at Dar-es-Salaam.

5. The pay of the employee shall be at the rate of Shillings 333/- (three hundred and thirtythree) per month from the date of landing at Dar-es-Salaam and rising upon satisfactory service by annual increments of S 25 per month to a maximum of S 500. For the period occupied during transit from to Dar-es Salaam and return he shall receive half pay only. If the employee after duly completing his engagement shall, for his own convenience, fail to proceed or to continue on his return journey as directed by a competent officer, then his pay shall cease on and from the day on which his engagement ended. The employee shall receive free quarters and medical attendance.

6. The Government may at any time by giving one calendar month's notice in writing determine the engagement of the employee.

7. In the event of the employee being guilty of insubordination or misconduct (of which insubordination or misconduct the Governor for the time being shall be the sole judge), he shall be liable to instant dismissal and thereupon this agreement shall be at an end.

8. The employee shall in all other respects be governed by the ordinary service regulations of the government.

9. If any difference of opinion shall arise as to the true intent of this agreement or any part thereof, the decision of His Majesty's Government on this point shall be final and conclusively binding on both parties.

.....
Signature of Employee.

.....for the Government of Tanganyika Territory.
Witness to the Signature

Particulars of Applicant for Post of Overseer of Experimental Station.

DEPARTMENT OF AGRICULTURE, *Tanganyika Territory.*

1. Full name and address
2. Date of Birth
3. (a) Married or (b) single
4. If (a), number of children

5. General state of health
6. Where educated
7. Educational subjects: (a) elementary
(b) advanced
8. Clerical knowledge and standard
9. (a) Agricultural subjects studied
and (b) standard of efficiency in them
10. Experience of handling labour
11. Experience of work in experiment stations: (a) as a learner
(b) as a worker
12. Experience of the candidate in a position of responsibility
13. Brief report by the person or persons vouching for the candidate:
14. Any other matters desired to be recorded:

UNION ACTIVITIES.

In accordance with the note published in the Novr-Decr. issue of the Journal, the working committee, after obtaining the opinions of all the members of the Council, arranged for a deputation to wait upon the Director of Agriculture on the 22nd of this month, and discussed with him the following subjects, besides others, which affect the welfare of the members of the Union.

1. The question of allowing rent-free quarters to the farm staff.
2. Reorganisation of the scales of pay of the Lower Subordinates.
3. Allowing permanent messengers to the District staff.

The Director gave a very patient hearing to the arguments put forward by the members of the deputation and was throughout extremely sympathetic to them. Regarding the first he said that the matter was still with the Government and that he had done his best in the matter as he was fully convinced of the necessity for this concession. Regarding the reorganisation of the scales of pay of the Lower subordinates he said that as long as Financial conditions remain unsatisfactory as at present there was no possibility of the Government accepting any new proposal for increased expenditure but he said that the intention of the Government as expressed in the G. O. recently passed on the retrenchment committee's report was to gradually absorb all the offices in the lower subordinate cadre into the Upper division, and that he would be very glad to promote deserving men to the upper division whenever vacancies occurred and heads of sections recommended suitable candidates for promotion.

As regards the question of allowing permanent messengers to the District staff he said that the question of Funds will again not permit him to give a separate messenger to every officer, but wherever

cases have been made out for more Demonstration coolies he would try his best to see that more men are employed.

As mentioned before the Director was quite in sympathy with the various proposals put forward by the deputation and after being assured of all possible help in the matter, the deputation thanked the Director for affording them an opportunity to place their case in person before him and then withdrew.

STUDENTS' CORNER.

Literary section. Under the auspices of the Students' Club a paper was read on 29th January 1924 by Mr. B. S. Suryanarayana of B. Sc. II on his "Impression of the last Science Congress" and another by Mr. K. Varadachary of the same class on 11—2—24 on the subject of "Physical culture" Messrs G. N. Rangaswami Ayyangar B.A., and T. V. Ramakrishna Ayyar, B.A., presided respectively on the two occasions. Mr. G. R. Hilson, delivered special lectures on "Probable Error" to the students of B. Section Class III.

Games Section. The Government College Coimbatore, and the Agricultural College applied this year for the local Abraham Football Memorial Tournament. The match was played on 6th February 1924 when the Agricultural College sustained a defeat by three goals to one.

The results of the matches, so far played in the Inter—class Tournament of the Agricultural College for the Victory Cup are as given below.

As the strengths of B. Sc., III, I, and Short Course I do not permit of individual representation a combined team of all the three B. Sc., classes was put in for the tournament.

Foot Ball

Short Course II	9th Dec. 1923	14th December 1923
Combined team	Short Course II	Second Course II
	3 goals to one	won by 1 goal to nil
B. Sc. II	Bye	

Hockey

B. Sc., II	} 11th December 23	} not played
Short Course II		
	Short Course	
	won by 3 goals	
	to nil	
Combined team	Bye	

On the result of the Hockey finals, the cricket matches will be played if necessary.

In the Tennis tournament, at the Agricultural College, student Ratnavelu was the winner.

EDITORIAL NOTES.

Mr. F. R. Parnell.

We learn with regret that the Agricultural Departments in India are very soon to lose the services of two of their officers in the persons of Messrs. S. Milligan, Agricultural Adviser to the Government of India and F. R. Parnell, the Government Economic Botanist, Coimbatore. We understand that they leave India to serve the British Empire Cotton Growing Corporation in South Africa for developing the resources of the Empire in cotton growing.

When an experienced officer retires, the department loses the benefit of all this accumulated mass of knowledge.

In the case of Mr. Parnell who has been in the department since 1913, who has specialised in paddy and who has evolved new strains of paddy, there is little doubt that the Madras Department of Agriculture is losing a very valuable officer. He has organised work on safe and enduring lines and has moreover trained a band of young men who may be expected to continue his work, yet the want of the guiding hand is sure to be felt until his successor gathers the necessary experience.

In addition to his duties as the Government Economic Botanist Mr. Parnell has been Principal ever since Mr. Wood left for Africa. Mr. Parnell's genial temperament and frank manners made him popular among the Students and the Officers. His departure will, it is feared, tell rather seriously in the games' section of the college owing to the already existing state of depletion in the ranks of Sportsmen on the estate. We are sure the members of Our Union will always carry in their memory the able and patient way in which he conducted the General Body Meeting on the occasion of last College Day and piloted the heated and often straying discussion in safe channels and helped to make the meeting the complete success it was.

The Union is grateful to him for the interest he has taken in its welfare and we wish him all success in his future sphere of work in South Africa.

Our Director - Mr. R. D. Anstead.

We are glad to note Mr. Rudolph D. Anstead has been confirmed as Director of Agriculture, Madras. Since August 1921 there have been changes in the personnel of the Director. We beg to convey our very hearty congratulations to Mr. Anstead and venture to hope that he would now have greater facilities to steer the department clear of obstacles along lines of progress and utility.

Mr. P. Susainathan.

Mr. P. Susainathan, assistant in the Entomologist's Section has been selected by the Imperial Entomologist, Pusa as Assistant Ento-

mologist in charge of Plant Quarantine work and control of pests of the Date palm at Basrah, on a salary of Rs. 500. He goes on an agreement for two years in the first instance. We trust Mr. Susainathan will amply justify the selection made and win laurels in his new sphere of work.

Posts in Tanganyika Territory.

We invite the attention of our readers to copies of correspondence and of a prospectus (printed elsewhere in this number) calling for applications for the posts of Overseers (managers) of Farms in Tanganyika Mandated Territory. The agreement is for three years in the first instance and in our opinion these posts should be considered as providing opportunities for our young men to go out and get experience, which will certainly be of value in their future career.

An Index for 1923 Journal.

An index for the 1923 Volume of Journal, kindly prepared by our energetic Secretary Mr. M. U. Vellodi on his own initiative, has now been printed and is issued to all our subscribers of 1923 along with the current number. The preparation of indexes for the first 10 volumes has been kindly undertaken by Messrs. Rao Saheb T. S. Venkataramayyar and T. V. Rajagopalcharya and we trust they will be ready before long.

Agricultural Department.

It is a matter of sincere gratification to us to note that in order to advance the interests of the agriculturists in India, a number of members of the Central Legislature, have formed themselves, into an 'agricultural party'. This is as it should be. Development of the country's resources cannot be a matter of disagreement or contention between any two persons in India, much less between the non-official and the Salaried custodians of public purse and public welfare. Responsible persons of all shades of opinion are happily agreed on this point. The Hon'ble Sir B. N. Sarma of the Viceroy's Council, when asked what steps Government were taking in regard to the development of agriculture in India, recently stated that proposals were under consideration in the matter of developing cotton cultivation and that the Cotton Research Institute would be established before long, the Military Dairy Farm in Bangalore had been taken over by the Imperial Agricultural Department—there was a fine breed of cattle in the farm and that higher education in Dairying would be given in the institute. He further intimated that the Experiment of evolving a dual purpose cow would be taken up here, at Karnal in the Punjab and at Pusa and that in the matter of sugarcane Government hoped soon to place the sugar industry on a better and more satisfactory basis. Lord Leverhulme, who visited Madras this month similarly drew positive attention to the necessity of developing agriculture. Our local legis-

lators of whatever persuasion they be have all been unanimous in furthering the cause of agricultural improvement. We are confident that the future is bright, for if under such auspices there be stagnation or setback in progress in the future, the reasons will have to be sought for elsewhere.

DEPARTMENTAL NOTES.

Appointments etc.—

Mr Rudolph David Anstead, Deputy Director of Agriculture, Planting Districts and Acting Director of Agriculture, confirmation as Director of Agriculture with effect from the 22nd December 1923.

Mr. B. Ramayya, acting Deputy Director of Agriculture under training at Coimbatore, to be acting Deputy Director, II circle, Guntur.

Leave.—

1. Dr. R. V. Norris, Govt. Agricultural Chemist, commutation of leave into leave on average pay for 3 months and leave on half average pay for 7 months and 10 days

2. Mr. A. C. Edmonds, Deputy Director of Agriculture, I circle, leave on average pay for three and half months and leave on half average pay for five and half months in continuation thereof with effect from or after the 4th March 1924.

3. Mr. Saadat-Ullah-Khan, Deputy Director of Agriculture, VI circle, on probation granted leave on average pay for one month from 17th March with permission to avail of Sunday 16th March and to suffix the Easter holidays.

4. Mr. K. T. Alwa Assistant Director of Agriculture, extension of leaves for a week on half average pay in continuation of the leave for five months and 29 days granted to him from 29th August.

5. Mr. E. K. Govindan Nambiyar, Agricultural Demonstrator, Tellicherry leave on average pay for 17 days from 4th February 1924.

6. Mr. R. Swami Rao, Demonstrator, leave on average pay for one month from the 1st February 1924.

7. Mr. N. Chinnasawmi Naidu, Farm Manager, Cotton Breeding Station, leave on average pay for twenty days from 28th January 1924.

8. Mr. K. Satyanarayana Gupta, Assistant Agricultural Demonstrator, extension of leave by 25 days on medical certificate.

9. Mr. N. P. Sankaran Nambiyar, 2nd Agricultural Teacher, Agricultural Middle School, leave on average pay for two months, on medical certificate from 15th January 1924.

10. Mr. C. A. S. Ramalingam Pillai Assistant Manager, Koilpatti, leave for 25 days from 26th February 1924 to 21st March 1924.

11. Mr. M. Singara Royan, Artist I grade of the office of the Government Lecturing and Systematic Botanist, leave on average pay for two weeks from 19th February 1924.

12. Mr. K. Gurumurthi, Farm Manager, extension of leave on average pay for 14 days and leave not due on half average pay for 25 days.

13. M. R. Ry. C. V. Ramaswami Ayyar, Assistant in Chemistry leave on average pay for one month from 1st March 1924.

14. M. R. Ry. T. V. Ayyaswami Ayyar, Assistant Agricultural Demonstrator Srivaikuntam, leave on average pay for 15 days from 1st March 1924,

15. Mr V. S. Varadarajan, Assistant Agricultural Demonstrator, extension of leave on medical certificate for three months.

16. Mr. S. Subramanya Ayyar, Agricultural Demonstrator, extension of leave on half average pay for four months.

Transfers:—

Mr K. Gurumurthi, Farm Manager, transfer to II circle after expiry of the leave.

Mr P. Krishna Rao, Farm Manager, transfer to Millets Specialist section

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Under European Supervision.

EXCELLENT COMPLETE MANURES

For Paddy, Ragi, Cholam, Sugarcane, Coconut, Tobacco, Fruit Trees, etc. etc.

WE HOLD LARGE STOCKS OF

Imported Chemical Manures,

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Bloodmeal, Milled Fish etc. etc.

SOLE AGENTS IN SOUTH INDIA,

FOR the Excellent New NITROGENOUS

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Our SPECIALITIES,

‘NITRATE OF LIME’—13% Nitrogen, 25-30% Lime, in a readily available form, well suited for South Indian soils which are generally deficient in Lime. This new Fertilizer has invariably given excellent results on COFFEE, TEA, RUBBER and CEREALS, and has obtained unsolicited testimonials

Refined Saltpetre, Dried Blood,

Basic Bonesuperphosphate, Flour

Phosphate etc., etc.

ANALYSES OF ALL MANURES GUARANTEED.

The various Fertilisers are ground as fine as possible and mixed to order, or sold separately as required on the most favourable terms. Special quotations for large orders.

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Messrs. T. STANES & Co., Ltd.,

Coimbatore Manurial Works,

and

Standard Saltpetre Refinery,

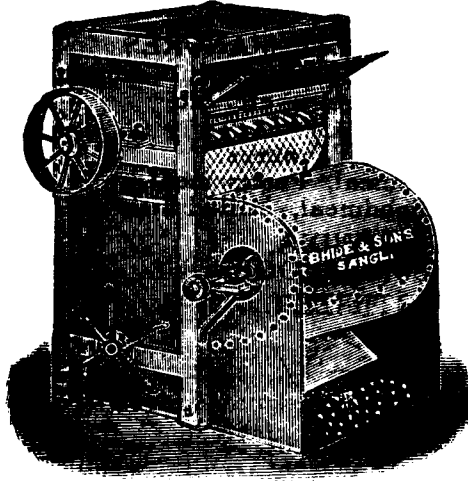
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169926

(vi)

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