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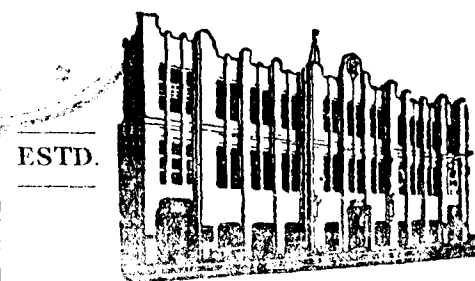
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Business Week

SUPPLEMENT

AUGUST 23, 1948

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South Indian Plantation Industry

A SHORT SURVEY

By V. I. CHACKO

The weakest spot in plantation economy has been its heavy dependence upon foreign markets. The three main crops, tea, coffee and rubber were planted on an extensive scale with a view to supplying Britain's needs as well as providing them with a valuable form of export trade. The recurring phenomenon of economic depressions in the importing countries communicated itself to this country, which added greatly to the uncertainty always associated with agricultural crop prospects in India. The broad effect of these two forces was to leave the great Indian plantation industry in a state alternating between periods of prosperity and heart-breaking losses. The British sense of organisation, their world-wide plantation interests and influence brought into being several regulatory schemes to equate production to estimated demands. By this means, Indian rubber was brought under, first, the Stevenson Scheme and later on the International Rubber Restriction scheme and tea under the International Agreement. Similarly, the coffee industry in India owes much to British planters in building up a regulatory organisation which has now become almost a model for all commodity committees.

Since 1934, both rubber and tea have been under international arrangements which restricted expansion and export of these two produces. The Coffee Cess Committee was formed in 1935 but it had no regulatory powers either over production or export. But, besides these main plantation crops, there were others which were not grown on 'estate' scale and their produces were facing almost identical problems. They were coconuts, arecanut, cashewnut, pepper, cardamom, orange and cinchona. Setting up statutory organisations for these commodities were delayed as the growers were themselves not organised. But, all these various attempts covering the main crops were to provide the plantation

industry, which has become the second most valuable exporter, with a sense of economic security.

TEA

Production and Prospects

Tea was brought under the International regulation scheme since April 1933. Only three of the main producers submitted to the scheme which East African and Malayan producers agreed to support. According to the scheme, the Standard export was fixed at 842,05,446 lbs. per annum of which India provided 45.5 per cent. Important producers such as China, Japan and Formosa were outside the Agreement. In the first year of the Agreement, which followed the lowest recorded price for tea at 9.45d. in London, the price averaged 11.7d. Since then, the price of tea maintained a steady upward course, except in 1935, till 1941-42 when the bulk-purchase scheme of the Ministry of Food was initiated. By this arrangement, Indian tea was priced at the average realised at the London auctions for the three years immediately before the war. To this basic price was to be added any rise in cost of production which may occur during the course of the war. The price of Indian tea exported to the U.K. therefore fell to an average of 10 as. 6 ps. per pound which is fully reflected in the value of our tea export during the war.

382 million lbs. during 1941-42 before the bulk-buying contract came into effect, fetched Rs. 39.57 crores as against Rs. 37.86 crores for 413 million pounds in 1943-44 when the cost of production of tea was claimed to have advanced by 25 per cent. of the price per pound. The internal price, on the other hand, rose from 4 as. 10 ps. in 1943 to 7 as. 4 ps. in 1941 and to Rs. 1-0-10 in 1942. The resumption of free trade in tea in 1946 gave a spurt to prices raising it to Rs. 1-15-7 in the Calcutta auctions. It is evident that during an important trading period Indian tea ex-

ports fetched a price that was deliberately depressed in the interests of Great Britain.

India has agreed to continue the International Agreement with the Headquarters of the Committee in London. By its recent decision, the participating countries are permitted to extend the area under tea by 2 per cent. and to replant by 3% annually for two years after which the matter is to be reviewed. India continues to be by far the biggest exporter of tea, a place which she gained over China in 1904-05, but the internal consumption has trebled since 1930. Indian consumption is estimated at about 150 million pounds while production in India has risen from 391 million pounds in 1930 to 586 million lbs. in 1947. World production and the exportable surplus in the producing countries however show a fall and so long as that continues, Indian tea is likely to fetch a good price. Once world production catches up with demand, unless Indian consumption substantially increases, the prices would collapse and the tea industry would again be in one of those periodic crises which has been its experience for several decades. As for export, the European Recovery Programme has provided for an increasing amount of consumption in the 16 participating countries and by 1951 will exceed 617 million pounds as against the pre war average of 500 million lbs.

The tussle between a rising cost and a hesitant price is more consequential to the future of the tea industry than the world marketing conditions though both are closely connected. Unless increased productive efficiency absorbs the increase in the costs and maintains an attractive margin of profit the prospect for the private investor is not likely to be bright.

COFFEE

Production and Price

During the pre-war years, the Indian coffee industry was to a great

BUSINESS WEEK

extent dependent upon a foreign market for the disposal of nearly half its crop, the estimated Indian consumption being between 5 and 7 thousand tons. The average price of the best grades was Rs. 33 to Rs. 36. Wynaad robusta was available at Rs. 15 per cwt. and Travancore robusta at Rs. 7. With the constitution of the Board and the extension of its functions to cover pooling of the entire produce, marketing and propaganda, there has been a steady increase in the internal consumption of coffee, a complete disappearance of export and a fantastic rise in prices. The record of the propaganda work is the most impressive. From a total turnover of Rs. 73,353 in 1939-40 the total has exceeded Rs. 75 lakhs during 1947-48. Indian consumption is now estimated at 19,600 tons per annum. But production has not kept pace with consumption or the demand of the external market. The average production for the last five-year period has been nearly 18,000 tons. An unfortunate aspect of the coffee situation in India has been that the higher price secured by the Board for the growers has resulted in a majority of them transferring their efforts from the coffee fields to the Committee room. Yield per acre has dwindled, the exhausted soil which has been nourishing coffee plants for over half a century continues to do so and the fruits of research, such as the discovery of higher yielding hybrids, have been generally neglected. The growers seek to cover a falling production with a rising price and a forward-looking spirit has infected only a few. Last year the Board had to refuse supplies to Ceylon, the U. K. and other continental countries. We must produce more and export more but a soaring price appears to give our growers the opposite incentive.

RUBBER

Price and Market

India is a small producer of raw rubber. At present, our total production of about 16,600 tons is fully 3,000 tons short of internal demand. Indian rubber price has been artificially based on the results of the periodic cost

investigations and it has always remained, since the end of the war, above the world price of natural rubber. This has led to serious opposition from the manufacturers whose products could not compete in the world markets. Growers, on the other hand, maintain that production will further dwindle unless an attractive price is offered to the producers failing which it will ruin an important industry. Although various marketing schemes have been suggested, the belief that the high cost of a large marketing organisation would eat into the ultimate price available to the growers deterred the Board taking a final decision in the matter. The prospects for rubber would be brighter once the world price reaches parity with the home price in India and the small holdings can be eliminated altogether or their production improved in all directions. Out of the 43 purely rubber companies, 15 could not declare any dividend last year, and unless the cost and price are stabilized and managerial methods are considerably improved Indian rubber industry would have to face a gloomy future.

COCONUT

The coconut industry covers approximately 1.51 million acres and produces nuts and by-products worth nearly Rs. 100 crores per annum. Southern India claims about 95 per cent. of the total area under coconut palms and to Kerala it is the mainstay of their economic life. A fair price for copra and coconut fibre is almost synonymous with the prosperity of the people of the West Coast. But, unfortunately, the holdings are too small and the agricultural methods so primitive and marketing so unorganised that the Indian Central Coconut Committee is faced with an almost impossible task of educating the growers on better methods of production, steadying the prices of the various coconut products and providing the incentive for expansion. India now imports about half the total Indian requirements in copra from abroad, but it was only thirty years ago she was an exporter of this commodity.

PLANTING SUPPLEMENT

During last year, the control over prices was removed and the import of Philippine and Malayan copra depressed the local market and the price of oil fell to Rs. 260 per candy, which has since recovered to the present level of Rs. 460. Unless economic prices are obtained and efficient production methods are introduced, the coconut industry will be on the down-grade, and the Coconut Committee's efforts must be concentrated upon arresting such a movement.

ARECANUT

As for arecanut, Indian production was estimated during 1945 at 48,10,800 maunds, and the import requirements were placed at about 13,31,000 maunds. By the partition of the country, the largest areca-bearing area has gone to Eastern Pakistan. 2,35,200 acres of Eastern Pakistan is estimated to produce 26,57,000 maunds which, at the present market price, if imported by India, would cost this country about Rs. 16 crores. India's dependence upon foreign supplies has greatly increased the case for a steady internal price and expansion in planting. Apart from the wildly fluctuating prices, the growers had to bear with the 'mahali' disease and an internal excise duty which ruled at as. 4½ per pound. The last was first reduced to annas 2 and then to 1 anna and finally abolished altogether, while the import duty on foreign areca remained at the high level of 5½ annas for non-empire countries and 4½ as. for empire countries. Even with this differential the growers are not satisfied and they have pressed for a greatly restricted import which would raise the internal prices. The Government of India is understood to have accepted the recommendations of the arecanut *Ad Hoc* committee to set up a permanent statutory committee for this commodity.

PEPPER

Pepper has faced, during the course of its long history, startling changes in both prices and yields. In 1939, the price per candy of pepper in the Alleppey market was as low as Rs. 60. The war-time American imports with strict O.P.A. price control held the price average

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at a low level. The destitutional control exercised by India was another check upon high prices. With the removal of all controls in October 1947, the price of pepper shot up within a few months to over Rs. 700 and by the end of the year it was above Rs. 800 per candy of ungarbled pepper at Alleppey. Since then, the rise was maintained until it reached Rs. 1,455 last week.

The reason for this fantastic rise was the world shortage of this ancient spice. The pepper culture of Bangka and Billiton and Indo-China was almost completely destroyed or rendered out of production and the world need of about 56,000 tons could not be met from the Indian production of about 23,000 tons, of which India could absorb almost 10,500 tons. The exportable quantity of 13 to 15 thousand tons had to be shared among a large number of importing countries in the West. The quantity shipped through Cochin port is broadly indicative of the trade pattern of Indian pepper, and according to the latest figures available for the July to June year 1947-48, 2,45,152 cwts. of pepper was shipped from Cochin. The main importer, as in the past, was America with 105,126 cwts., as against 116,576 cwts. the preceding year. Britain nearly halved her pepper imports, but the Dutch more than quadrupled their buying. Pepper export was checked only by lack of supplies and not lack of buyers. India is in a strong position with regard to this commodity, and if the speculative middle-men are checked the producers can look forward to a good future.

ORANGE

In 1941 it was estimated that the area under Citrus fruits in India was over 130,000 acres and 78% of that area under the sweet orange variety. Of this, the Southern area under the Mandarin orange covered about 22,000 acres in 1943. Since then, there has been great expansion in the area under orange in Coorg, Wynaad and the Malnad area of Mysore. The largest expansion took place in Wynaad where the area increased from 6,000 acres to about 20,000 acres within the course of about 12 years. The area

under orange in Coorg is above 16,000 acres, and for the whole of South India may exceed 40,000 acres. Although peasant holdings are common, plantation development is clearly preferred by the growers and there are several large estates in Wynaad and Coorg.

The yield per acre is estimated between 35,000 and 60,000 fruits and, at the present market rates for retail sale, it represents a rich return for any grower. But, orange is marketed by forward contracting middlemen whose rates are about Rs. 600 to Rs. 1,000 per acre of crop. In 1939 the rate was around Rs. 170 and the advance is not unattractive. Nevertheless, the producer gets only a seventh of what the ultimate consumer pays. But, in Coorg, a successful experiment in co-operative marketing has been carried out with about 60 member estates, and it has become a model for agricultural marketing co-operatives. It has an impressive record of useful service, and today handles more than 1/8th of the Coorg orange crop; has an experienced market-contacting staff and guarantees the quality of the crop sold. Parallel with this, is the beginning of a research station set up by the Indian Council of Agricultural Research. If the present rate of expansion is maintained orange promises to be one of the most important plantation crops in India. A like expansion in consumption may, however, be arrested by the high price of the fruit.

MINOR CROPS

There is an area of over 100,000 acres under Cardamom in India producing about 1,400 tons, of which nearly 60% is exported. The yield varies very considerably from area to area and from year to year, but at present, the price is attractive inducing many to collect wild cardamom in some parts of Travancore. A central organisation for research and marketing appears to be urgently necessary and the delay in setting up a Cardamom Committee has been largely due to the absence of sufficiently strong growers' associations. Compared to the growers, the traders are few in number and exercise an undue influence over price and the disposal of the crop. Indian

PLANTING SUPPLEMENT

cardamom crop is worth about Rs. 1.2 crores and this country meets the bulk of the world needs in cardamom.

Cashewnut is another commodity of which India is almost a monopolist supplier. What is more, it is a great dollar earner. The U.S.A. is by far the largest importer of cashew kernels and cashew shell oil for which there is increased demand. The total production of kernels was 20,000 tons in 1941 and India supplied nearly 95 per cent. of the world demand for cashew kernels. Indian production of cashew nut is estimated at 45,000 tons, and in 1941 it was estimated that about 28,000 tons were imported mainly from Africa. Indian consumption of cashew kernels do not exceed 6,000 tons, and it is estimated that about 16,000 tons depend on foreign markets. During 1943-44 the price of kernels soared to Rs. 210 per cwt., wholesale, while retail price in the local market was Rs. 3 per lb. As complete statistics of production and export are not available only rough estimates are possible, but there are indications that Indian acreage under cashew trees have increased, that production is greater and that import of raw nuts has fallen. Since recently, the price of kernels has risen and the wholesale price for 210-count variety is Rs. 60 per case of 25 pounds ex-factory. During the last 12 months ending June 1940, 15,333 tons of cashew kernels were shipped from the port of Cochin, as compared to 13,815 tons in the preceding year. Cashew oil export was above 780 tons. Cashew apples, nuts, oil and peels have a large potential market in India, and few commodities lend themselves to quicker consumer acceptance by propaganda as cashew kernels, and it is possible that the cashewnut industry will rank as one of India's largest plantation undertakings.

PLANTATION LABOUR

There has been a rapid advance in wages and working conditions of plantation labour during the last three years, and a number of influences have played their part towards this development. The publication

(Continued on page 6)

The Indian Cardamom Industry

By M. P. JACOB

(President, Cardamom Growers' Association, Travancore)

The area under cardamom in India is 1,50,000 acres. 79 to 80 thousand acres are in the Travancore Hills, 30 to 40 thousand in Mysore and Coorg and the balance in the Wynad area of Malabar district and the slopes of the Western Ghats in Madura district. A small quantity of cardamom is produced on the Southern foot hills of the Himalayas and Kashmir. 90% of the Cardamom grown in our country is in Southern India as is evident from the above statement. Other countries producing cardamom in the East are Ceylon and some of the islands in the Eastern Archipelago.

Production, Yield and Price

The total production of cardamom in South India is 1 to 1½ lakh *thulams* (20 lbs. per *thulam*), and is valued at about Rs. 1½ crores. 30 to 40 per cent. of the annual yield is exported and the remainder is almost entirely sold in the North. The yield per acre and the price are subject to considerable variations; the yield greatly influenced by rainfall and the price by the size of the output and the foreign demand. The export market is an important factor in the price conditions of this spice and India has not been able to regulate it so as to obtain a secure price for cardamom, although she is almost a monopolist producer of this commodity.

During the two world war periods there was little or no export of cardamom and low prices prevailed. After the cessation of the first world war there was a brisk demand for cardamom for the export market and during the years 1920 to 1925 fetched what might be considered fair prices. Then, the price began to fall and continued to do so when hostilities commenced in 1939. Small rises in prices occurred due to a temporary short-fall of crop but the general conditions in the industry were not sustained by a steady price. Throughout the second World War there was no export of carda-

mons and prices dropped to very low levels. Since the end of the war there has been a steady recovery and the present prices are possibly the highest in the last 25 years. But, it has been offset by the steep fall in yield during the last three years.

Obstacles in the Way of Progress

The structural defects of the cardamom industry which stand in the way of a fuller realization of the wealth-making potentialities of this crop and its large-scale development arise primarily from the absence of an effective organisation among the growers. No research work worth mentioning was done in the past in the matter of improving the yield, quality, propagation or marketing and the most urgently needed assistance of the growers is in the direction of scientific research. As for marketing, there exist no central organisation either of the growers or the traders. A handful of traders control the entire cardamom market of India and the price levels.

With the creation of a research and marketing organisation and a price stabilizing machinery the cardamom industry can be put on its feet. Another handicap which seriously hinders progress and increases the cost of production is the lack of adequate communications and cheap means of transport. Especially in Travancore where a large number of labourers are employed in the cardamom holdings, unlike in the tea and rubber holdings, no organised or guaranteed supply of food grains exists.

The Government of Travancore impose an Export Duty of Rs. 5 per cwt. of cardamom exported out of the State. The State's efforts to market its cardamom crop in Travancore has not succeeded due to the powerful control the ring of Virudhunagar and other merchants exercise over the cardamom trade.

The Principal Markets

In Europe, London is the main marketing centre for the cardamom

exported from India, but the main consumption areas are the Northern European countries. Cardamom is used in Russia, Sweden, Norway etc., for flavouring drinks and in France and other countries the spice is used for making tincture cardamom. U. S. A. also uses cardamom for such preparations, but depend for her supplies to a large extent upon Brazil and certain other South American countries where an inferior variety of cardamom is grown. There is a large market for cardamoms in the North and the fullest examination of the possibilities of marketing and expansion is necessary to ensure a sound economic basis for the Indian cardamom growing industry.

(Continued from page 5)

of the Rege Report in 1946 together with the vast political changes in the country compelled the planting industry to put its labour house in order. The need was not as much in the setting up of new standards in amenities and welfare for labour as in approximating the general conditions to those prevailing in estates under progressive managements. The paradox of plantation labour conditions was that in some directions such as housing, medical aid, child care and group developments some of the managements were far in advance of most industrial undertakings in urban centres. But, at the other extreme, estate labourers in many estates lived in appalling conditions, were bullied and beaten and were cruelly treated. Lack of sufficient appreciation of the importance of the labour question was implicit in the fact that the United Planters' Association of Southern India did not have a labour relations organisation till last year.

Though plantation wages do not compare with urban wage rates there are certain advantages in plantation life which if fully utilized could greatly advance the wellbeing of the industry's 4,50,000 workers.

Resource Development in South India

By M. P. JACOB

"The Kerala Round Table Group", with its headquarters at Alwaye, after careful study and discussions during several months have now brought to the notice of the public and of the Governments the natural facilities available on the Western Ghats which if carefully and competently developed would lead to large-scale industrial and agricultural development over a wide region of South West India. Mr. M.P. Jacob, the writer, is a prominent member of the Round Table Group and the material for the following article has been collected from a number of published sources."

"It is time that the lessons of history are taken to heart in shaping the administrative arrangements of new India. The Central Government had spent huge sums for strengthening the defence of North West India. India's biggest irrigation works which are located in the Punjab and Sind have now been lost to the Indian Union. The areas which used to supply some of the most important raw materials of India such as jute, cotton, wheat etc., have now been separated from India. The partition of India has therefore greatly increased the importance of South India as a producer of vital raw materials"..... "South India possesses an extensive sea border and several excellent harbours. Strategically,

South India is best suited for the location of essential war industries"..... "In the place of coal, there are almost unlimited water power resources in this region, if the numerous rivers of South India are fully harnessed."

Abundant Power Resources

Dr. Thomas in his article pointed out the very great possibilities in the production of Hydro-electric power in one place in South India, i.e., in the High Ranges of Travancore situated in about the Centre of South India. The facts and figures given by Dr. Thomas in the article were mostly those given in a memorandum on and a summary of two Periyar River Projects prepared by the Kerala Round Table Group,

which were shown to Dr. Thomas when he was at Alwaye recently. In Periyar River Project No. I and No. II it is estimated that about 5 lakhs K.W. electric energy may be possible of being generated by harnessing the waters of one river, the Periyar in the High Ranges of Travancore in five places, three at elevations 3,000 ft. M.S.L., one at 2,000 ft. and one at 800 ft. and made to drop 1,000 ft., 2,000 ft. and 600 ft. respectively. The five lakh K.W. electric energy thus pointed out as possible of being generated in the High Ranges of Travancore, is about equal to the total electric energy estimated in a conference of Engineers held at Madras a few years ago as the total requirement for industrial and other purposes in

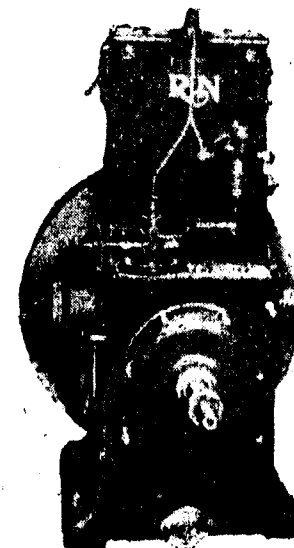
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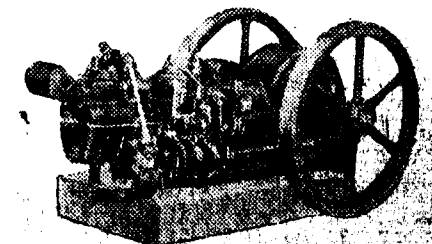


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the whole of South India in the near future.

Alarming Food Shortage

Dr. Thomas is right to dwell mainly with the economic aspect of the food shortage in South India. War or no war, the worst spot in the economies of the people in late years in South India was food shortage. When there was a war it was all the more so. As pointed out in the article by Dr. Thomas, in Kerala itself which forms only a small part of the Province of Madras, the annual food import during the past several years cost 75 to 80 crore of rupees. That is a very heavy drain on the resources of a small part of the Province. The Central Government in Delhi, which recently allotted as much as Rs. 58 crores to the Damodar Valley project in Bihar and Rs. 47 crores for the Damodar Project in Orissa, may be expected to allot a similar sum for a project in the Province of Madras, if the project is shown to be worth while or, as pointed out in a moving article in the *Manorama*, the Province should in future turn a corner for the location of war industries to make effective the arrangements for the defence of the whole United India of the future.

If proper use is made of the facilities afforded by Nature in this place in South India, left neglected so far but now brought to the notice of the public and of the local Governments, development of agriculture and industries in large areas in South India could be made possible. In view of the strategic importance of South India in the defence of the New Indian Union, as pointed out by a leading Newspaper in South India, and of the need for stabilising the economic structure of this portion of India, as pointed out by an economist of standing in India, the Central Government in Delhi may be induced to render the development possible in the best interests of the whole of India.

Harness the Periyar

Dr. Thomas bestows attention to developments in South India made possible by the waters of the Periyar River in the High Ranges of Travancore mainly on account of the agricultural developments and food production. The drain

of large sums of money from South India mainly on account of food import could not but imbalance the economies of South India. The waters of the Periyar River in the High Ranges of Travancore made possible the development in the Western Ghats in the West which has made possible large quantities of paddy annually for the food of the people. Increased production of paddy in these areas would have the further advantage that it would neutralise the requirements in the High Ranges of Travancore where there is a very large square miles of land under cultivation of *Zizania* and other crops which need irrigation for the cultivation of crops such as sugarcane, coconuts, and other crops which produce a surplus of copra and oil. Two essential needs for the development of these fertile lands in the hills are transport facilities and access to the food of the labourers working in the extensive estates. As an agriculturist and one who cultivates some land in the High Ranges of Travancore, this writer is of the opinion that the key to the development of the extensive lands now lying uncultivated in the hills is the provision of facilities to feed the labourers employed for work there. A certain quantity of rice per head per week is a requisite for every labourer to make him work contentedly in the hills.

Boon to Planters

Till the break out of the last world war, it was rice from Burma and Tanjore and other paddy areas in South India that was used for the food of these labourers. Quite a thick if not more of the cost of the rice when it reached the estates went towards the cost of transport to the estates from its place of production. All planting concerns big or small in the High Ranges have now to write off large amounts annually as loss on account of the supply of rice to the labour force. If such loss could be eliminated, the estates could use the large amounts for quantities of life for the labour force. If rice could be produced in the extensive plains of

the Periyakulam Taluk of Madura District and in the level lands of Kunnathur in North Travancore and of Kanayannur Taluk in Cochin State, that could be transported to the hills cheaply by way. To make that possible, largely increased paddy cultivation has to be done in these areas with irrigation facilities suggested in the Periyar River Projects. Faster and cheaper development of the fertile lands in the hills could then be made possible and at the same time provide work for large numbers of working class people in places in the neighbourhood of the Western Ghats. More than 75% of the lands available for cultivation there are now lying uncultivated and uncultivated mainly due to the two difficulties mentioned above. If properly developed, the wealth production possibilities of the area will be great amounting to several crores of rupees annually. These being new developments, fair distribution of the wealth produced among the labourers and the employees of labour could also be arranged for. Such developments in the hills would also lead to other large developments in the plains below.

Industrial Possibilities

The hydro-electric power production possibilities of the place which is also large will lead to large industrial and other developments in as many as five important districts in the Province of Madras, viz., Thiruvelli, Ramnad, Madura, Coimbatore and Malabar, besides the two States of Travancore and Cochin. These great development possibilities offered by the lands and waters of the Western Ghats, brought to light in the Periyar River Projects prepared by the Kerala Round Table Group, when seen by Dr. P. J. Thomas, the eminent Economist, were appreciated and supported by him.

The Periyar River Projects with Ammonium prints of the Periyar river valley are now ready to be placed before the public and to be submitted to the Governments of Madras, Travancore and Cochin and to the Central Government in Delhi for getting them examined by experts and to decide about financing and bringing them into operation.

The Coconut Industry in India

By K. GOPALAN, M.A., B. COM., (M.A. '37)

(Secretary, Indian Central Coconut Committee, Ernakulam)

Coconut is the mainstay of life in Kerala, the land of coconuts. The southern part of the west coast of India has, from time immemorial, been occupying a pivotal position so far as the cultivation of coconut and the manufacture of its products are concerned. Coconut serves the purpose not only of an adjunct to diet but is also one of the most important commercial crops of Malabar, Travancore and Cochin, from the proceeds of which the people of these areas purchase their daily needs. In spite of the fact that the economic fabric of this part of the country is closely bound up with the coconut and the allied industries such as copra-making, oil milling, coir and coir industry, etc., the history of the industry has not been marked by any material progress or notable scientific development.

Acreeage and Production

Among the coconut producing countries of the world India is next only to Philippines. Of the 8 million acres under coconut in the world 2 million acres are in the Philippines, 1.48 million acres in the Indian Dominion, 1.2 million acres in Ceylon and 0.6 million acres in British Malaya and South Sea Islands. Of the total Indian acreage 613,997 acres are in the Province of Madras, 575,673 acres in Travancore, 175,796 acres in Mysore, 64,988 acres in Cochin State, 24,675 acres in Bombay, 16,448 acres in West Bengal and 10,949 acres in Orissa. Of the 613,997 acres in the Madras Presidency, Malabar has 369,615 acres, South Kanara 52,863, East Godavari 56,605 acres and Tanjore District 35,415 acres. Kerala accounts for more than two thirds of India's coconut acreage. Taking Madras, Travancore, Mysore and Cochin together it is seen that about 84% of the coconut area in India is concentrated in South India. The average yield per acre is 2,190 nuts, though it varies from area to area and district to district.

The annual production of coconuts in the Indian Dominion is estimated at 3,277 million nuts of which 1536 million nuts are produced in Madras, 1211 millions in Travancore, 281 million nuts in Mysore, 30 million nuts in Cochin, 53 million nuts in Bombay, 22 million nuts in West Bengal, 21 million nuts in Assam and 19 million nuts in Orissa. Out of the total production, 1,495 million nuts are utilised for the production of 2,20,700 tons of copra and the rest are presumably consumed unprocessed either as mature nuts or green nuts.

From Exporter to Importer

Prior to the first world war, India used to export considerable quantities of coconut and coconut oil, the annual average net export for the quinquennium 1909-10 to 1913-14 being 45,433 tons (in terms of copra). The quantity declined to an annual average of 23,033 tons during the five years ending 1918-19 to 17,308 tons in the following quinquennium and to 624 tons during 1924-25 to 1928-29. From 1929-30 onwards India went completely out of the picture as an exporting country and became a net importer. During the five years' period ending 1933-34, the annual average net imports were of the order of 26,370 tons and in the following quinquennium 87,044 tons. In 1939-40 the net annual imports increased further to the tune of 104,053 tons and in 1940-41 and 1941-42, Ceylon, which was the chief source of our imports, lost most of her European markets due to the war with the result that she placed unusually large quantities of copra and oil on the Indian market. Our imports during the period exceeded all the previous records, the average for the two years ending 1941-42 being as much as about 181,000 tons. The main sources of imports into India during the pre-war period were Ceylon and Maldives, the former accounting for 77% and the latter 22%. Since 1941-42 the distribution of the entire exportable

surplus of copra and coconut oil in Ceylon has been under the control of His Majesty's Government in the United Kingdom who have allotted to India an annual quota of only 65,000 tons up to 1946 and 75,000 tons in each of the four years ending 1950 against India's net import of about 181,000 tons in 1941-42. (All the figures in terms of copra). Owing to failure of crop the quota for 1947 was reduced to 37,000 tons of which 7,000 tons were earmarked for Pakistan. Besides the Ceylon copra, it is now known that about 28,000 tons of copra from Philippines, Malaya, and Netherland East Indies were also allotted to India. As far as is known, only small quantities of this allotment have been imported into this country.

There has been in recent years an unprecedented expansion of the soap industry in the country due to the increasing soap habit of the people. The *per capita* consumption of soap in India which was $\frac{1}{4}$ lb. some thirty years back increased to $\frac{1}{2}$ lb. before the war. It is now reported as 12 oz. It is estimated to increase this to 1 lb. during the next five years. Thus, while the annual consumption of coconut oil in the soap industry in the pre-war period was only in the neighbourhood of 30,000 tons, it is estimated to double itself in the course of the next five years due to the increasing activities of the soap industry.

From what has been stated above three conclusions emerge, namely, (1) that India, as a rapidly industrialising country has been increasing her demand for coconut and coconut products (2) that Indian production lags behind her demand and (3) that immediate steps need to be taken for intensification of production, better utilisation of coconut and coconut products, and rehabilitation of an industry which in the past has not had full scope for development.

Central Coconut Committee

The Government of India considered that the various interests of

the Industry could best be served by setting up an All-India Central Coconut Committee, on the lines for which the Indian Central Cotton Committee and similar bodies concerned with Jute and Lac, with their outstanding achievements, afforded precedents, to watch over the interests of the coconut growers and to assist in the development of the coconut industry and the industry of its derivative products. The functions of the Committee, started a little over three years back, fall under four main heads, namely, (1) the conduct of research—agricultural, economic and technological—for the improvement of the commodity and the application of the results to everyday practice, (2) the improvement of marketing of the commodity and its products, (3) the supply of information to Government departments, the trade and the general public on all matters relevant to the industry, and (4) tendering of advice in respect of policy on matters connected with the development and improvement of the industry.

Agricultural Research

There is at present a wide gap between the production of coconut in the country and the demand for it and to bridge the gulf large quantities of Coconut oil and Copra are imported from foreign countries. Both immediate and the long term development of the industry therefore calls for increase in the production of coconuts in the country. As most of the suitable area is already under Coconut cultivation there is little chance of achieving the object by extending the area. The most effective way therefore of increasing the production would be to adopt improved practices in regard to the maintenance of the existing plantations systematically from year to year. There are two important ways of doing this. One is to increase the yield of coconut per acre and the other is to improve the copra content of the coconuts already available. Researches conducted in India, Ceylon and other countries have shown that the yield of coconut can be increased substantially by manuring and intercultural practices. Intercultural or intertillage practices in coconut gardens such as digging

or ploughing the inter-spaces every year has been found to enhance the yield of coconuts even in the absence of manuring by about 100% on the Coconut Research Stations on the West Coast of Madras Presidency. The soils in which coconut trees are grown in India are, in common with other soils generally, deficient in organic matter. It is especially so in the case of the laterite, sandy and sandy loam soils of the East and West Coasts of India and the uplands of Mysore. One cannot therefore over-emphasise the need for replenishing the soil and maintaining its fertility by proper manuring. The cost of intercultural and manuring is reported to be only a fraction of the extra returns accruing from the increased yield. The production of coconuts can also be stepped up by taking timely action against the pests and diseases of coconuts. The yield per tree can also be augmented to a considerable extent by judicious cutting down of poor yielding trees to provide enough space between the remaining trees to enable them to grow vigorously and give good yields. In Ceylon, by intensifying and systematising cultivation, the yields in some of the estates increased to 3,000 to 5,000 nuts per acre, while the average yield per acre in India still stands at about 2,100 nuts. By diligent cultural practices it is also possible to get more copra from the nuts. In the Philippines and in Ceylon less than 5,000 nuts produce a ton of copra, while in the West Indies 6,250 nuts and in India 6,800 nuts are required to yield a ton of copra.

Research Stations

The agricultural research work undertaken so far in the Provinces and States has been directed mostly to the varietal, cultural and manurial aspects, except in Madras where the crop has been studied more extensively. But the results achieved are neither thorough nor applicable to the diverse conditions under which coconuts are grown. The need for detailed investigation on sound lines of the fundamental aspects of research and of the cultural and manurial aspects and for control of pests and diseases is apparent. The importance of the control of diseases of the Coconut

would be appreciated when it is remembered that the diseases have been in existence in Travancore for over 70 years where they have assumed very serious proportions and affected one third of the total coconut area. They have also been in existence in Cochin State for a very long time. The Indian Central Coconut Committee, realising the importance of these problems, have set up two Central Research Stations of their own. One of them is for work connected with fundamental research and the botanical and genetical aspects of coconut cultivation. It has been located at Kasaragod and for the purpose the present Agricultural Research Station there with all the available facilities was purchased by the Committee on 15th November 1947, and it is proposed to develop it by acquiring about 110 acres of adjoining land. A special acquisition staff has been appointed by the Madras Government at the Committee's cost for expediting the acquisition of the land. The special staff have already joined duties and the work is progressing.

The Central Coconut Research Station for the control of pests and diseases affecting the coconut palm has been started at Kayamkulam in Travancore in the centre of the disease affected area. A nucleus staff has already been appointed and research work is in progress. The land for the Station at Kayamkulam has been acquired and the foundation stone was formally laid by H. H. the Elaya Raja of Travancore in April 1947. The construction of the laboratory and other buildings has started and is making good progress.

Besides, investigations have shown that in planning Agricultural research for the improvement of coconut particularly on the cultural and manurial aspects, researches will have to be carried out at representative centres in each of the major producing areas in which climatic and other conditions are different so that the results of the trials may be immediately passed on to the growers in the areas concerned. It has been observed that improvements in coconut by agronomic means are so local in application that it is necessary to conduct more

investigations at about a dozen centres throughout the coconut belt. The Committee have therefore recommended that a number of regional stations in Madras, Travancore, Cochin, Mysore, Orissa and Bengal should be set up by the Provincial and State Governments concerned, with financial assistance from the Committee. The importance attached by the Committee to the agricultural research work may be realised by the fact that the two Central Research Stations alone would cost them about Rs. 12 lakhs by way of non-recurring expenses and Rs. 2 lakhs as annual recurring cost. Three regional stations, one each at Kumarakom, Thodupuzha and Neyyattinkara, have already started functioning in Travancore State while another is being set up in Orissa Province.

Coconut Nurseries

The supply of good quality seedlings is a pre-requisite for raising profitable plantations and for increasing production. Considering that coconut palm is a perennial tree which takes 8 to 10 years to commence bearing and lives up to an age of over 80 years, the importance of planting good selected seedlings that would ultimately give economic yield as adult trees cannot be over-emphasized. There are no reliable nursery-men who can supply large quantities of reliable planting material. The supply of pure reliable planting material has always been a problem. It has assumed serious proportions in recent times with the present fairly high prices for coconut resulting in increased interest in raising new plantations and under-planting in existing gardens. Until recently, there was only one Government nursery at Nileshwar in South Kanara district and its output could only touch the fringe of the demand. Considering the importance of the coconut nurseries in the improvement of coconut cultivation, the Committee have sanctioned the setting up of several coconut nurseries for distributing seedlings of guaranteed excellence to the growers. Six of these nurseries were started on the 1st January 1946 situated at Samalkot in East Godavari district, Pattukottai in Tanjore district, Vailom and Kazhakkuttam in Travancore, Arsikere in Mysore and Cuttack in Orissa. A nursery at Irinjalakuda in Cochin State was started on the 1st September 1946, while another at Pattambi in South Malabar was set up on the 1st September 1947. Nurseries are also being set up at Aduthurai, Marateru, Anakapalle and Coimbatore in the Madras Province. Under the consolidated nurseries scheme, Madras alone would be distributing as much as 1,60,000 selected coconut seedlings every year instead of 25,000 seedlings supplied at present. Orissa will also have a new nursery at Balia in Balasore district very soon. The Committee have also sanctioned two more coconut nurseries, one at Kumpta in Bombay province and the other at Tejpur in Assam, and they are expected to start functioning soon. All these schemes would be in full swing in the near future when a good proportion of the demand for selected and guaranteed quality seedlings would be met by them.

Although it was originally decided to sell seedlings from the various nurseries at 4 annas only so that even the poor grower could go in for

quality seedlings, it was decided at the 7th meeting of the Committee (17th April 1948) to sell seedlings in future at eight annas in view of the increased cost of production. Even this price is lower than that at which ordinary seedlings are sold.

An Economic Price

Attempts at developing the industry may not yield full results unless the producers are ensured of economic prices for the coconut. Experience shows that the interest that growers take in their coconuts depends upon their price. During the period 1929-39, when the prices of coconuts declined sharply due to heavy import of copra and coconut oil from foreign countries the growers neglected their gardens and refused to plant new trees. On the other hand, when prices looked up, they have been found to take more interest in coconut cultivation and devote attention to manuring and cultivation. The necessity, therefore, for ensuring a remunerative price for the coconut in any system of planned development of the coconut industry cannot be over emphasized.

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however, be stated that there is a steadily increasing demand for the article in India resulting from the increasing manufacture of confectionary in the country. Considerable interest therefore seems to have been aroused in its manufacture, economics and marketing. Enquiries are being received from traders in and outside the country about the possibilities of its manufacture in India. It was also suggested to the Committee that they should encourage and if possible subsidise the introduction of the industry in India. The question was considered by the Committee in their September 1945 meeting, and their unanimous view then was that in view of the considerable shortfall in the supplies of coconut in the country it was premature to consider the possibilities of starting the industry in India. The position has not changed since then to warrant a revision of that decision.

Coconut Oil

The possibility of increasing the percentage of extraction of oil needs to be examined. The yield of oil obtained by crushing depends on the oil content of the copra, the season of extraction and the efficacy of the method and machinery employed. The quality of the oil is usually judged by its colour, cleanliness, flavour and freedom from rancidity. A clear white oil, with pleasant flavour is valued higher than a turbid or yellowish oil or one which shows signs of rancidity. As a result of improvements in the methods of curing copra and extracting oil in the mills there has been a marked reduction in the free fatty acid content in the oil. Researches may also yield commendable results with regard to improving the quality of the oil. And, as there is a definite market for superior quality oil, the time is opportune for carrying out such investigations.

Coconut oil is extensively used in the manufacture of soap by both the cold and fully boiled processes. It has been found to be characterised by the presence of a high percentage of lauric acid which gives coconut oil soaps their characteristic

solubility. The presence of lauric and myristic acids also makes the oil eminently suitable as a better substitute than margarine. Researches conducted by Miss Hartwell of King's College, London, have shown that the coconut oil is digested more rapidly than other fats including butter and may prove a more valuable food than has hitherto been supposed. It may also be used in the preparation of toilet articles and in the manufacture of coconut stearine, large quantities of which, because of its comparative cheapness, may be used in the preparation of chocolates, biscuits, pastries, cakes, etc. Researches into the methods of refining oil, with a view to increasing its keeping and edible qualities and the utilisation of the oil for various other industrial and commercial purposes also seem to be urgently called for.

The Husk

The two important by-products of the coconut are its husk and shell. The green husk is generally used in the manufacture of coir by retting. The present methods of retting the husk leave much scope for improvement. Dr. Reginald Child of the Ceylon Coconut Research Scheme has indicated that the technical side of the fibre industry can be developed by the employment of patent equipment for dry milling the husks without soaking, which process has been successfully worked out in Trinidad and Tobago. The machine may be usefully introduced in Malabar in areas where back-water facilities for retting are scarce. The dry husk could be utilised for extracting fibre for bristles, brushes etc. and as stuffing material for mattresses. The possibilities of introducing in Malabar the chemical and mechanical methods of retting practised in other countries also deserve to be examined. The main advantages claimed for this process are saving in time, higher yield and a greater uniformity in the quality of the products. The economics of the various chemical and mechanical methods, which have not been adequately examined, deserve to be investigated. Attention may also be devoted to see whether the coir fibre cannot be

material for pipes, cables etc. The possibilities of manufacturing compress boards, panelling boards, tea chests, packing materials, bath mats etc. from coconut husk and premature coconuts which the trees often shed, and which at present are not put to any useful purpose, and pith, heaps of which go to waste in coir factories, deserve serious consideration. It is reported that Mr. S. R. K. Menon of Travancore has conducted certain experiments with regard to the manufacture of box-boards from immature nuts and trials made to examine the possibilities of making the boards on a semi-commercial scale have given encouraging results.

The Shell

Technological researches on the use of shells for commercial, industrial and other purposes also hold out immense possibilities. Shells are commonly used on the west coast as fuel and for firing copra drying kilns. The collection of shells on a commercial scale is undertaken only when copra is manufactured and it has been reckoned that shells from roughly 1,400 million coconuts are so collected. The coconut shell charcoal was in great demand during the war for use in gas masks. The charcoal specially prepared and activated can be used for refining sugar and vegetable oil. The shell yields, on carbonising in a proper plant under scientific control, acetic acid and tar. During the war, there was some demand for charcoal in the preparation of acetic acid for coagulating rubber in factories. But, as the import of acetic acid at cheap rates from Canada and other countries is now possible, its preparation may not be an economic proposition because of the high prices of coconut shell and lack of demand for charcoal for use in gas masks. When, however, the prices of shell fall and imports of acetic acid become scarce, it may be possible to manufacture it on a commercial scale in India. The shells are also used for the preparation of ladles, bowls, scoops, etc., and various utility articles such as flower vases, fancy bowls, paper weights, buttons and various other useful purposes.

Only a few of the more important

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enumerated above. There are many others that may call for investigation as work on the above items progresses. This Committee have been convinced of the urgent necessity for undertaking work connected with the above and other items of technological investigation, and on mature consideration have come to the conclusion that the above problems call for the establishment of the Committee's own Technological Laboratory. The Committee, therefore, set up a special Sub-Committee to report whether the Technological Laboratory proposed should be organised as a separate institution or whether it should be enough if it is established in conjunction with one of the Central Research Stations of the Committee. The Committee, on the recommendation of their special sub-committee, have decided that it should be enough if the work on technological researches of coconut is carried out in a separate section of one of the Central Research Stations of the Committee. But, considering their present financial position and the commitments already made, the Committee have postponed for the present the investigations relating to the technical problems of coconut.

Co-operative Marketing of Copra

There is also the important problem of improving the marketing of coconut and coconut products. It has been indicated above that about 46% of the nuts produced in India are used for copra making. Of the copra made on the West Coast, as much as 85 to 90% is prepared by professional village copra-makers. At present, little attention is paid to the manufacture of quality copra and it is a common practice in the growing areas to sell partially dried copra containing as much as 15% moisture, while the oil mills usually like to purchase copra dried up to 6 to 7%. These defects may be remedied and the present system of marketing of copra improved by the organisation of co-operative marketing societies for the sale of copra which helps to increase members' holding power by provision of cheap credit against stored produce, obtain better returns, encourage the members to produce quality copra, and facilitate installing of hot air kilns

and grading of copra. They could also arrange to purchase and distribute manure and supply members with guaranteed seedlings, besides undertaking other functions. With the above objects in view, the Indian Central Coconut Committee have enabled two such co-operative marketing societies to be started one at Vaikom in Travancore and the other at Narakkal in Cochin State. During the short period they have been in existence, they have done considerable good to the members. And, as the growers like to avail themselves of all possible opportunities of improving their economic position, Co-operative marketing of copra is bound to become more and more popular and with it will arise the need for federating these societies into unions, as in Ceylon, to undertake as many marketing functions related to the industry as practicable in the interest of the producers.

Grading of Copra and Oil

Improvements in the marketing of coconut could also be brought about by the adoption of grade specifications for copra and oil. At present, several grades and qualities of copra are recognised in the trade, but the classification is based mostly on visual examination, with the result that better types of copra do not get premium, and buyers are tempted to offer prices which may not be fair to the producers. Similarly, several qualities of oil are known in the trade, but there are no well defined grades with specifications to indicate the various quality factors or purity of the oil. Recognising the importance of and necessity for introducing grade standards for coconut and coconut oil the Committee sanctioned a scheme for the purpose. Under the scheme, samples of milling and edible copra and of coconut oil collected from various parts of the country during various seasons are being analysed under the direction of the Oilseeds Specialist, Coimbatore, with a view to procuring data for fixing the grade specifications.

Statistics

Again, there is a great necessity for improving the statistics of coconut acreage and production. The

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policy with regard to import, export and distribution of coconut and coconut products presupposes accurate statistics relating to their production and demand in India. The available statistics about coconut acreage and production are quite unsatisfactory. An examination, for example, of the figures of acreage published in the Agricultural Statistics of India shows that in some cases the figures vary from year to year. As the acreage under a perennial crop like coconut cannot fluctuate widely from year to year, the variations can only be accounted for by the change in the system of reporting, errors in reporting or changes in the area covered from year to year. The position with regard to the figures of production is in no way better. There is, at present, no accurate data available on the basis of which standard yields can be worked out with any approximation to reality. There are, therefore, no official figures of annual production of coconut available. This, together with the doubtful figures of acreage, makes even a rough estimation of production a difficult task. The question of improving these statistics has been taken up by the Committee with the Provinces and States, and it is hoped that as a result of their joint action reliable statistics, on the basis of which alone well planned-out development of the coconut industry can take place, will be recorded on a more satisfactory basis.

But, even the most obvious truths are apt to be forgotten or overlooked unless they are constantly re-iterated and kept before one. Proper care of the coconut tree is one such obvious thing which the coconut grower tends to forget. To keep him reminded of it and to tell him how best he could achieve it, and also to provide him with more intelligence and other useful information concerning the coconut industry, the Committee has started a publication since August 1947 of a monthly Bulletin in English and Malayalam. A quarterly Journal in English with a high academic standard is also being issued since December last. Three issues of the Journal have already seen the light of day and have been widely

The catastrophic fall in the prices of coconut during the period 1929-39 and the subsequent distress of the coconut growers have left behind in them a lurking fear that any prosperity is only a passing phase and that the conditions of the depression period may be repeated sooner or later. This feeling is but natural considering the inability of the average coconut grower in India to compete with the organised large-scale cultivator of coconut in Ceylon. Under the conditions obtaining in India with regard to the law of inheritance etc., the difficulties in the way of consolidation of holdings are insuperable. Only new plantations can be organised on a large scale basis. Possibly it was because of this and other considerations that Travancore, Malabar and Cochin, when they carried on a strong agitation against the so-called dumping of cheap Ceylon Copra, made a fervent appeal for protection in line with the generally accepted policy of granting protection to agricultu-

rists against abnormal conditions. But protection as a measure for the rehabilitation of the industry can serve only as a palliative and not as a cure. There can be no better remedy from the long term point of view than placing the industry on its own legs. Unless the industry is put in order it may not be possible to withstand the competition from Ceylon and other countries. For placing the industry on sound footing it is necessary to reorganise the cultivation according to up-to-date methods, improve the marketing conditions, find better uses for coconut and coconut products and stabilise the prices of coconuts at a level fair both to the producer and the consumer.

It should be possible to stabilise the price if we could concert ways and means of increasing our production to make the country self-sufficient in the matter of coconut and coconut products. Improvement of coconut production, however, unlike annual crops, takes time as new

plantations come to bearing stage only in 8 to 10 years after planting and the results of manuring and cultivation operations are noticed only after 2 or 3 years. In the mean time, there would be need for supplementing our production by well regulated imports. When we reach the happy position of being able to do away with imports as a result of increased production by extending the acreage and by improving the yield and the copra content of the nut, it should be possible to stabilise the prices at a level fair to all concerned, having regard to the price policy adopted for other agricultural commodities, particularly those which serve as substitutes for coconut oil. While on this topic it may be stated that the prices of coconut and coconut products declined slowly and steadily from August last due to lessened demand of oil from the soap industry chiefly on account of short supply of caustic soda and transport difficulties. The price of coconut oil at

Cochin, which had shot up to Rs. 2,014/- per ton soon after the control on prices was lifted on 20th June 1947, was reported at about Rs. 1,815 towards the end of July 1947, and at Rs. 1,678/- towards the end of August last. September registered a still further decline and the month-end saw the oil being quoted at Rs. 1,330 in the Cochin market. Throughout October and November too, the prices declined. October ended with the price of oil at Rs. 1,228 per ton at Cochin. Since then also the prices had been declining and for the better part of March 1948, oil at Cochin was reported to have been quoted at less than Rs. 1,000 per ton. And, on the 26th April 1948, it was sold at Rs. 1,338 at Cochin. At the 6th meeting of the Indian Central Coconut Committee which met at Bombay in November, the Committee took a serious view of the downward tendency of prices and decided to take steps to tackle the problem of stabilisation of prices at a reasonable level so that the growers could be encouraged to bestow whole-hearted attention on the trees with a view to developing the industry and bridging the gap that yawned between the demand for and supply of coconut in the country. The Committee set up a small sub-committee to go into the question in detail and make recommendations for the consideration of the Committee. A questionnaire to collect information regarding costs of cultivation, production etc., has been issued and it is hoped that the response to it will be encouraging and that the sub-committee would be able to send in their report for the consideration of the Committee at its meeting in September 1948.

Technological Development

Improvements of the industry may also be brought about by attending to technological problems relating to the utilisation of coconut and the products of the coconut palm. Among others, the following items of technological work deserve mention:

The quality of copra produced in the country, especially during the rainy season, is unsatisfactory. The chief draw-back is the difficulty of

preparing copra of uniform grade throughout the year. It is only for about six months in the year that we are able to produce satisfactory quality copra by sun-drying due to the limitations imposed by the exigencies of unfavourable weather conditions. The limited quantity of copra made during the monsoon by the smoking method is generally of off-colour and rancid. Of the chief advantages of Ceylon over Indian producers is the availability of facilities for drying copra throughout the year in kilns or driers. In India it may be better to prepare copra by the hot air method during the rainy months. Of the three important driers in operation in Ceylon—Estate Kiln, Pearson's Drier and Chula Drier—it would appear that from practical considerations the Estate Kiln, with certain modifications, would answer our requirements satisfactorily. The question of introducing the right type of kiln for the purpose in India is engaging the urgent attention of the Indian Central Coconut Committee and it is hoped that as a result of their endeavours

substantial improvement in the quality of copra would materialise in the near future.

Desiccated Coconut

The question of developing in India the manufacture of desiccated coconut, in which Ceylon has a lucrative trade, needs consideration. This industry has been a speciality in Ceylon, which, in the peak period, exported 30,000 to 40,000 tons to the United Kingdom, America, Australia, Canada and other countries including India. The imports into India, which were insignificant up to 1936, have increased steadily and were about 1,400 tons in 1943. Since then, there has been a decline in the imports. The imports were of the order of 1,237 tons in 1944, 436 tons in 1945, 587 tons in 1946, and 102 tons in 1947. The drop in imports may be explained by the strict control exercised on the export of the produce from Ceylon, scarcity of freight and reduction in export quota to permit of the maximum export of copra and oil to relieve the over-all world shortage of oils and fats. It may,

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Tax on Rubber

BY A. V. GEORGE

(Member, Indian Rubber Board)

Among the major plantation crops rubber claims as great a share of small Indian holdings as coffee, but the small holder in rubber operates under greater disadvantages. For, his crop, which has to be processed by costly machinery and equipment, reaches, not a large consuming public as tea or coffee but a small body of well-organised manufacturers. Tea and coffee in comparison operate in a market where the consumers can be directly approached and who are so large in number and unorganised that the market price more correctly reflects the laws of demand and supply. This resort to first principle in economics is denied to rubber which can only be sold to the manufacturers of finished goods. If this distinction is fully appreciated the rubber problem can be seen in its proper perspective and the more correctly understood.

Whatever the price at which the finished goods can be sold by the manufacturers, which depends upon the supply and demand of such goods in the vast Indian market, the price at which the producers can sell their raw rubber to the manufacturers is broadly determined by the world price. The smaller the number of manufacturers and the better they are organised the weaker the relative position of the large body of comparatively unorganised producers, the majority of whom are not aware of the forces that tend to depress the price of their produce.

Another aspect of the rubber problem is the large number of workers who are employed in the estates, compared to the few in the manufacturing industry, and whose welfare and wages claim an increasing share of the estate budget. Public sympathy, naturally, is with labour and their claim for a living wage and fair and comfortable working conditions is irresistible. If the cost for these were added to the normal charges of reserve, depreciation, maintenance and a reasonable rate of interest for capital the resulting price for finished goods would be too high to pay, in the end, by

the consumer whose sympathy for the estate worker, if its implications were fully explained to him, will however not induce him to pay a greater price for the producer if he (the consumer) could get it cheaper elsewhere.

Heavy Burden of Income-tax

However, the most serious problem with which the Indian rubber producers are faced arises from the taxation policy of the Government of Travancore. How important the fiscal policy of this State in relation to rubber will be realized from the fact that nearly 85 per cent. of all the rubber grown in the Union is in Travancore. The introduction of agricultural Income-tax in 1942 and the subsequent inclusion of rubber as liable under ordinary income-tax have imposed an unbearable burden upon the industry under the weight of which it will succumb. Below are given the records of three rubber companies registered in Travancore:

	1942	1943	1944	1945	1946
(1) The Travancore Rubbers Ltd.					
Income-tax	108	263	269	74,588	31,689
Agricultural	17,153	12,666	20,627	nil	nil
(2) Nenmeny Rubber & Produce Co Ltd.					
Income-tax	205	427	512	44,903	28,943
Agricultural	10,757	7,515	9,362	nil	nil
(3) Kailas Rubber Co. Ltd.					
Income-tax	nil	657	376	65,633	41,447
Agricultural	nil	11,175	19,764	nil	nil

BUSINESS WEEK

The "Leader", Allahabad, in its issue dated 30th May, 1948, writes:

As the name indicates this weekly journal is devoted to the cause of business. In this limited field however the reading material provided is varied and relates to many topics and many countries. Not only is there given national and international news on the economic and industrial front, but there are also special articles which are both educative and readable. As much of politics today is also economics, this journal would be useful to the student of current affairs as to those more directly connected with the business world.

It may be seen that neither labour nor capital, but the State takes away an unconscionable share of the produce of the industry. Apart from the vagaries inherent in the imposition of tax upon the small growers the increase in the actual rate is as startlingly heavy as it is damaging. When in 1942 the Agricultural income-tax was first levied the maximum rate was approximately 1 anna 9 pies in the rupee which in 1945 was raised to the level of business income-tax rate of 5 as. 3 ps. Over and above the tax at this rate, the raw rubber attracts both an export duty when it leaves the State and a Cess when it is produced. Income-tax at the above rate has extracted from the Travancore Rubbers, it may be noted, Rs. 1,06,300 in two years, 1945 and 1946. The Kailas Rubber Company have paid an aggregate of Rs. 107,080 during the same two

years. While the rate of taxation went up since 1945 the profit of all companies have declined. Out of 43 purely rubber companies only 25 and out of the 12 mixed plantations, only 7 have paid any dividends at all in 1946.

The industry is not faced with the past but with the future. If it must survive and prosper the least that the State can do is not to smother it with what appears to be almost punitive taxation. It is a hopeful sign that Sri C. Kesavan, the Minister in charge of the Income-tax Department in Travancore, is now studying the whole range of the State's taxation policy.

Recent Advances in Malaria Control

BY DR. J. M. MUNGAVIN, M.B., B.CH. (CANTAB), M.R.C.S. (ENG.), L.R.C.P. (LOND.)

Substantial advances were made during the war in destroying the malaria-carrying mosquito and in preventing the onset of malaria by routine drug prophylaxis

Modern war has a destructive effect on mankind's civilization, but the effect on all types of scientific research has also resulted in benefits which can be put to good use in the days of peace. Recent advances in anti-malarial drugs and insecticides and their usage are largely due to the intensive efforts made by all countries during the last war, to produce better anti-malarial drugs and more effective insecticides.

Before describing these specifically, it would be advantageous to mention the three principles upon which malarial control is founded. They are, firstly, the destruction and elimination of the anopheline (i.e., malaria-carrying) mosquito, its larvae and breeding places, (2) preventing mosquitoes from biting the human subject, and (3) preventing the onset of malaria as the result of a mosquito bite, by routine drug prophylaxis.

Substantial advances have been made mainly in (1) and (3) thanks to the synthesis and availability on a large scale of new insecticides and anti-malarial drugs. Chief amongst the former are 'Gammexane' and D.D.T., whilst foremost amongst the latter are in order of merit and usefulness, 'Paludrine', Chloroquin, and Mepacrine.

Two-Front Attack

Measures aimed at the destruction of the mosquito, to be successful, should be directed not only against the adult mosquito but also against the larvae, and the introduction of insecticides has added powerfully to our armamentarium in this direction. The third principle has been put into practice and realized by dosing the population in malarious areas at regular intervals with anti-malarials. This method of controlling malaria will retain its importance so long as other anti-mosquito measures remain incomplete in their applicability and effectiveness on account of local conditions. That routine drug prophylaxis is an effective way of controlling malaria may be seen from the following

figures from an estate in the Western Doonars—

In August 1946, when drug prophylaxis was not used in any form, the number of cases of malaria was 1181, as compared to only 45 of the same month in 1947 following routine 'Paludrine' prophylaxis of 1 tablet, twice weekly, evenly spaced. Similar striking figures were obtained from other malarious areas.

The idea anti-malarial for routine drug prophylaxis is one which is cheap and without harmful or unpleasant effects on the individual. 'Paludrine' is such a drug. Routine prophylaxis with 'Paludrine' costs approximately 3 annas per month *per capita*. Further, it has the supreme advantage over other anti-malarial drugs in that no unpleasant effects, as for instance colouring of the skin, are caused by it, even after prolonged administration lasting for many months.

Chloroquin, like Mepacrine, is an effective, though more powerful, suppressive drug against malaria. Both Chloroquin and Mepacrine,

however, may give rise to unpleasant symptoms, which 'Paludrine' does not do. Mepacrine (Atebrin) in a dose of 0.1 Gm. daily is an effective suppressive drug in malarious areas, but when the subject leaves the district and discontinues the drug, attacks of malaria are prone to occur because it acts only on the blood forms and not on the tissue forms of the parasite. Continued administration over a long period causes toxic effects such as dermatitis (skin eruptions), yellow pigmentation of the skin, etc. To sum up, as far as the scientific aspect of drug prophylaxis is concerned, 'Paludrine' is a real and substantial advance.

Use of Insecticides

The use of various oils as mosquito larvicides has been known to mankind from a very long time. Until recently, anti-larval measures formed the most popular mode of attack against these pests. Various types of oils such as crude oil, etc. were used. Paris Green (Copper aceto-arsenite) is also one of the most successful larvicides used

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against surface-feeding mosquito larvae (anopheline).

The discovery of persistent insecticides such as D. D. T. and 'Gammexane' opened up new spheres of mosquito control. The use of a persistent layer of these insecticides on the walls of human dwellings against the adult mosquitoes was developed, the insecticides being applied as a kerosene solution, emulsion or water suspension. This opens up various problems such as effect of insecticides on mosquitoes, environmental conditions, effect on malaria rate, etc. Considerable work will have to be done before this problem is finally solved, and the optimum methods of use decided.

Recent work indicates that while D.D.T. has greater persistence than 'Gammexane', the former has the disadvantage of being repellent to mosquitoes as a result of which high mortality of mosquitoes is not achieved.

D.D.T. and 'Gammexane' can also be used as mosquito larvicides either as dust or in an oil form.

Applications of repellent creams and ointments for those who have to spend limited periods in mosquito-infested areas at night, e.g. police patrols, forest officers, etc., have been known for some time. Such substances as Dover's formula (oil of citronella, spirits of camphor and white petroleum jelly) have been used successfully in the Indian Army. During the recent war D. M. P. (di methyl-phthalate) was synthesized and this had the advantage of good persistence, non-odoriferous to man and ease of application. In a limited field D.M.P. will no doubt have a useful future.

It will be clear to the reader, from the foregoing short account, that though the total elimination of the menace of malaria from this country is not immediately feasible for various reasons, nevertheless, in the new synthetic anti-malarials and insecticides, we have potent weapons which in co-operation with other established and well tried anti-malarial measures, can enable us to move very far towards the attain-

ment of this eminently desirable goal.

What You Can Do

The individual can play his part by ensuring that his compound and house are regularly treated with a good insecticide, and that collections of water offering suitable breeding places for mosquitoes are dealt with. He can also safeguard the health of himself and his family by seeing that they take a good anti-malarial, such as 'Paludrine', regularly each week during the transmission season of malaria.

Employers of labour should see that their medical officer not only treats malaria, but that he carries out regular inspections of the estate or factory compound, with a view to eliminating all the breeding places of mosquitoes by the regular use of a recognized insecticide. Further, the labour force should be given a free issue of a safe anti-malarial during the malaria season, regularly every week.

If in doubt or need of advice the householder or employer of labour should consult the local Anti-malaria Officer or Public Health Officer.

Given the requisite co-operation between the public and the Public Health authorities, the problem of malaria in India can be solved.

(Continued from page 15)

appreciated. The *Bulletin* is read with profit by thousands of growers all over South India, Orissa and West Bengal, while the *Journal* circulates extensively among the more educated classes interested in the coconut industry.

Conclusion

I have only endeavoured to indicate in broad outline some of the possible lines of development, but there are many more, and still more may crop up as the work on the various aspects of the advancement of the industry gets into full stride.

From what has been described above, it is clear that India, which was a surplus country in the matter of coconut and had figured prominently in the exports of coconut and coconut products, ceased to be a net

PLANTING SUPPLEMENT

exporter since 1928-29. About that time, Ceylon, also a surplus country, began to lose her foreign markets for her surplus stock of coconut products as a result of the competition from other vegetable oils and animal fats and started looking for new outlets. She found a convenient market near at hand in India and her loss of exports elsewhere was made good by sending large quantities of coconut products to this country. Ceylon's good fortune, however, spelt disaster to India, and as a result, the industry fell on evil days. From the second half of the second World War, prices of coconut improved considerably. With the present controlled quota of imports and the favourable prices of coconut, the present time is opportune for the rehabilitation and establishment of the industry on a sound footing. If this could be managed, we should be able to make the country self-sufficient in the matter of coconut and, with the free operation of the economic law of supply and demand and the favourable position our country enjoys with regard to the production of vegetable oils, stabilise the prices of coconut at an economic level, to the benefit of all those whose well-being is interwoven with the "KALPA-VRIKSHA."

"BUSINESS WEEK"

"The Orient Illustrated Weekly," dated March 28, 1948, writes:

This is a useful, informative, commercial journal. The notes and articles appearing in the present issue, March 6, 1948 (Vol. I, No. 14) deal with commercial, economic and financial topics of national and international interest. The *Weekly* under review, though chiefly meant for businessmen, will also help the common reader to grasp the meaning of the economic measures and steps taken by the Government from time to time and the repercussions they produce.

The Indian Coffee Industry

(CONTRIBUTED)

The recent history of the coffee industry in India provides a remarkable example of both the best organised Government and industrial effort to stabilize the prospects of an industry and the inadequacy of the profit-incentive to subserve the interest of the community at large.

In 1935, when the first Cess Committee for coffee was formed, the growers were in the throes of a depression. The price of coffee was very low. Plantation "A" was available at Rs. 32 per cwt. and Robusta at less than Rs. 15/-. The Cess Committee, before it was reorganised as the Coffee Board, engaged itself in studying the problem carefully and in engaging the services of publicity firms to popularise coffee.

Consumption of coffee in India was then estimated at about 7,000 tons, and approximately 9,000 tons had to find its way into overseas markets. The future of the coffee industry depended upon absorbing the entire Indian output in the country. When the war began, the Continental markets were lost for us and the Board was faced with the disposal of this large quantity of raw coffee. Propaganda was completely taken over by the Board and the campaign was intensified. More coffee houses were opened in many parts of India. While coffee drinking was popularised, simultaneous steps were taken to stabilize the price of coffee.

Board as Monopolist Supplier

The traditional forward contractor had a strangle-hold over the coffee market, and the Board had to free the market and the growers from his clutches. From the very beginning, the Coffee Board recognized the need to buy up the entire output so that a central agency could set an economic floor price. This facilitated a regulated distribution of coffee which was equated to actual demand. The forward contract system was banished and coffee of all estates of 25 acres and above was collected by the Board and was paid for in instalments. Later on, this was modified and every coffee

estate, irrespective of size, had to submit its crop to the Board. With this, the Board assumed the role of an absolute monopolist supplier of a commodity in India.

The drive for the expansion of the coffee habit in India went ahead and by 1942, there were 24 propaganda units, which increased to 45 by 1946 and are 50 at present. The tremendous increase in coffee drinking may be seen by the fact that 11,38,033 cups of liquid coffee were sold in 1939-40 and the figure for 1947-48 is 89,06,916 cups. The total turn-over of all propaganda units rose from Rs. 73,353 in 1939-40 to over Rs. 75 lakhs in 1947-48, an increase of over 100 times!

Acres and Production

The production of coffee has averaged 17,200 tons over a period of ten years and as the Report on the Marketing of Coffee in India states, the area under coffee in the country has remained fairly static around 200,000 acres. In the last two years production has shown a distinct tendency to fall. Mysore, which led with above 50 per cent. of the coffee area, has fallen second with 39 per cent. and in the matter of production, the fall has been even steeper. The price of coffee, on the other hand, steadily rose under the influence of all the measures taken by the Board, from Rs. 36 per cwt., for Arabica Assortments in 1940 to Rs. 122 at Mangalore, before the control over the price of coffee was removed, on the 11th February 1948.

From the above, a few points emerge clearly. The Government stepped in to assist the growers when they were facing a crisis. The Board was created a monopolist-seller to be able to effectively secure a fair price for coffee. The propaganda campaign was immensely successful. The prices rose by over four times the pre-war level. No noticeable expansion in area or increase in production, however, took place.

The above facts make it clear that despite the success of the Board and the price secured for the coffee grower, the latter's response by way of increased production has

not been forthcoming. The research department has been successful in evolving hybrids capable of producing truly amazing yields compared to present averages. If increased profits were considered to provide the incentive for greater interest in production, why did it fail to work in the case of the coffee growers?

In July 1947, a proposal for the increase of coffee price by 25 per cent. was brought into the Board and the country was soon faced with an acute coffee shortage. A completely new marketing scheme was about to be brought into being early this year when, in February, a deputation of coffee dealers managed to persuade the Central Government to decontrol coffee. Within a few days, the price of coffee increased by 100% in some areas. Board auctions resulted in bids which more than doubled the previous prices. Robusta price rose from Rs. 90 per cwt. to Rs. 190/- and Arabica from Rs. 130 to Rs. 285. Even some of the growers were frightened by the increase which they knew would compel the Government to re-introduce control and they recorded their protests. But, the actual rise went unhindered. Today, the people pay, for a producing country, the highest price for its coffee. The Board is still the monopolist coffee seller. As for price, the sky is the limit.

In other words, a machinery perfected to help the grower and secure for him a reasonable price for his produce is now turned, with all its deliberate efficiency, against the consuming public, the community at large. A national organisation, by the statutory recognition and privileges given to it by the representatives of the people, could not have been designed to subserve the sectional interests of a small group of producers at the expense of the larger community.

A Neglected Industry

Re-habilitation of the coffee industry, which the past few years of steady profits should have encouraged, has signally failed to materialize. Except in the case of

(Continued on page 21)

Plantation Labour

By V. I. CHACKO

Few industries in India provide a parallel to the cruel and callous exploitation of the Indian labour as the plantation industry, which was the first field of organised British enterprise after they became masters of India. Vast areas of the most fertile hill tracts were freely given away to the pioneer planters; laws were made to give them rights, which, but for their political dominance, they would never have obtained, and they built up, away from the towns and cities of India a veritable industrial empire out of the toils and suffering for several generations of agricultural labourers, who were bullied, blackmailed or decoyed into the fever-infested jungles of Assam, Bengal and South India.

Unaffected by the political awakenings in the country, never having to deal with Indians on equal terms, where all the Indians they knew were their servants, the planters developed, isolated even from their own kind in the rest of India, a pattern of life, a manner of behaviour and a tradition of management which continued unchanged till a few years ago.

The Ubiquitous Kangany

It is against such background that the plantation labour problem must be viewed. The planters on the hills needed workers by the thousands and the Kangany was the answer to it. The link between the planter and the village peasantry was the Kangany. In course of time, the Kangany became the money-lender, task-master, tout and informer for his master. The workers were paid annually because the accumulating wages with the estate provided a strangle-hold over the labourers. The wages were paid not to the workers but to their Kangany, and the Kangany was never paid for recruiting. His income was related to the earnings of his gang of workers, so that in his own interests, he had to keep a close watch over the attendance and

output of work of his gang. The Kangany became a pivotal figure in estate management and its labour relations.

The material aspect of estate management has been the strongest plantation characteristic and the standard of the managerial conduct resulted from the evolution of the collective attitude of the close-knit community of the British planters who were very conscious of their powers and privileges. The corrective force of public opinion was never turned in their direction. They held very strongly against the appointment of Indians to managerial posts and when in 1940, when a British Firm essayed into the new adventure and experiment of appointing an Indian Assistant Superintendent, it was quite an event. There were a few appointments, in all not exceeding four in the entire South, where Indians were appointed to managerial posts, so that the social gulf between the British planter and the hundreds of thousands of Indians, from supervisory staffs to labourers, were both deep and wide.

The annual settlements, the high mobility of labour, the careful balancing of the labour composition along communal and linguistic lines, strangle-hold over the Kangany and the industry-wide organisation of the employers and the isolated position of the estates were all combined to shield the plantation workers from the trade union movement and intelligent and effective leadership. The poor and illiterate labourers were completely in the control of their Kangany and outsiders could not enter the estates. Mr. D. V. Rege, the chairman of the Labour Investigation Committee, states in his report on plantation labour that the Assam planters objected to the entry of his field investigators in the Assam gardens because the planters claimed that it would "unsettle" labour. This was in the year 1944, when the Japanese

were in Manipur. That did not unsettle the labourers.

Lack of Amenities for Workers

The excessive concentration of all authority in the hands of the individual planters led to a bewildering variety of conditions on the estates, the only common practices being in the matter of wages, contract procedures and Kangany's commission. Even in these there were noticeable exceptions. As for housing, medical aid hours of work, pre-employment advances, food supplies, provision of amenities etc., conditions on no two estates, even of the same company were alike. Housing standards ranged from mud and bamboo huts to two-roomed labour cottages. Many estates had no provision for medical aid. But there were a few with hospitals, which in the standard of equipment and staff, were comparable to the best in the country. As far as the planting industry is concerned, no general statement can truthfully portray the various conditions and the first essential step in the improvement in the working conditions must be a general standardisation from which a planned development may be envisaged.

In the particular case of Southern India, where about 4,50,000 workers are employed in plantations, the reform must begin with the elimination of the Kangany system. Every investigating authority has had reasons to condemn this system, although many failed to suggest any alternative which would secure the estate an adequate supply of labour.

A skein in the thread of labour control is the pre-employment advance. By the acceptance of such advances, the labourers got shackled to the estates whose Kangany made the advances. Apart from this, every rise in wage conditions in the country was equated by a rise or fall of the advances, thus helping to hold

down the real wages of plantation workers.

Lack of Leave Facilities

Annual termination of employment has become so old a practice on the estates that its effect upon the mobility of the estate labour, the formation of workers' organisations and the development of civic responsibility is not fully realised. The annual recruiting system and the costly imposition of a huge recruiting organisation upon plantation economy are necessary because the workers have no chance of permanent, continuous employment in the plantations. This practice has been continued by the owners on the rather specious plea that they are only trying to accommodate the desire of the workers to go down to their villages every year. The fact that is well known is that the other employees including the planters too desire to visit their homes and the opportunity is provided by an annual leave or a triennial furlough. Regulated leave is not offered to workers because that would cut the ground from under the century-old Kangany system which sits like a colossus upon the plantation labour world. If there is no annual settlement, naturally, there would be no need for annual recruitment.

A Central Recruiting Board

But, by this, the supervisory role of the Kangany need not be eliminated. Under the present system, the Kangany is, strangely enough, not paid for his recruiting work, or for the various responsibilities which he assumes as a lender of money and task-master for the employer. If the workers are attracted to any estate in future it should not be by the chain of debt or blandishment but by making sufficiently attractive the terms of employment and the living conditions on the estates. By that, Kangany system would wither away. The gap between the present and that desirable eventuation will have to be covered by a Central Recruiting Board on which planters, labourers and Government may be represented.

Beginnings of Organization

The first organization of the employees in the plantations was

formed in 1928 and belonged to the staff workers. It was assisted at the beginning by several well-meaning planters, but the majority of the owners were suspicious and many hostile. Bitterness and a sense of frustration consumed this section of the workers as they came to learn by long experience that not reason or justice or the friendship and sympathy of a few planters, but organised strength will secure for them fair treatment. Although several individually isolated and sporadic attempts were made to organise the workers none remained long enough to be effective before 1945. The main weakness was found to be an unduly heavy dependence upon political power for the growth of unions. The first congress Ministry in the Province gave rise to some unions, only to go out of existence as soon as the Ministry went out of Office.

Historic Strike and After

A revival of union activities occurred towards the end of the war and afterwards. But the most notable event in plantation labour history was when in August 1946, the labourers of an estate in Manantoddy area of Wynaad struck work, the apparent cause being a reduction in the issue of food grains. The real cause was an accumulation of unredressed grievances over long years which was ignited to life and to open expression by this incident and, soon, the strike spread to Meppady, the centre of South Wynaad planting District. The suddenness and the spread of the strike unnerved the planters whose power and position were shaken by the political changes in the country. They agreed to revise the wages as soon as they could have the opportunity of considering the claims of the labourers at their meeting. This was a spontaneous rising of the labourers and marked the first concession in the planting history of the South, made by the organised management to the united pressure of labour. As a result, wages were increased from an all-in 1. annas 6 pies to 15 annas 6 pies, and the free issue of one noon meal became a district-

wide practice. The effect of this strike communicated itself to all the planting Districts of the South. The average wage went upto 15 annas for the entire plantation industry as against 6 as. in 1939-40.

Unity in Organisation

Although the strike was short-lived and successful, the effort to consolidate the new-found unity in action as unity in organisation was not as successful. Too many aspirants to leadership and too little constructive work divided the workers into several organisations. Since then, there has been a continuous effort in many Districts to make their unions live with the result that workers' organisations of more than 12 months' duration exist today in the South Indian plantations.

The conditions relating to housing, medical aid, food supplies, educational facilities and other amenities have advanced at a quick pace in the course of the last ten years. But a steady, uniform, industry-wide advance in all the directions is yet to be achieved. Shortage of building materials, artisans, excessive cost, lack of transportation, etc., hinder a speedier progress. But planters are alive to the need for quick advance in the provision of welfare measures and on building upon a new basis of labour relations.

(Continued from page 19)

a few large owners, the bulk of the producers are content to leave their future to nature and the Coffee Board. They now know, it is easier to fight in the committee room for increase in price than to work harder on the estate and produce more.

The example of the coffee Board is applicable to other commodity committees where such statutory protective bodies are gradually transformed into privileged exploiters of the public.

South Indian Planters Meet

MR. F. G. WALLACE'S PRESIDENTIAL ADDRESS

Last year, I expressed the view that as an industry we are concerned very much about the economic and administrative problems and changes which would inevitably arise, but I also expressed the belief that the new dynamic impulse of an independent India would tackle and resolve those problems with more realism than we have been accustomed to in recent years. Twelve months is admittedly too short a period in the life of a nation, but I think we are all agreed that the Government of India and the Provincial Governments have even during this short period shown an awareness of the need for a more practical approach to the urgent social and economic problems of the country and are doing their best to solve them. We of the planting industry of South India are always ready and willing to co-operate with Government in all possible ways and we who represent employers in one of the major labour-employing and major export industries of the country would, in turn, ask Government to recognise the special competence of the planting community to advise in certain matters of trade and commerce affecting the economic prosperity of India as a whole.

In my address to you last year, I referred to the Madras Provincial Welfare Fund sponsored by Lady Nye. I told you that an appeal had been made to the Planters in the Coonoor Taluk to subscribe sufficient to pay for a portable X-Ray apparatus for the Coonoor Hospital. I have great pleasure in telling you that through the efforts of the members of our Association in the Coonoor Taluk and those of the small growers in the district an X-Ray apparatus is now installed in the Lawley Hospital. I trust that the Government of Madras will now implement their promise to place a Radiologist at the services of the hospital.

Food and Transport

The operation of food and other controls in the planting districts of South India continued during the year, though in a modified form in

some cases. We have always considered that the removal of such controls was precipitate and there can be no question about the adverse effect on prices of a policy of decontrol in some districts while continuing control in adjoining districts. It is good to learn from the periodical official reviews appearing in the press that the food position in the Province of Madras is showing definite signs of improvement and we hope that this improvement will be maintained even though it may take a long time to reach pre-war normalcy in supplies. Situated, as most estates are, away from normal market centres, the provision of food supplies for their large labour forces in adequate quantity and at reasonable prices remains one of the big problems and responsibilities of planters and this has been made more difficult by inability to obtain a relatively fair allocation of petrol for such essential transport requirements.

We are aware that the petrol position is difficult, but it is disappointing to find that our requests for an increased allocation for purposes of transport and plant protection do not receive sympathetic consideration. Transport of food stuffs is made doubly difficult by the shocking condition of some of the first class roads, to say nothing of the second class and District Board roads. Some of these latter do not deserve the name of roads. A more apt description would be a track consisting of a series of pot holes and what were presumably at one time Irish Drains, but which have now, in many cases, become grand canyons. I am glad to record some improvement in the supplies of cement and iron materials and a few other estate requisites even though they are still operated by controls.

It is a matter for gratification that membership of the U.P.A.S.I. has been continually increasing and I am happy to record that during the past year there was an addition of more than 9,000 acres to our subscribing area. Except for one large

European interest almost the whole of this increase is made up of Indian owners of estates which, I think, is a point worthy of note. We consider this additional membership as an indication of the growing awareness among all planters that the need for a united body of planters like the U.P.A.S.I. has never been greater.

Better Tea Crop

I shall not go into details about the different products as this will be dealt with more authoritatively by the Chairmen of our various Product Sections. The production of tea during the year turned out to be better than was anticipated at the beginning of the year, notwithstanding blister blight and other pests and diseases. On the marketing side, there has been a further renewal of the International Tea Agreement, in a slightly modified form, for a further term of two years, with India as one of the participating countries, which means that the regulation of production and exports will continue for two years more. The tea industry will be able to use this period to devise a long-term plan in accordance with the rapid changes that are taking place in the world production and consumption of tea.

Coffee and Rubber

The coffee crop for the year is believed to be well below average but much the same as in the previous year. With Government suddenly embarking on decontrol of price, there has been a scramble for coffee in the markets throughout South India and prices have soared to unreasonable heights. Coffee planters cannot look on this development with unconcern and they have already requested the Indian Coffee Board to release sufficiently large stocks of coffee so that they will be readily available to consumers at fair prices. To allow the present situation to continue will be to nullify the good work already done by the Board's propaganda section towards increasing consumption.

Rubber received a slightly better deal during the year than was at

one time thought probable though the question of price still needs satisfactory adjustment, and, we hope, this will be possible now that the Cost Accountant's report is already in the hands of Government.

Increased Cost of Production

The cost of production of all plantation crops continued to rise during the year, primarily as a result of substantial increases in labour wages. In the case of tea, there being no price control on international sales, the increase in cost of production was to some extent recovered from increased market prices, but with coffee and rubber which operated under price controls the increase in production costs had to remain a burden on the producer until such time as Government could be persuaded to recognise the increase that had taken place. In practice, this has meant that growers had to continue in production even in the face of a loss, and by the time Government was persuaded to agree to a price increase some loss had already been incurred which could not be made up.

Labour-Management Problems

The organisation of workers' unions in plantations received a new impetus during the year, and requests for recognition were received from more than one union by the newly inaugurated South India Estate Labour Relations Organisation. The policy of this Organisation is to recognise only such Unions as are organised on an industry-wide basis. Both the U.P.A.S.I. and the S. I. ELRO welcome the organisation of labour by Unions properly established and are prepared to co-operate with such unions for the general well-being of plantation workers.

In January this year, the Council of the S. I. ELRO recommended to all member estates the disbursement of a lump sum payment equivalent to four per cent. of the cash earnings of all workers in 1947. Workers' Unions in Anamallais and Nilgiris carried on an intensive propaganda against the acceptance of this payment by workers, and started an agitation for payment of a bonus equal to six months' wages. General strikes were threatened but

later on withdrawn through the intervention of the Commissioner of Labour of the Government of Madras. Since then, acting on a suggestion from the Government of Madras that a bonus of 6½% of the cash earnings of workers for 1947 be paid pending the publication of the findings of the Expert Committee on profit-sharing, employers in the province of Madras have been asked by U.P.A.S.I. to make such a payment, provided that this payment included the 4% payment already recommended. The Association has also forwarded a memorandum to the Government of Madras pointing out the economic implications of the continuous rise in labour and general production costs. It is to be hoped that Government will appreciate the real situation in which the industry is placed and of the practical impossibility of making further concessions of this sort.

There has been a spate of labour legislation in India during the past year, including the Industrial Employment (Standing Orders) Act, 1947, the Trade Unions (Amendment) Act, 1947, the Minimum Wages Act, 1948, and the Employees' State Insurance Act, 1948. At the second session of the Industrial Committee on Plantations held in Delhi early this year we have also been promised a separate Plantation Labour Code in view of our repeated claim that plantation labour should be governed neither by industrial nor agricultural legislation, but by separate legislation suited to the particular needs of the plantation industry.

Government's Labour Policy

In common with other industries, the plantation industry also has experienced a year of diminishing output *per capita* of worker, notwithstanding the continual increase in wages. The cause of this is to be seen in the labour policy of Government which for a long time has laid far too little emphasis upon the urgency of increased production. It is therefore encouraging that in their Resolution on industrial policy announced in April last, the Government of India have laid particular emphasis on the expansion of production, both agricultural and industrial; and, in particular, on the

production of capital equipment, of goods satisfying the basic needs of the people, and of commodities like tea, the export of which will increase earnings of foreign exchange.

Profit-Sharing Bogey Again

In the furtherance of this objective; Government have foreseen the need to ensure the fullest co-operation between labour and management and the maintenance of friendly relations between them. But, how do Government propose to achieve such co-operation and friendly relations? The Government resolution endorses the decision taken at the Industries Conference held in December last that labour should be entitled to a share in the profits on a sliding-scale normally varying with production. The proposal has provoked all manner of comments from industrialists throughout the country and the proposal is now under examination by an Expert Committee. All such proposals tend to make the question of what is the true reward for labour an unnecessarily complicated one. Should such reward ever depend on profits? Should some workers share in profits regardless of their lower output? Should the reward of some workers be lower regardless of their increased output? These and a host of other questions can conceivably crop up in this connection.

The more we think of this the more we are convinced of the grave dangers of departing from the conception that the true reward for labour is wages and wages alone: a fair wage for fair labour under fair conditions is the predominant need of industry in India. Profit-sharing can only succeed in promoting more efficient production so long as it remains a special form of reward not shared by everybody. When it becomes general it is part and parcel of the wage structure and, by whatever name it is called, the reward is in reality wages.

S.I. Planters' Good Record

So far as the plantation industry is concerned, it is now generally known that planters in South India have fairly endeavoured to anticipate the demands of workers and have made many voluntary conces-

sions during the past year or two, without waiting for legislation or organised labour agitation to press the need. Even before the passing of the Industrial Disputes Act, 1947, which requires the setting up of Works Committees in all industrial units employing one hundred or more workers, the U.P.A.S.I. had proceeded with the formation of Works Committees on estates and thereby anticipated legislation and the resolution of the Industries Conference for setting up conciliatory negotiating machinery for maintaining industrial peace. The plantation industry is second to none in its desire to promote and maintain industrial peace by conciliation and by meeting the legitimate demands of workers in regard to wages and amenities. In my address to you last year, I considered the labour supply position to be easier in most districts. I think this improvement has continued. My own experience is that many more labourers are offering themselves for work. This, in my opinion, is in part due to the inability of all classes of employers to undertake certain work owing to high rates.

Estate Staff Union Formed

An important stage in employer-estate staff relations during the year was the recognition granted by the South India Estate Labour Relations Organisation to the Estate Staff Union of South India which represents members of staffs employed in estates over the whole of South India. The Council and the Sub-Committee of S. I. ELRO have had discussions with representatives of the Union on the subject of classification and grading of staffs employed on estates and determination of their scales of pay and terms of service. I am glad to record that negotiations were conducted in a friendly and conciliatory spirit and that agreements on the basis of a fair compromise were reached. It can now be stated that practically all outstanding matters connected with estate staffs have been satisfactorily settled by negotiation. We can rightly claim that our staffs are enjoying a scale of pay and allowances which are generally higher than those enjoyed by similar staffs

in other industries and in Government service.

Still Rendering Yeoman Service

The Association has rendered and is rendering all possible assistance to members in the way of securing much-needed estate supplies like fertilisers, cement, iron and steel materials, machinery, capital goods, G.I. pipes and railway facilities. The thanks of the Association are due to the various Government and other departments concerned for their ready and sympathetic assistance in the matter.

Our relations with the South Indian Association in London, the Indian Tea Association in Calcutta, the Association of Planters of Travancore and other bodies with objects similar to ourselves have been most cordial and mutually beneficial. These contacts are particularly valuable in discussions over matters of common interest which are both numerous and varied. Some of our members have, while on leave or while visiting the United Kingdom, been in direct contact with the South Indian Association in London. I am sure that nothing but good will arise from these direct contacts and I hope that during the coming year further opportunities will occur.

To refer to the Scientific side of the Association, it is with regret that we have to record Mr. Manning's resignation. Mr. Manning has been offered and has accepted an important position in the Tea Research Institute of Ceylon. He takes with him our best wishes for the future.

Membership of the U.P.A.S.I. Labour Department continues to increase and I would like to express my appreciation and that of the Committee on the valuable work done by the Director and his staff.

MINISTER'S ADDRESS

Mr. B. Gopala Reddi, Madras Minister for Finance and Transport, addressing the meeting said: "Organisations like this, with a vast membership, and contacts in various countries, can still play a vital part in maintaining cordial relations with Britain.

"India must either become a powerful nation within the next 15

to 20 years or it must continue to be a weak State for a long time to come. The immediate future is all-important, and, I trust, all elements will cooperate in allowing the State to acquire internal strength. We have just now stepped over the threshold of freedom, and unless the people work on a war-time basis on all fronts, no visible or tangible results will accrue from Political Swaraj. A multi-pronged drive on all fronts alone can save us.

"Employers, and employees should have oneness of spirit; for unless these two co-operate, subordinating their claims to the general good, our production, our export trade and industry will greatly suffer, making investment shy and development impossible.

"On an occasion like this, it is but right that we become analytical and take stock of the position before we go forward with new determination.

"The 'Kangani' system which is prevalent must be done away with and it is up to you to co-operate with the Government to abolish this system and the proposal is under the consideration of the Government.

Proper Housing

"Proper housing facilities for labour is the test I want to put to every Member of this Association, and while I am glad to find that some of you have taken steps to provide houses, there are still others who are hesitant to do the right thing by the labourer.

"The question of affording better medical and educational facilities is, I am sure, not escaping your attention and all possible and reasonable steps must be taken to give them all facilities.

"Let me in conclusion appeal to you to co-operate with the Government in all the ameliorative work that is taken up. I want the fullest co-operation of your Association to the Government in dealing with the problems of labour and let us hope that Government, management and Labour will co-operate with each other in producing more wealth for the country to be shared equitably by all concerned."

THE ESTATE STAFFS

THE ADMINISTRATIVE BACK-BONE OF THE PLANTATION INDUSTRY

(Contributed)

Fight for Trade Union Rights

Sir Fredrick James once mentioned that the estates staffs are the administrative back-bone of the planting industry. The role of the perfect estate staff is to be the human link between the management and labour. So, the plantation industry, which employs a very large number of labourers, and cannot do without them, has, by the very nature of its needs moulded a type of its executive and supervisory staff whose exact functions are as difficult to limit as to define. In the highest form of its development the estate staffs will be, to put it in the language of Alexander Heron, the 'understanding unit' ideally suited to ease the future relations between two powerful elements in the industry, the management and labour.

The plantation staff became union-conscious as early as 1928 and many liberals among the planters helped it forward. But, it soon had to face all the ills to which unions of white-collar workers are heir. There was no link sufficiently strong to hold this scattered community of workers together. With educated and intelligent workers there could be no emotional spell-binding capable of holding them together for long. Besides, the hard conservative core among the employers began to assert a hostile influence in the higher echelons of the industry. The estate staffs were understandably impatient when they saw even their most reasonable claims, to correct the chaotic service conditions to which they were subject, thwarted or evaded. The practical difficulty lay in the fact that the assertion of ordinary trade union rights was unknown to the majority of the planters who have been brought up in unquestioned authority and whatever they offered those under them they (the planters) considered a favour which they have the right to withhold at their own pleasure.

The estate staff association was soon embittered and their agitation for fair treatment continued, often assisted by some of the most advanced planters. This fight for trade union rights brought into the forefront a body of leaders who invested the movement with a crusading spirit. The main difficulty was that the United Planters' Association did not possess the power to enforce their own decisions upon their various members. This basic weakness became all the more pronounced when the U.P.A.S.I. approved and recommended to their members certain forward measures, partly meeting the demands of the employees, which a large number of planters chose to ignore. The differences increased and the gulf between the organisations grew wider. Even when the relationship between the two was passing through the most acrimonious phase both sides knew each other's difficulties and in private admitted them. The Staff Association was too often felt touching certain group of planters on the raw and in turn most planters knew the staffs had a case but that admitting it would sweep them into the embarrassing position of having to compel some of their more stubborn friends to climb down somewhat.

Claims of Estate Staffs

The claims of the estate staffs may be summed up as: (1) regulated method of recruitment and insistence on a minimum educational standard, (2) a regulated scale of pay uniformly applicable, (3) curtailment of the powers of the individual superintendants in relation to their staffs, (4) adequate leave, (5) a better standard of universal medical aid and housing in the industry and (6) opportunity for advancement from subordinate grades to the higher grades.

A recent agreement between the staff union and the newly-created South Indian Estate Labour Rela-

tions Committee has been able to bring the two sides much closer than they have been for many years. But, there is one more aspect of estate staff aspirations that has to be realized. The planting industry has long been British controlled and their policy has always been one of strict exclusion of Indians from all management posts. Educated Indians entering estate service chafed under this restriction as they could not advance beyond the senior subordinate level. Some relaxations to this rigid convention were made during the war and since. But it does not apply to men entering the estate service at the lower levels and therefore has lost much of the progressive worth of the innovation. Estate staff has yet to fight for this right and win. British interests based on exploiting Indian resources has yet to accept this policy with a sense of generosity.

Need for Refresher Course

Before a change in this policy can be envisaged a refresher or training course will be highly useful in making the selectee adapt himself to his new responsibilities and it is necessary that it should become an essential part of the change-over process. An organised and dynamic body of workers will throw the whole range of employer-labour relationship into the melting pot of new economic and social concepts and the increasing tempo of competitive forces will place new responsibilities upon the managerial machinery on estates. It will be a challenge to the leaders of the industry whether they can have a sub-stratum of efficient and loyal staff on their side. There is no doubt that without giving the average estate staff the opportunity to advance in their career the will to succeed will not be there. A change in the policy of plantation owners in this regard will transform the old relationship between estate staff and planters.

United Planters' Association of Southern India

ANNUAL REPORT OF THE U.P.A.S.I. TEA SCIENTIFIC SECTION

Manuring.—Several of the manuring experiments have now proceeded into the third plucking cycle. As the experiments proceed, the information which they supply becomes more reliable, and advisory work on manuring has largely been based on the results of these experiments which have produced data upon which a high measure of reliance can be placed.

As more data accumulates, it becomes increasingly clear that successful results from manuring with supplementary fertilisers is entirely dependent on having the soil in a good condition beforehand. Most estates in South India are able to maintain a high organic matter content in the soil by growing shade trees and by tolerating or encouraging the growth of weeds of unharmed species. Soils are therefore in a position to make reasonably good use of the extra plant foods which are supplied in the form of fertilisers, and except where there are limiting factors tea responds accordingly.

The experiments continue to show the value of nitrogen to which there is almost always a response. No significant responses have yet been obtained either to phosphate or potash.

Advisory work on manuring programmes has taken into account these response tendencies, and so far as possible has been designed to fit with factors which are known to be limiting. For example under dense leguminous shade, the response to nitrogen is small or even nil.

Fertiliser mixtures which estates have been able to obtain are still dependent on ingredients available to suppliers. Some forms of nitrogen, phosphate and potash containing manures have been in short supply, and all forms of manures are about 3 times the 1938 price. On the whole, however, by the use of substitute sources, manuring programmes have not had to be drastically curtailed.

Pests and diseases.—Pest and disease problems have occupied the greater part of the time of the Scientific Section staff during the year. To begin with, it was an urgent necessity to test the degree of protection which could be obtained in spraying tea against blister blight. Secondly the preliminary trials on the use of DDT for controlling *Helopeltis* were so promising that further experiments were clearly called for. The need for finding a means of controlling *Helopeltis* had become increasingly important when it became apparent that there was a particular danger to estates, resulting from interactions, which are subject to attacks by both blister blight and *Helopeltis*. Thirdly, there has been a great increase during the year, of areas in which tea becomes defoliated and tends gradually to become entirely unproductive. In addition to these three problems, it has also been necessary to follow as closely as possible the status of a series of other pests and diseases normally regarded as of lesser importance.

Blister Blight (Exobasidium Vexans, Massée). During the course of the year there has been the opportunity to conduct carefully controlled experiments on the use of protective sprays. The detailed recordings obtained in these experiments will be found in the Mycological Section of this report, and it is of particular interest to note the highly successful results which were obtained.

No attempt was made to spray tea in plucking. The experiments were confined to protecting nursery plants and to protecting pruned tea in the period between bud break and tipping. The results show that regular and careful spraying will produce a sufficiently high degree of protection to tea nurseries to prevent any serious damage or stunting of growth.

In the case of pruned tea, the experiments put spraying to the severest possible test as the area chosen was pruned at a time (May) such that bud break would occur in the South West Monsoon when conditions are highly favourable to the pathogen. No spraying was done until 3 months after pruning. All the new shoots which had developed in this period were killed by blister blight. But as soon as spraying commenced, growth in the sprayed plots developed with only minor injury, and the tea in the sprayed plots was back to the tipping stage in the normal time.

It is a reasonable conclusion that if tea is pruned at a more favourable season an even higher degree of protection can be imparted by spraying, it being thereby possible to escape the savage damage to pruned tea which occurred when blister blight first appeared in S. India, and which is always liable to occur if weather is unfavourable after pruning.

It was not possible in these experiments to test fungicidal sprays at different strengths or at varying rates of application or at varying intervals of application. There are matters for further experiment, but for the present sufficient information has been obtained to suggest that a spray compounded of 2 to 4 ozs. of Perenox or Copper Sandoz (or its equivalent in other copper sprays) in 10 gallons of water applied at intervals of 7-14 days according to the state of the weather, is a working basis.

The nursery spraying trials revealed the danger there is of stunting the growth of small tea plants unless the spray is very lightly sprayed.

A considerable amount of spraying has been done on estates, and the results have generally been satisfactory. There is a tendency, however, while field workers are not highly trained, to use excessive amounts of spray fluid thereby increasing the cost of spraying in both material and labour.

A number of different types of sprayers have been tested during the year. Most of the hand sprayers marketed will do the job, but few are highly efficient for the none too easy operation in selective spraying which is required for dealing

PLANTING SUPPLEMENT

with blister blight. The manoeuvrability of the smaller machines is a clear advantage, and for nurseries a miniature sprayer is the ideal.

It has also become apparent, with further experience, that nurseries are only safe if the spraying is done regularly throughout the year, adopting longer intervals between spraying when the weather is unfavourable to the fungus.

In most districts the North East Monsoon rains were unusually light, and the period December to March has been very dry. The result has been that blister blight attacks have been not at all severe. Such favourable conditions for avoiding attacks are unlikely to occur every year (witness, for example, the equivalent period in 1946-47), and to be certain of avoiding any damage to pruned tea by blister blight attack, it would be a wise precaution to have ready equipment and materials to spray at least a fair portion of the pruned tea acreage. Tea pruned this pruning season (October-January) has escaped attacks of any serious consequence, but the weather conditions were unusually favourable.

The second advance that has been made during the year, in finding counter measures to blister blight, is that there has now been time to put to test those alterations in agricultural and horticultural practices which were thought likely to alleviate damage. It is true that the modifications in these respects have not radically changed planting practice but they have involved restrictions such as, for example, combining pruning to short season, and the other measures advocated in circulars which were distributed to estates by the Scientific Department. It has been possible to follow the results of these modifications in practice through regular monthly reports which have been provided by a large number of estates in all districts.

Pending more detailed testing over a number of years, the main conclusions to be drawn are:

1. That pruning should be a seasonable operation.
2. That hard clean pruning exposes tea to the danger of attacks for too long a period, whereas a light prune leads to rapid recovery.
3. That shade does exert the influence on blister blight attacks which was at first suspected and it is therefore necessary to review shade policies in favour of a rotation of shade trees which ensures that shade is controllable in those months (April-May and September-December) when it exerts most influence on the disease.
4. That the system of plucking should be sufficiently light at least to compensate for the drain on bush reserves which is liable to occur by continuous blister blight attacks.
5. That if it is accepted that shade exerts the influence it does, then there is a strong case for pruning and plucking methods which avoid bushes shading each

BUSINESS WEEK

other particularly on steeper hill sides with a northern facing.

There is now no escaping the fact that blister blight has become firmly established in South India. Its ability to survive the present long dry weather is sufficient proof of this. The net result therefore, is that at certain seasons of the year, blister blight will cause some loss of crop. Its effect may become cumulative, but the data which has been collected does show that provided certain precautions are taken it is possible greatly to reduce the over-all damage, and it is not impossible that compensatory treatments and bush reactions may go a long way towards filling the gap in crop, except in the least favourably situated areas.

Helopeltis. (Helopeltis Theivora).—It is now established that *Helopeltis* can be controlled by DDT, and it therefore remains to work out methods and technique which will provide a sufficiently high degree of control at a sufficiently low cost.

There seems no doubt that for conditions in South India it will be necessary to concentrate on dusting rather than on spraying, as the steep hillsides on which tea is grown in Travancore lend themselves to this form of control rather than spraying.

The basis on which the latest work has proceeded involves the following principles:

To attack the pest at the time of year when populations are small, and thereby prevent any rapid build up of population by further reducing pest numbers, rather than starting control after the pest has become well established.

To ensure the most complete kill by two dustings following closely up on each other, thereby ensuring proportionate kill of the new hatch which may have emerged in the intervening period.

To apply direct control, in the form of dusting, to large acreages, thereby reducing the chances of gradual reinfestation from outside the treated area.

To deal thoroughly with known pockets of infection where the pest usually survives the dry weather in greatest numbers.

To determine whether infection can be sealed off by killing the *Helopeltis* bugs in pockets of infection and by sealing off uninfected areas by barrier dusting.

To determine the lowest possible concentration of DDT dust which is effective.

To determine whether the cost of dusting can be reduced by using locally obtainable clays as fillers to dilute DDT dust of high DDT concentration.

To determine whether costs can be reduced by using the 'fog' principle of dusting whereby dust is dispersed over large acreages from power operated machines as opposed to treatment of individual bushes with hand machines.

To determine the lowest rate per acre of insecticide which is necessary to provide reasonable control.

To test different kinds of dusting machinery.

With these objects in view, arrangements have been completed for large-scale trials in the coming season, and we

PLANTING SUPPLEMENT

have been fortunate enough to receive the co-operation of Agents and Managers which will make these trials possible.

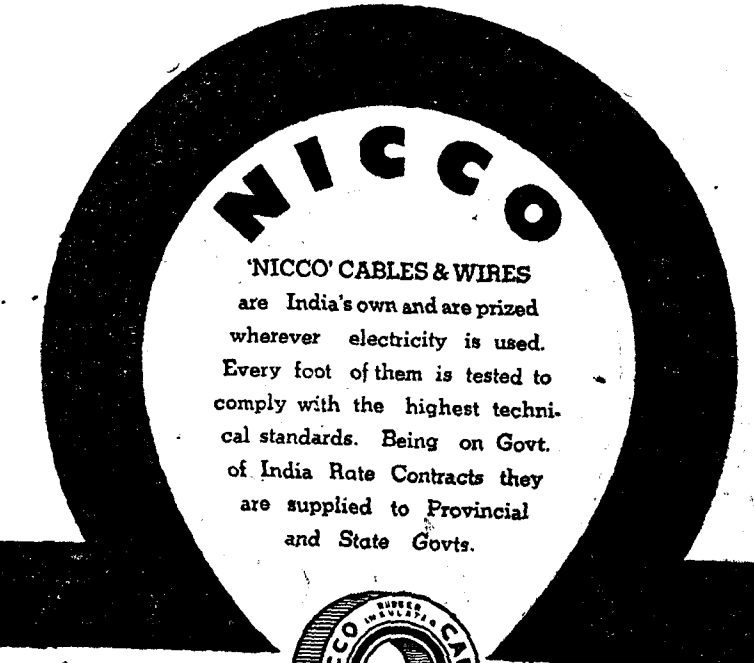
During the year *Helopeltis* attacks on many estates have been exceedingly damaging, and as pointed out in the report of the Plant Protection Sub-Committee it has become increasingly important to find a means of controlling *Helopeltis* now that tea in the same areas is also attacked by blister blight.

Work on *Helopeltis* control has been proceeding in North East India at the same time, and there has been a valuable exchange of information with the I. T. A. Experiment Station at Tocklai. The information we have received from Tocklai is that spraying in Assam is likely to be the more economic means of control but, as mentioned earlier, the problem for Travancore estates must take into account

the extreme difficulty of transporting spray fluid to the steep hillsides.

2. **Defoliation.**—A very large number of reports have been received during the year of the appearance and spread of a form of defoliation of tea. The symptoms are that bushes first drop their lower leaves, and then gradually cease to develop new leaf, and finally die.

At present, the cause of this type of defoliation is not established, and methods to counteract it are not known. No special pathogen appears to be associated with the condition, nor can it be accounted for by soil condition, shade, manuring or cultivation. In all cases of defoliation there is a marked depletion of carbohydrate reserves in the roots of bushes showing the symptoms of defoliation. As opposed to a disease, defoliation seems to be a physiological disorder.



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U. P. A. S. I. TEA SECTION

REPORT OF THE TEA SECTION COMMITTEE FOR THE YEAR 1947-48

Membership.—The acreage subscribing to the Section on 31st March 1948 was 147,637 acres. Out of 180 members, 128 owning 146,710 acres paid the Product Cess.

Tea Scientific Section

Administration and Staff.—Mr. J. D. Manning continued to hold charge as the Tea Scientific Officer during the year. Partly to avoid heavy capital expenditure on renewal of buildings at Devarshola and partly in pursuance of a desire to centralise the main departments of U.P.A.S.I. at its headquarters in Coonoor, the Tea Section Committee decided to transfer Mr. Manning's office and residence to "Glenview", Coonoor, as from January, 1948. The Entomologist, Mr. S. Ananda Rau, who was designated as Assistant Tea Scientific Officer during the year, was posted to Central Travancore to take charge of experiments in the experimental area kindly provided by Messrs. A. V. Thomas & Co., Ltd., and the Soil Chemist Mr. V. Jayaraman, was retained in Devarshola to be in charge of the Devarshola Tea Experimental Station. The post of Mycologist was not filled during the year. Mr. K. S. Venkataramani was appointed in April 1948 in a temporary capacity to carry out special investigation on defoliation.

Expansion of Tea Research.—At the Calcutta Conference held on 10th and 11th December 1947 the question of revision of the Indian Tea Cess Act was considered, but no final decision was arrived at. A circular issued by the U. P. A. S. I. to all members of the Tea Section on 24th March 1948 asking for their views on the proposal of the Federation of Indian Chambers of Commerce and Industry that part of the cess collected under the Tea Cess Act and the I. T. M. E. B. should be allocated to scientific research in tea brought forth replies which showed that opinion was sharply divided on the question. In June 1948 the Government of India made certain proposals for revision of the Act chiefly with a view to enabling the Indian Tea Market Expansion Board to take over scientific research and the work of compilation of tea statistics, and invited the U.P.A.S.I. to submit its views. These proposals were considered at a special meeting of the Tea Section Committee held in Coimbatore on 10th July 1948 and a telegram was despatched to the Ministry of Commerce, Government of India, strongly protesting against the very limited time allowed to discuss a matter of such vital importance to the tea industry and conveying the following resolutions of the Committee:—(1) opposing the expansion of I. T. M. E. B. functions on grounds of danger to the efficiency of tea market expansion in the world; (2) stating that scientific research is an essential function of and should be controlled by the industry and that statistics are an essential function of Government; (3) stating that the financial

requirements for research for South Indian tea industry had been carefully considered and a research scheme had been framed by experts, estimated to cost Rs. 2,50,000 per annum and (4) strongly advocating provision of these funds from existing excise duties and welcoming Government technical liaison on the Research Committee.

Tea Contracts with Ministry of Food

1947 Contract.—The Government of India had originally authorised the Tea Controller to accept tenders of tea under this Contract up to 200 million lbs. but this was subsequently raised to 268 million lbs., made up of 246 million lbs. from North India and 22 million lbs. from South India. The "Invitation to Offer" was issued on 30th April 1947. The conditions of Sale stipulated that full payment should be made in India, the price payable being basic f.o.b. price, adjusted to ex-warehouse terms, with the addition of cost allowance of 12d. per lb. for Travancore estates and 19½d. per lb. for other South India estates. For various reasons, including the possibility of early resumption of London auctions, it was believed that this would be the last contract under the Block Purchase Scheme.

1948 Contract.—Contrary to expectations, however, towards the end of 1947 the British Ministry of Food opened negotiations with producers in India with the object of concluding a fresh contract to meet the major portion of the United Kingdom requirements of tea during 1948. The Government of India agreed to permit the supply under Contract of some 300 millions lbs. to the U. K., and this limit was later raised to 325 million lbs. The Tea Controller's "Invitation to Offer" was issued on 30th March 1948. The basis of the contract was generally the same as that for 1947, except that as regards the allowance for increased cost of production, the Ministry agreed to pay an additional 2d. per lb. in respect of the first third of the deliveries under Contract, the allowance for the remaining two-thirds of deliveries to be determined later when the costs examination which had been undertaken by the industry had been completed and the result of the Tripartite Plantation Conference was known. It was also stipulated that the additional allowance for the two-thirds would in no case be less than the 2d. per lb. allowed for the first one-third. The U.P.A.S.I. Tea Costing Sub-Committee is engaged in computing the increase in costs for 1948.

The U.P.A.S.I. also drew the attention of its own members as well as of the Tea Controller to certain points in the "Invitation to Offer" which had not been settled to the satisfaction of the industry. These were, firstly, the substitution of F.O.B. basis for ex-warehouse basis in the new Contract, under which, it was pointed out that the tenderer should be compen-

sated for the present increased cost of placing the tea P. O. B. in comparison with the cost of placing the tea F.O.B. in 1941. Secondly, the industry had represented that the Ministry of Food should compensate the tenderer for delayed payments under the F.O.B. basis. Thirdly it had been suggested that by delivering tea F.O.B. in Cochin State territories waters, tenderers might become liable to Cochin Sales Tax, and hence a similar compensatory provision for such possible liability was required in the "Invitation to Offer". These points have not been satisfactorily covered, although the "Invitation to Offer" states in a general way "that any additional costs that may arise will be taken into consideration separately in the general costs review."

It is not known whether tenders have been received by the Tea Controller in respect of the whole of the 325 million lbs. required by the U. K. Ministry. It is believed that the offers from Travancore estates have been very low in view of the possibility of double income-tax on some Travancore producers under the existing system of tender. This question also has been raised with the Tea Controller. Latest information is that the Government of India is prepared to conclude reciprocal arrangements with States in respect of income assessed to State agricultural income tax and ordinary income tax in India.

International Tea Agreement.—With the International Tea Agreement due to expire on 31st March 1948, the question of its renewal or otherwise became a matter of urgent importance long before that date. The situation was already somewhat complicated by the withdrawal of the East African territories from the Agreement as from 1st April 1947, i.e., one year before the other participating countries were permitted to withdraw. It was suggested that one way of meeting the situation would be for the other participating countries to pass legislation rescinding all restrictive clauses in the Agreement, so that these countries also could freely expand their planted acreages. An alternative suggestion was to press for a planned expansion of production on the basis of an agreed additional acreage for all participating countries, and to admit East African territories into this scheme only if they accepted an agreed uniform rate of expansion. If East Africa would not come into the Scheme it was further suggested that the other participating countries should place a ban on the export of tea seed to East Africa. The above suggestions which were mentioned in a letter dated 30th July 1947 from the Chairman, Indian Tea Licensing Committee, addressed to the U. P. A. S. I. and certain other queries arising therefrom were put to all members of the Association, and the following is a brief summary of replies and comments received:

a. Members of the U.P.A.S.I. own no less than 116,872 acres of land available for new planting, and of these 108,000 acres were lands adjoining areas already planted with tea.

b. As regards restriction, more than two-thirds of the replies received (replies were received from 127,407 acres) were for modification of the existing restrictions on new planting and present export control, while some five to six thousand acres were for continuance of restrictions on new planting without modification.

c. On the question of whether the right to plant new areas should be transferable, some 70% of the replies favoured transfers restricted between estates of the same company or interest and half that acreage favoured transfers between existing registered tea gardens.

d. The vast majority of the replies were in favour of the right to plant new areas being made transferable, but not marketable.

e. As regards crop basis, about 60% of the replies to queries in this connection were in favour of revision and the remainder opposed to it.

f. Assuming that Government control over export of tea might continue, the majority of replies were in favour of the issue of export quotas with unfettered right to export anywhere up to the limit of the export quota, and some 16,000 acres were in favour of continuation of the block purchase scheme.

In forwarding the above views of the South Indian tea industry, the U.P.A.S.I. also advised the Chairman of the Licensing Committee of the following personal views of the Tea Section Committee:—

a. That the International Tea Committee should continue in being.

b. That continued regulation of exports is necessary to ensure adequate supplies for internal consumption.

c. That, once controls had ensured supplies for India's internal needs, tea exports to any country should be unhampered by controls, i.e., a free export trade should be permitted.

d. That a revision of the crop basis is necessary and should be on the basis of any one year from 1940 to the date of the change, or if this cannot be introduced, on the basis of any two years since 1940.

e. That the International Tea Agreement and Indian legislation should be amended so as to permit extension of existing acreage under tea up to a maximum of 10% spread over a period of five years and that any right to extension of planted area should be transferable only between estates of the same proprietor or company or under the same managing agency.

The whole question was later fully examined at a Conference convened by the Government of India in Calcutta on 10th and 11th December, 1947, between representatives of the industry and Government. Messrs G. B. Reade and C. M. Kothari represented the U.P.A.S.I. at this Conference.

The Conference decided, among other matters, that control over future extensions was absolutely essential if the Indian

Tea Control Act was to be continued beyond 31st March, 1948, and to recommend to the Government of India that

a. the Act be renewed for an interim period of two years.

b. extensions be limited to 2% each year, and replacements to 5% each year, the latter to be accompanied by simultaneous uprootings.

c. tea seed should not be exported to non-participating countries.

Information was received in due course that the International Tea Agreement was to be renewed for a further term and a cable dated 5th March 1948 from the South Indian Association in London stated that the only fundamental changes in the new Agreement were that new extensions of two per cent. per annum and replacements of five per cent. per annum were to be allowed in accordance with the recommendation of the Calcutta Conference. Upon receipt of a further cable from the S. I. A. confirming that these were the only fundamental changes, that the participating countries would be India, Pakistan (subject to delay over administrative difficulties), Ceylon and the Netherlands East Indies, and that every effort would be made to bring in East Africa and other countries by supplementary agreements, the U. P. A. S. I. authorised the S.I.A. Representative in London to sign the Agreement on behalf of U.P.A.S.I.

Besides the above provisions regarding new planting and replanting, the new International Tea Agreement prescribes the following:—

a. The period of regulation is for a period of two years from 1st April 1948.

b. The permissible acreages on 31st March 1948 in the producing countries are as follows:—

India and Pakistan	852,400 acres,
Ceylon	565,603 "
Netherlands East Indies	519,012 "

c. The terms on which any other tea-growing country may be admitted to the regulation scheme and the formal admission of such other tea-growing countries shall be dealt with by agreement supplemental to this Agreement.

While Pakistan has now agreed to sign the International agreement provided that Pakistan should have an independent Board, that tea seed should be supplied to meet her replanting requirements and that she should be supplied with necessary packing materials, news that the agreement has been signed had not been received at the time of writing this Report.

Indian Tea Control (Amendment) Act, 1948.—In order to implement the International Tea Agreement, the Government of India introduced the Indian Tea Control (Amendment) Bill, 1947, in the Constituent Assembly (Legislative) towards the end of March 1948. The Bill was passed into Law in March 1948. The industry was given no opportunity to study or comment on its main provisions. After the Act was passed, it was seen that the proviso to Sub-Section 2 of Section 28 still prohibited limited liability

companies owning more than 300 acres and individual proprietors owning more than 150 acres of planted tea from participating in the 2% per annum permissible extension authorised under the International Agreement. Representations were immediately made through the Commerce Department and Government have now taken action under Section 40 of the Act suspending the operation of the proviso to Sub-Section 2 of Section 28 until further notice. It is therefore now possible for all estates, irrespective of size, to apply for permission to extend their planted areas.

Period of validity of special export licences.—Requests were received from some members urging an extension of the period of validity of 1947-48 special export licences on the ground that owing to petrol and wagon shortage it would not be possible for these members to move their tea to the ports of shipment under these special export licences before the 31st May 1948. The U. P. A. S. I. made representations to Government through the Indian Tea Association and Government have recently passed an order extending the period of validity of these licences, to 31st July 1948.

Indian Tea Market Expansion Board.—The rate of cess payable to the Indian Tea Market Expansion Board was during the year raised to Rs. 1/6 per 100 lbs.

Indian Tea Licensing Committee. The rate of fee payable to the Indian Tea Licensing Committee continued to be 14 annas per 1,000 lbs.

GENERAL

Tea Excise Duty.—The Finance Bill, 1948, contained a proposal to raise the excise duty on tea from 2 to 4 annas a lb. A very strong protest was launched against this proposal, and the duty was later fixed at 3 annas a lb. instead of 4 as.

Numerous complaints were received from members about the serious delays in securing refunds of excise duty paid in respect of teas that were cleared from factories but were subsequently exported and thus became excise-duty-free. Later in the year the Government prescribed a new method of collecting excise duty which, it is believed, will obviate the difficulties experienced by members previously in the matter of securing refunds. Under this revised procedure, an excise duty of 3 annas a lb. is being collected on all teas leaving the factory and in respect of teas which are exported, a further duty of one anna a lb. is collected at the time of export. The four annas a lb. thus collected in respect of export teas would be treated as export duty. The question of refund of excise duty does not thereby arise.

Sales Tax.—The Madras General Sales Tax (Amendment) Act, 1947, came into force on 1st January 1948. The liability of tea estates to sales tax arose from the fact that whereas in the original Madras General Sales Tax Act, 1939, the proceeds of the sale by a person of agricultural or horticultural produce grown

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area consisted of 28 plots, 7 each of the following treatments (1) Clean pruned at 15" (2) Clean pruned at 26" (3) Skiffed at 31" (4) Skiffed at 31" with some cleaning out of thin and diseased wood. The treatments were carried out between 21st and 23rd May 1947. The growing buds were continuously attacked by Blister Blight and up to the end of August there was no growth at all in the pruned plots. The Greyish shade was lopped in the beginning of September. Spraying commenced on 25th August, half plots of pruned tea being sprayed with P. renox at the rate of 4 ounces in 10 gallons of water at 10 days intervals till the last week of December.

The number of shoots on 62 bushes selected at random in each of the treatments were counted and examined for blisters. Figures show that a larger number of shoots developed on the sprayed plots and a very high percentage of these shoots were completely free from infection, thus indicating that spraying afforded a great degree of protection against Blister Blight.

Test No. 2.—Degree of intensity of infection in sprayed and unsprayed plots.

The degree of infection in the unsprayed plots was definitely greater than in the sprayed plots. The infection in the unsprayed plots extended to the stalk, resulting in the ultimate death of shoots. In the sprayed plots, all the bushes showed only a very slight infection. Owing to the decrease in the severity of the disease during the third week of November, stalk damage was not in evidence in the unsprayed bushes after that time. Towards the later rounds of spraying, it was not possible to spray the leaves at the bottom of the bush. So, the infection in the sprayed plots was confined to such portions of the bush as could not be reached by the spray. The young shoots at the top were completely free.

Test No. 3.—Percentage of bushes tipped.

Large number of bushes came to the tipping stage earlier in the sprayed plots. Although 70% of the bushes in the unsprayed plots were tipped in the beginning of February, the total yield from these was low as compared to the yield from the unsprayed plots.

Test No. 4.—Yield in lbs. green leaf.

The yield was considerably higher in the sprayed plots. In the bushes in the

unsprayed plots, the number of growing points was considerably smaller than in the sprayed plots.

Test No. 5.—% infection in individual shoots.

Here again the percentage of infection is definitely greater in the unsprayed plots.

The incidence of the disease began to show a distinct decline from the middle of December. During February and March, the infection was practically negligible owing to dry weather.

The amount of spray fluid found to be sufficient was 25 gallons per acre for each of the first 5 rounds; 40 gallons per acre for the sixth round; 60 gallons per acre for the 7th round; and 75 gallons per acre for subsequent rounds.

Pruning and Skiffing experiment.

This experiment was started to study the effect of different types of pruning and skiffing on the yield of tea and on the incidence of Blister Blight. There were 4 treatments, namely, (1) clean prune 1" above the previous cut (2) clean prune to 26" (3) skiffing and (4) skiffing with cleaning out whippy shoots. Each treatment was replicated 7 times. The treatments were carried out during the last week of May. The skiffed plots were subdivided into half plots. In sub plot A all banjis were removed and bushes were hand plucked for the first three rounds and in B, the bushes were tipped 3" above the skiffed level. All the bushes in the 'skiffed & cleaned' plots were tipped 3" above the skiffed level.

During June, July and August the severity of Blister Blight was so great that all shoots were attacked and destroyed. The attack extended to the stalk in many bushes. No difference in the intensity of attack could be noticed between the treatments till the beginning of September, when the shade was lopped.

Defoliation.—Defoliation of tea was more widespread and general during the year. Starch tests in the root samples invariably showed very low reserves in defoliated bushes. In order to find whether Red Spider and other mites influenced defoliation, two experiments with lime sulphur spraying were started in areas in which defoliation was fairly general. One trial on an estate in the Nilgiri-Wynaad consisted of 3 treatments with 6 replications, the treatments being (1) no spray-

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ing (2) spraying with lime sulphur, strength 1 in 18 (3) spraying with lime sulphur, strength 1 in 36. Each plot consisted of 196 bushes. 12 bushes in each plot chosen at random showing various stages of defoliation were marked in each plot. These were classified and scores given as follows—

1. Healthy bush with full leaf and no sign of defoliation 100
2. Bush with beginning of defoliation at basal part 75
3. Bush in which 50% of the older leaves have dropped 50
4. Bush in which all the older leaves have dropped leaving only a crown of leaves at the top 25
5. Bush completely denuded of leaves 0

The first spraying was carried out during the middle of March and the second is due at the beginning of May. It is intended to examine the bushes at regular intervals till the onset of the monsoon.

In a second trial at the Experimental Station, 10 bushes in each category mentioned above have been selected, staked and marked with numbers. The bushes were sprayed with lime sulphur at a strength of 1 in 18 on 17th March. The next spraying is due in May. The bushes will be examined at regular intervals to study the effect of spraying.

PRUNING EXPERIMENT IN TRAVANCORE

A randomised block experiment with 6 replications designed to compare the merits of 18" pruning, skiffing at 36" with no cleaning out and skiffing at 36" with cleaning out, was undertaken during the year. It was started towards the end of May in order to see how these treatments would influence Blister Blight attack. The experiment was terminated in December 1947.

The 'skiffed' and 'skiffed plus cleaned' plots came into plucking early in August though by this time Blister Blight too had increased considerably.

The plots skiffed without cleaning did consistently better than plots 'skiffed plus cleaned'. The 18" pruned plots suffered so badly that they had not recovered from pruning even at the time of termination of the experiment. It was felt that they may not come into tipping until some considerable time after the dry weather sets in.

feature would allow of some latitude to pruning time, as severe attacks resulting from pruning in an adverse month can be overcome by application of DDT at or prior to tipping time. It is believed also that DDT treatment would offer a means whereby 'die-back', which is a common feature in South Travancore following successive attacks of *Helopeltis* during the first year of pruning, can largely be prevented.

Local Clays as Diluents for DDT.—A few samples of locally available clay were tried as diluents for DDT as their

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use was considered to reduce the cost of DDT dusting considerably. Although they possessed properties usually considered as suitable for insecticide diluents, the necessity for grinding them, in order to get dusts of the desired fineness, prevented further trials being made with them. The china clay available in Travancore was found to meet the requirements very well and this product is being used for the 1948 trials.

Life-History Studies.—These studies revealed that the incubation period was 11-12 days in July and August and 13 days in September and October in South Travancore at an elevation of 2,500 feet. The incubation period in these 4 months in N. E. India is only 5 to 7 days. It is clear therefore that under climatic conditions obtaining in S. India *Helopeltis* breeds far more slowly than in N. E. India.

It is further reported that during the height of season in N. E. India the adult insect lives for over 2 months during which period the female can lay more than 600 eggs. From studies made during the year in S. Travancore, it is doubtful whether in S. India *Helopeltis* approaches the N. E. Indian form either in longevity or fecundity.

An attempt was made to study the effect of lowering the temperature on the insects and their eggs. Adult insects and egg-bearing shoots were kept in the re-

frigerator for a period of 6 hours at 55° F. and then removed outside. Adult insects were noted to be temporarily paralysed but recovered soon afterwards. The eggs hatched out successfully. The practical bearing of this observation is that even in the coldest nights obtaining in the *Helopeltis* districts there is not much likelihood of the insect perishing. Further observations are necessary, however, to confirm this finding.

Parasites.—In addition to the Mermitid worm (*Agamermis paradeicaudata*), a wasp grub has been known for a long time to be parasitic on *Helopeltis* in S. India, but attempts to breed the adult wasp were not successful in the past. In the early part of June 1947, a few grubs emerging from parasitised *Helopeltis* nymphs successfully formed cocoons from which it was possible to breed two adult wasps. The period of pupation lasted 18 days. A superficial examination of the wasp indicates that it is the same as, if not closely allied to, *Euphorus helopeltidis*, which occurs in Java. Authentic identification of the wasp is being arranged.

This wasp grub is also occasionally found in adult *Helopeltis*. While it would eventually cause the death of the host, its immediate effect on the female *Helopeltis* appears to be to render it sterile. In no case so far met with has any egg been found in the parasitised female *Helopeltis*.

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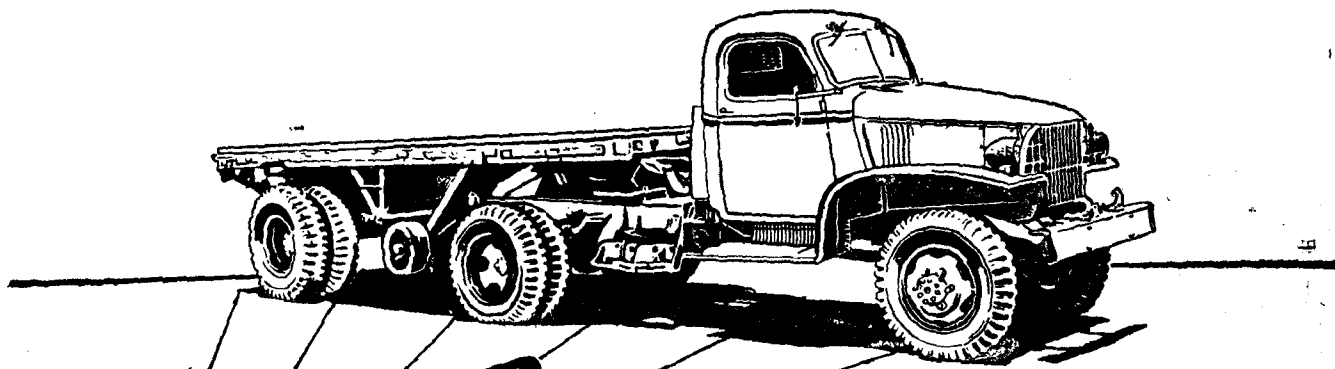
General Condition of the Pest in 1947.—The few reports which have come to hand are generally conflicting. While one area in S. Travancore experienced only mild attack throughout the season, reports from another estate in the same district indicated severe attack extending from May to October. Some estates in Central Travancore appear to have suffered severe damage, but here again, as the incidence reported varies from estate to estate it is difficult to estimate, even within wide limits, the actual condition in respect of the pest during the year.

EELWORM

Trial with Agrocide-2.—This trial referred to in last year's report, was concluded.

As seen from the figures relating to growth at 3½ months, 'Agrocide-2' significantly depressed growth, the higher dose more so than the lower. There were also larger numbers of dead plants and failure in the two treatments than in the control. This feature was most marked in the double dose treatment. As regards infestation, it was generally light to moderate in all the 3 treatment, but the reduction noticed in the 'Agrocide-2' series was only of the order of 18.4% in the case of the lower dose and 13.2% in

(Continued on page 36)



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Report of the Entomologist

A review of the results from Field Trials. The field trials conducted during the year have given results which should prove useful as a basis for large scale control operations. The following features are especially noteworthy.

The effect of DDT dusting as judged by the appearance of the field and response in crop was indeed spectacular.

DDT dusting aided rapid recovery of 'die-back' bushes in a most striking manner.

In dusting, a certain amount of drift is inevitable and it was found to have

some beneficial effect on a few rows of adjoining tea. This would appear to indicate that it may not be necessary to dust individual bushes at close quarters and that satisfactory control of the pest can perhaps be achieved if large clouds of dust can be drifted over the field from suitable paths in the area, having regard to direction of wind. The problem thus resolves itself into one of technique of applying the dust over large areas and of finding suitable equipment for it.

The advantage of DDT treatment to tipping tea has become obvious. This

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by himself were exempt from sales tax, the new Act specifically excluded tea from the scope of the term "agricultural or horticultural produce". Largely as a result of U.P.A.S.I. sponsored representations before the Select Committee the Bill was amended so as to provide for exemption from tax in the case of tea sold by the grower for delivery outside and actually delivered outside the province of Madras.

The Madras Sales Tax authorities insist on proof of such outside delivery and this has presented some complication in the case of tea sold in Cochin auctions. These sales are now being assessed to Madras Sales tax even though the teas are mostly exported. As the area where the auctions take place is now part of the Province of Madras proof of outside delivery must be produced in order to get exemption or rebate from the Madras Sales tax.

Tea Chests Fittings, etc.—There was a continued shortage of good quality plywood chests during the year and the position was rendered more difficult by the severe restrictions imposed by Government on imports of foreign-made chests. Although later advice showed that Government were issuing import licences for 1½ million chests, the shortage of chests continued to be severe on many estates. Urgent representations were made to Government by U.P.A.S.I. for liberal issue of import licences.

The Secretary, U.P.A.S.I., has interviewed the Under Secretary to the Ministry of Commerce and as Government have

also received confirmatory evidence from official sources abroad about the inferior quality of Indian tea chests, it is hoped that a fairer and more liberal import policy will be pursued.

Machinery requirements.—During the year a large number of applications were received from members asking for assistance in obtaining various categories of machinery for tea factories and these were examined and duly recommended to the Government authority concerned. Numerous requests were also received for assistance in procuring G.I. pipes and after scrutiny these were forwarded to the Tea Controller for onward transmission to the Iron and Steel Controller. It is believed that a large number of these recommendations have produced favourable results.

Iron & Steel.—Reference was made in last year's report to the U.P.A.S.I. request to Government for the allotment of a quota of iron and steel direct to the Association instead of through the Indian Tea Association. This request was granted with effect from the middle of the year and since then the U.P.A.S.I. has continued to contribute the proportionate share of the I.T.A. Iron and Steel Department expenditure.

The quota of iron and steel allowed to the Association direct by Government, has, however, been found to represent only a fraction of the industry's requirements. The allotment of iron and steel as well as tinplate to individual members

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is being done in as equitable a manner as possible.

During the year, the Government of India adopted a new procedure for acquiring iron and steel for tea chest fittings. Under this procedure, consumers of tea chests have to obtain a quota of iron and steel to cover fittings such as metal corners, etc., and the U.P.A.S.I. has been assigned the work of allotting this quota for the whole of the South Indian tea industry. Here again, the quota of blackplate (P.C.R.C.A.) and wire nails placed at the disposal of the Association has been found to be inadequate for the requirements of the industry.

South India Tea crop, 1947.—The following statement shows the tea crop of each planting district during the calendar year 1947:

	Total 1947 lbs.
Anamallais	19,228,671
Central Travancore	13,256,258
Coorg	325,354
Madakayam	1,737,277
Mysoor	1,580,024
Nellampathies	671,987
Nilgiris	14,305,122
Nilgiri Wynnad	9,977,338
South Travancore	5,797,518
Wynnad	10,745,539
Madras	560,003
Tinnevely	351,850
Kanan Devans	19,311,551
Malabar	218,234
	98,666,726

Report of The U.P.A.S.I. Tea Scientific Section

MYCOLOGICAL

1947—1948

BLISTER BLIGHT

Spraying Trials — Tea Nursery.

To study the effect of spraying and picking off infected leaves in the control of Blister Blight an experiment was started in a tea nursery in the Nilgiri-Wynnad. The layout was of a randomised type with three treatments replicated eight times. The treatments were (1) Picking off infected leaves (2) Spraying with Perenox plus 1% Albolinum and picking off infected leaves (3) Spraying with Perenox only and picking off infected leaves. The nursery was laid down in December. From the beginning of April to the end of June spraying was done once in 21 days and then once in 15 days regularly till the end of December. The strength of the spray fluid was 8 ozs. of Perenox in 10 gallons of water till the end of June and 2 ozs. in 10 gallons thereafter. Only a very light spray was applied to the seedlings and the quantity used never exceeded one gallon per bed of 600-700 seedlings. Owing to the lack of supplies of Albolinum, from the end of September, No. 2 treatment plots were sprayed with Perenox only. Picking off infected leaf stopped from the beginning of November owing to the decline in the incidence of the disease and also in order to help the seedlings in No. 1 plots to recover from the effects of frequent removal of leaves.

The experimental area was visited once a week. The seedlings in each bed were

examined one by one and counts were taken of the number of infected seedlings and also of the number of infected leaves on each seedling. All the infected leaves, including those showing disease in the early stages, were removed. It was thereby ensured that the infection never reached the mature blister stage.

The total number of plants affected and the total number of leaves removed are higher in the non-sprayed plots than in the sprayed. The differences are highly significant. Spraying thus affords a very great measure of protection against the disease in a nursery.

Between the treatments 2 & 3, the infection was less in 2 though the difference is not significant. Nevertheless, the indications are that the addition of Albolinum in the Perenox spray imparts greater protection against infection.

The trend of the two graphs is almost the same. The disease is seen to occur in waves showing three peak periods, the interval between two successive peaks being 7 to 8 weeks. The graphs also show that weekly picking off the infected leaf has not prevented the disease from increasing when conditions are favourable for the multiplication of the fungus. It will thus be seen that picking off of infected leaves as a measure of control is one of very limited value and that the increase or decline of the disease is largely

influenced by prevailing weather conditions.

In the sprayed plots generally, only one leaf on a seedling was infected whereas in the non-sprayed plots up to 8 leaves were infected.

Blister as a rule, were considerably greater in number on leaves of non-sprayed plots than those in the sprayed plots.

Continual removal of infected leaves had a markedly adverse effect on the growth of the seedlings. From the early stages of the experiment the seedlings in the plots where infection was handled off were stunted and continued to be so till November. The difference in the growth of seedlings between the sprayed and non-sprayed plots was very marked. After November, the infected leaves were not removed in order to give the plants a chance to recover and, as at this time the disease was also on the decline, the plants when examined during January were found to have made fair growth. During March, the plants made very good growth. Even then, the difference between the sprayed and unsprayed beds was very marked. Blister Blight was completely absent in March.

Spraying Trials in Pruned Tea.

In a pruning and skiffing experiment spraying trials were undertaken to test the extent of protection that can be given to pruned tea against Blister Blight. The

U. P. A. S. I. COFFEE SECTION

REPORT OF THE COFFEE SECTION COMMITTEE FOR THE YEAR 1947-48

The total area represented on the Section at the end of the year was 73,981 acres of which the subscribing acreage of coffee on 31st March 1948 was 57,759 acres and of minor products of cardamoms, cinnamon and pepper owned by members amounted to 16,222 acres. The regulated scheme of marketing under the Coffee Market Expansion Act, 1947, continued to be in force throughout the year.

Coffee Prices.—Considerable attention was paid during the year to the question of coffee prices. Early in the year producers expressed grave anxiety over the ever-increasing cost of production which threatened to make coffee planting an uneconomic proposition, and they urged Government to grant them a suitable increase in the ceiling prices to enable them to meet the increased costs. The U.P.A.S.I. made strong representations to the Government of India who then deputed a Cost Accountant to investigate the cost of production of coffee. While the industry was awaiting the result of his report, Government decided to raise the price control resulting almost immediately in an acute scarcity of coffee and an alarming

increase in the price of such coffees as were available in the market. Simultaneous with the decision to raise price control, it was announced that if the price of coffee rose unduly after decontrol, the Board would arrange to sell coffee direct to consumers at reasonable prices. At the General Meeting of the Coffee Section held on 22nd March 1948 a resolution was adopted expressing alarm over the high prices of coffee and the serious difficulties experienced by consumers in getting coffee and requesting the Board to take urgent steps to remedy the situation and to bring down the prices to reasonable levels. Replying to this, the Board said that it was arranging supply of raw coffee at reasonable rates throughout South India by utilising the Wholesale Co-operative Societies, but the position is still far from satisfactory.

Central Excise Duty.—The Government of India's budget proposals for 1948-49 included provision for an enhancement of the excise duty on coffee from 2 to 4 annas a lb and on the protestations of the U.P.A.S.I. the duty was finally fixed by Government at 3 annas a lb. instead of 4 annas.

Fertilisers and Petrol.—The availability of chemical fertilisers for use in coffee plantations continued to be difficult. The total allotment of fertilisers for tea and coffee estates in South India for the year 1947-48 only amounted to 2,400 tons. Coffee estates have also experienced considerable difficulty in obtaining adequate supplies of petrol for spraying purposes.

Pepper.—Towards the close of the period under review the Government of India re-introduced the control over exports of pepper and allotted destination quotas for export to the United Kingdom and other countries amounting to some 1,610 tons. It was also announced that applications from bona fide shippers for licence to export reasonable quantities of pepper to other destinations in soft currency areas would also be considered by the Export Trade Controller, Madras.

Cardamoms.—There were no important developments affecting cardamoms during the year, and there was consequently no meeting of the U.P.A.S.I. Sub-Committee.

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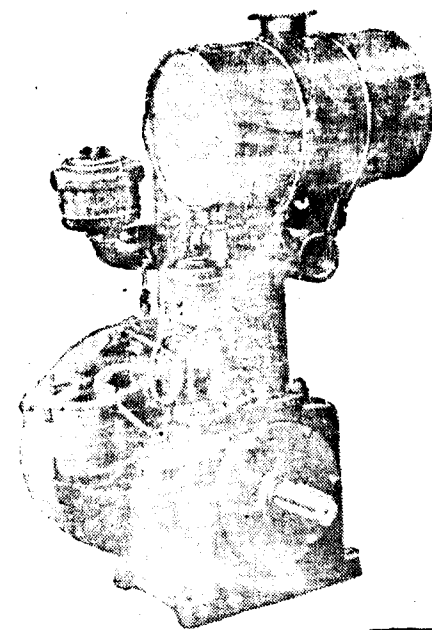
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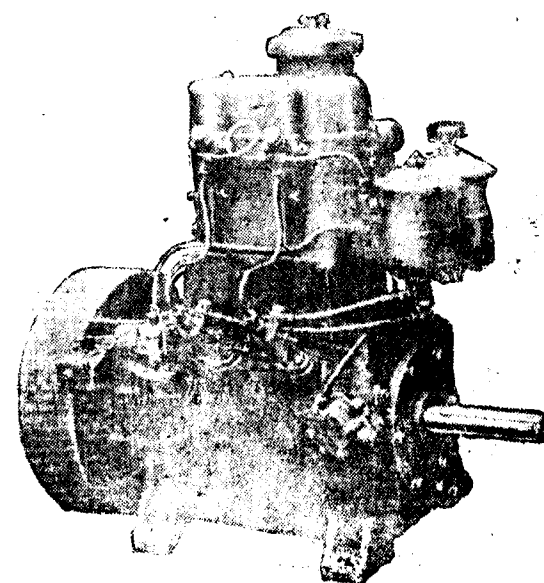
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Views of Sectional Heads

Mr. H. M. Macpherson, Chairman of the Rubber Section said that the price which the rubber producers received throughout the year barely kept pace with their increasing costs until recently, when it has fallen behind. There is an increasing area of rubber already closing down which cannot produce for the existing price in view of the rising costs imposed on them. He demanded a price related to production costs and a reasonable profit and security. Nothing less than a rupee per lb. would be justified by costs.

The Cost Accountant's report was very unsatisfactory. The capital cost per acre of a mature estate was fixed at Rs. 750 and the average crop at 500 lbs. an acre to determine what was fair return for an estate and what the price was to be. The figure of Rs. 750 per acre had been arrived at more or less by rule of thumb from the figures of a few selected companies, and did not cover such things as Debentures, mortgages, etc. Nor did it consider the capital cost of the higher capitalised estates with budded rubber. The figure of 500 lbs. per acre crop is grotesque and if multiplied by the South Indian acreage of 1,58,322 we find that our crop for South India should be 35,331 tons, a figure more than double what South India actually gets.

While Planting companies which are paying dividends are rapidly vanishing, large manufacturers pay steady dividends of not less than 30 per cent. 80 per cent. of the capital in India in rubber planting Companies is invested in India plus about 15,000 small-holding Indians, and the industry employs over a lakh of workers, against the few thousands in the manufacturing industry.

"Manufacturers enjoy a protective tariff and it has been suggested that we should also have a protective tariff against the dumping into India of other countries' surplus cheap rubber to the ruin of this strategic industry. We suggested that such a tariff should be devoted to Scientific research and the proceeds used for our mutual benefit. It has been disclosed that the manufacturers have been enjoying their protective tariff on the assumption that the price in India would be in the vicinity of 87 cents, and the world price 55 to 60 cents. This again very fully emphasises the unfair attitude which the manufacturers have maintained towards producers."

COFFEE

In his address at the Coffee Section, Mr. N. B. Athrey, Chairman, said that the grower will have to spend Rs. 382-8 per acre to maintain his estate in an efficient condition, while the return per acre which he can be expected to get for the season works out approximately to Rs. 85.

At the present prices of milk and sugar, it is impossible for a middle class Indian drawing a salary of Rs. 100 to Rs. 150 a month, to drink coffee at home at the present prices of coffee. Our class has also to bear the incidence of the excise duty on coffee. At the moment, the price of coffee is four to five

times as much as on a cup of tea. An equal duty on the two plantation products per lb. weighs heavily against coffee as a drink, and considering the present difficult conditions, the consumer should be given relief by the removal of this inequitable duty.

TEA

Addressing the annual general meeting of the Tea Section Mr. C. J. Madden, Chairman, said that over 60 per cent. of the production costs had been spent on labour and staff charges.

MR. C. M. KOTHARI

Mr. C. M. Kothari, M.L.A., requested the Government to back up the Plantation Industry's case for a reduction in Central taxation. The industry provided employment for about 2 lakhs of labourers. He referred to the headaches given to planters by so-called Labour Conciliation Officers. Conciliation officers are meant to conciliate and not to pinprick employers. It will be found that 80 per cent. of the cases are frivolous.

(contd. from page 35)

the case of the higher. The efficiency is so low that 'Agrocid-2' dressing can hardly be considered as a satisfactory practical measure for the control of the root-knot disease.

Examination of plants at the end of 5½ months indicated that the plants in the treated series, which had suffered initial set-back, made somewhat better growth than the control in the later period, but eelworm attack on them was as heavy as on those of the control.

RED SPIDER AND OTHER MITES

In connection with defoliation which became prominent in the latter part of the year over large areas of tea in the Nilgiris and Nilgiri-Wynaad, the question of the possible implication of these mites was gone into, as they were almost invariably present to a greater or less extent on defoliating bushes. A survey was made by visiting a few estates in which defoliation was prevalent and a report was drawn up for the Plant Protection Sub-Committee incorporating such observations as it was possible to make.

Red Spider and other mites are known to occur on tea in South India but have not been regarded as serious pests. The present survey indicated that these mites were far more numerous than at any time previously. It did not appear improbable that their attacks, though apparently mild in each year, have had a cumulative effect on the bushes and aggravated their debility. Evidence, however, is not sufficient definitely to connect defoliation with mite damage, as several other factors are also involved in the question.

SOIL CHEMIST'S REPORT

Tea Experimental Station.—The conclusions referred to in last year's report are confirmed by figures. The yield from the manured plots is higher than that during the first year of the previous cycle and there is no sign of

falling off in yield from the unmanured plots. Once again, there is no significant response to 40 lb. application during first year of pruning cycle.

Soil Organic Matter & Nitrogen Relation to Manuring

The factorial experiment has now completed seven years of manuring. In order to find whether the organic matter and nitrogen contents of the soil have altered as a result of continuous manuring with inorganic fertilisers only, determinations of these constituents were made on samples of soil from the area. The soil from each plot obtained from 25 borings with a 2" auger was mixed thoroughly and analysed. Duplicate determinations were carried out on each sample.

There is no change in the organic matter content of the soil. Although the nitrogen content is higher in the manured soils the differences are not significant. It has been found in N.E. India that while 40 lb. application of nitrogen did not increase significantly the organic matter and nitrogen contents of soil, 80 lb. and 120 lb. applications, increased these constituents significantly. The prunings were buried in N.E. India, while in the present trial they were left to rot on the surface of the soil, becoming incorporated in course of time. In Ceylon, where the dose of nitrogen was 40 lbs. per acre annually for 12 years, "actual determinations of both carbon and nitrogen in the soil showed no increase that could be relied upon although small positive differences were noted". It is clear that continuous application of inorganic manures has not led to a drop in the amount of organic matter in the soil.

Increase in Yield in Relation to Manuring

To find whether the increased yields obtained as a result of nitrogen application is due to increase in the weight of individual flush or to the production of a larger number of shoots or to a combination of both these factors, the following trials were carried out.

18 bushes in each plot were marked and, during each plucking round, a circular ring 2 ft. in diameter was placed in the middle of each bush and the total number of shoots falling within this area were counted.

80 lb. application of nitrogen and both levels of potash show significant differences. It will be remembered that in total yield potash does not give significant increase.

After each plot was plucked, 100 shoots (1) of two leaves and a bud only and (2) of all kinds were chosen at random and weighed.

It appears that the increase in yield due to manuring is due to the production of a large number of pluckable shoots and not due to increase in weight of individual shoots. This is corroborated by the increased weight of prunings from the manured plots.

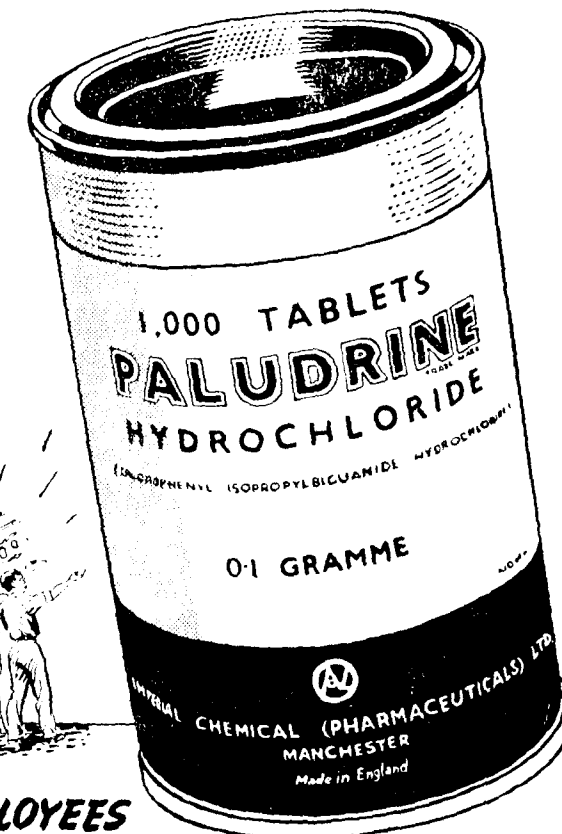
(2) Anamallais (Mudis). The fourth year yields show there is significant response to 60 lb. application of nitrogen, 1 lb. of nitrogen giving 2.3 lbs. of made tea.

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