

# THE INDIAN COCONUT JOURNAL

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JANUARY-MARCH, 1949



# THE INDIAN COCONUT JOURNAL

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# THE INDIAN COCONUT JOURNAL

JANUARY TO MARCH, 1949.

## AS WE SEE IT

**T**HE paper entitled "Coconut Cultivation", by Mr. C. M. John, which leads off the contents of this issue of the Journal is a succinct yet comprehensively informative account of the proper methods of cultivating coconuts, which every coconut grower should read, mark and digest. The coconut grower has yet to shed a number of outmoded notions and adopt a number of modern and scientific practices, if coconut cultivation is to be made successful and profitable. And we feel sure that growers will be amply repaid by a perusal of Mr. John's paper and the adoption of the methods of cultivation advocated in it. Of all the points stressed in the article perhaps the most important one is that which relates to the raising of quality seedlings. It is not every grower, particularly not the small grower, who is in a position to raise coconut seedlings in a scientific manner. And it is primarily to meet the demand for quality planting material, on the part of

such growers, that nurseries are run under the joint auspices of the Indian Central Coconut Committee and Provincial and State Governments in the coconut producing areas. If growers will take full advantage of these nurseries, get their supply of coconut seedlings from them and follow the advice given by Mr. John in regard to the subsequent stages of cultivation, there is no reason why they should not get an adequate return for their labours.

♦ ♦ ♦ ♦ ♦

**T**HE article on "Ceylon's Coir Fibre Industry" by Mr. S. Nataraja reproduced in this issue from the "Ceylon Trade Journal" must give food for thought to those in India who are anxious to utilize as fully and profitably as possible the vast quantity of coconut husks available in this country and of which only about 20.5 per cent is now used in the coir industry. In India, coir fibre is prepared by hand, on a cottage industry basis, with an eye to

its utilization for the manufacture of finished coir goods, whereas in Ceylon the fibre intended for coir manufactures is prepared as in India, while the production of fibre intended for export is highly mechanized and the product itself finely graded. It is an interesting sidelight on the Indian coir industry to read in this article that India, herself an inexhaustible reservoir of coir fibre, used to import from Ceylon considerable quantities of coir mattress fibre. Having regard to the great possibilities that exist in India for manufacturing coir fibre by such mechanical methods as are employed in Ceylon, it is surprising to note that during the 16 years from 1934-35 to 1947-48, the peak export figure for coir fibre was only 1,075 tons. There is no tendency evident to build up either this industry or the export trade based on it, for we find that the quantity of fibre exported in 1947-48 is as small as 349 tons.

**I**N conjunction with the above article we would recommend to our readers a perusal of Mr. V. K. Achyutha Menon's article entitled "Stray Thoughts on Coir", also included in this issue. Mr. Menon rightly emphasizes the need for instituting researches on coir under an all-India agency like the Indian Central Coconut Committee, if the coir industry in this country is to hold its own, not only against industries based on other vegetable fibres, but against possible developments in the coir industry itself in the other coconut

growing countries. As the author has pointed out science is a dynamic force and those in the coir industry who now feel secure in the monopoly they enjoy will do well to take note of the tide of scientific research and its possible consequences.

**N**EXT to the Province of Madras, the State of Travancore has the largest acreage under coconut and also some of the biggest industries based upon its products. The article on "Coconut Industry in Travancore" published in this issue should, therefore, prove of considerable interest to our readers, giving as it does a composite picture of all aspects of the industry in the State.

**I**N these sultry summer days; the tender coconut is no doubt in great demand and wayside sights such as the one in our cover picture are becoming increasingly frequent. However, few persons perhaps know that every year about 48 million tender coconuts are consumed in India, that is about 1.6 per cent of the total Indian production of coconuts. As the tender nuts cannot be stored for more than a few days without the water inside getting insipid and useless, the demand for them is highly localised. It is, however, interesting to calculate that were all the nuts now consumed as tender ones allowed to mature they would yield about 1000 tons of copra besides valuable byproducts like the shell and the husk.

# COCONUT CULTIVATION\*

By C. M. JOHN

**T**HE coconut is essentially a tropical palm thriving well within 23° north and south latitudes and up to an altitude of about 3,000 feet above the sea level. In India it grows luxuriantly in the coastal and the deltaic tracts as also in some of the interior uplands of Mysore, where a good supply of soil moisture and proper drainage are assured. To make the coconut yield well and be remunerative, it is necessary to grow it on suitable soils even though the palm is capable of adapting itself to varied conditions of soil and climate.

## SOIL

The best soil for the coconut is rich alluvium with a fair proportion of sand or coarser particles that ensure proper drainage. Extensive plantations are met with in laterite loamy soils. Coconuts also thrive and yield well when planted in black clayey soils, on bunds of canals or channels and on the banks of rivers. They can be successfully

MR. C. M. JOHN, formerly Oil Seeds Specialist with the Government of Madras is now Special Officer with the Indian Oil Seeds Committee.

grown even in sandy soils provided there is an assured supply of good underground water within the reach of the roots and the trees are properly manured. Soils lacking in water-holding capacity and suffering from excessive dryness or improper drainage are unfit for coconut cultivation. In other words, proper supply of soil moisture either through well distributed rainfall, percolation water or irrigation, and sufficient drainage are essential for coconuts and extensive planting should be undertaken only in lands satisfying these conditions.

## VARIETIES

Of the varieties of coconuts available in different countries, the tall variety and the short or the dwarf variety are the most striking ones. The tall variety is the one that is largely cultivated in India and elsewhere for commercial purposes. It is a long lived (80 years) hardy palm yielding nuts, copra, oil and fibre of good quality. These trees also yield on tapping good quantity and quality of juice for fermenting or for the production of jaggery and sugar. Among the tall variety, growers recognize different sub-varieties based on the colour, shape and size of nuts and their bearing nature. Trees

\* Pamphlet issued by the Department of Agriculture, Madras.

yielding a large number of medium-sized round nuts are considered the best for propagation on a plantation scale. The tall variety commences to yield in about 8 to 10 years after planting when raised under unirrigated conditions. The dwarf variety, on the other hand begins to yield in about four years after planting. But it is a delicate, short-lived (30 years) palm susceptible to fungus and insect attacks. Moreover, the nuts of the dwarf variety are small and the quality of the copra is inferior. Although some people like it for its earliness in bearing and the attractive colour of its nuts, it is never recommended for cultivation on a large scale.

### SEED MATERIAL

In view of the fact that the bearing capacity of a coconut palm can be properly judged only in about fifteen years after planting and that a tree easily lives for about eighty years, the selection of proper planting material that will ultimately give high yields, is of utmost importance. Any neglect in this respect cannot be easily remedied when once the trees get established and a plantation containing trees giving poor or indifferent yields will result in loss to the planter as long as it lasts. To obtain proper seed material, selection has to be done on the following lines:—

(a) *Selection of parent trees.*— (i) Parent trees have to be selected

from a garden which contains healthy middle-aged and properly bearing trees and which does not require irrigation during the dry months of the year.

(ii) They should be heavy yielders giving about 100 or more nuts per tree per year. The yearly yield of a tree can be roughly estimated by counting all the nuts on the tree from the youngest to the oldest, as the coconut palm bears a year's crop in its crown.

(iii) The trees should be regular bearers, yielding heavy crops every year instead of in alternate years.

(iv) The trees should be healthy, vigorous and robust with a thick-set crown, spherical in outline, having many leaves borne on short, thick stalks. The peduncles or stalks of bunches must be stout and should not show tendency to buckle or droop down.

(v) Trees having medium-sized nuts with nearly round shape are better than others, because such nuts are associated with heavy yield and high copra content.

(vi) Avoid trees growing close to houses or other favoured conditions as it is difficult to differentiate intrinsically good ones in such places.

(vii) Avoid trees producing barren nuts, i. e., nuts which are empty or do not contain well developed kernel inside or trees that shed their nuts before they are fully mature.

(b) *Selection of seed nuts.*— (i) Select medium-sized, round nuts when they are fully mature but not dead ripe. Nuts are fully mature when they are about 12 months old after the opening of the female flowers. Such nuts can be easily distinguished from the colour of their husk and the quantity of water contained in them.

(ii) Discard a few nuts at the base and at the top of the bunch, as also nuts having cracks or any unhealthy signs about them. These are inferior for seed purposes.

(iii) Reject nuts which do not show signs of the presence of water or 'milk' inside, and those having loose kernel which rattles on shaking.

(iv) Nuts ready for harvest during the period February to about the middle of May are the best and should be selected for seed purposes as they give a high percentage of germination and produce vigorous seedlings.

(c) *Harvest and preservation of seed nuts.*— In hard soils bunches of seed nuts are cut and lowered by means of ropes to avoid damage that may result due to the fall from the crown. The seed nuts may be stored for about a month till the husk becomes dry before they are put in the nursery. If seed nuts are stored for four or five months, they become over-dry and the water (milk) inside the nut disappears and the kernel at

times rattles. Such nuts are not fit for sowing as they do not germinate. To prevent seed nuts from drying, they are best preserved in sand instead of exposing them direct to the atmosphere. For this the seed nuts are spread with the stalk end up on the floor of a shed over a layer of about 3 inches of sand and the nuts completely covered up with sand and thus protected from the direct action of the atmosphere, till they are required for sowing.

(d) *The nursery.*— The best place for a nursery is sandy soil located near a well or other water source. In places where sandy soil is not available the seed bed has to be made up of sand by digging out the required area to a depth of about a foot and a half and removing the soil and filling it up with sand. This is necessary to prevent white-ant attack and to provide proper drainage. The seed bed may be of any convenient breadth, say about 5 feet, to facilitate watering. In places severely infested with white-ant, it is customary to char the sides of the pit by burning rubbish in it to prevent the spread of white-ant infestation into the nursery area.

The nuts are buried in the seed bed in a horizontal, vertical or oblique position with the stalk end up so that the husk appears just above the surface of the soil. A spacing of about a foot and a half from nut to

nut will be quite convenient if the seedlings are to remain in the nursery for over a year. It is not usually necessary to manure the seed beds. Manuring with organic manures like farmyard manure which attract white-ants should be avoided.

The nuts may be planted with advantage in June or July with the beginning of the south-west monsoon or in October or other rainy months. Planting in the rainy months saves watering charges, as profuse watering has to be done in the initial stages, usually on alternate days. Germination of nuts commences in about three months after planting and ends in another two months. Usually from 90 to 95 per cent of seed nuts germinate. Regular watering of the nursery and shading of the seedlings during the summer months are necessary till the seedlings are transplanted.

(e) *Selection of seedlings.*— Selection of seedlings is as important as the selection of parent trees and seed nuts. The points to be noted in the selection of seedlings are:—

(i) Seedlings should be healthy, vigorous and robust looking with a large number of leaves, good girth at the base, short, thick leaf stalks and a large number of roots.

(ii) Early germinated nuts give better seedlings than the late germinated ones and are associated with early bearing.

(iii) Early splitting of leaves into leaflets is a good sign of vigour.

(iv) Unhealthy seedlings, with poor, stunted growth and those that are thin and lanky should be rejected.

(v) By such rigorous selection about 20 to 40 per cent of seedlings get rejected. Therefore, a sufficient number of seed nuts should be planted in the nursery to get the required number of selected seedlings.

The best time at which seedlings can be removed from the nursery for transplanting is when they are about a year old. The seedling should not be pulled out of the seed bed by force, but the roots should be neatly cut and the seedling with the nut gently removed by holding the nut. Younger seedlings establish more quickly when transplanted than the older ones, but they are subject to damage in transit, attack by white-ants in the field, and may not withstand waterlogging in the rainy months. Seedlings two or three years old are generally preferred for planting on bunds of rice fields or similar situations and after planting they have to be held firm by suitable props for about a year till the seedlings strike roots and get established.

#### SPACING OF TREES

If coconut trees are to bear well, plenty of sunlight is necessary. Where trees are overcrowded there is a tendency for them to grow tall and lanky in their struggle to get

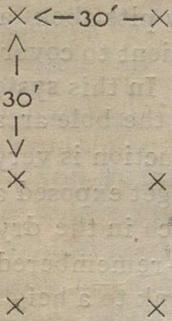
at sunlight and considerable energy is utilized in producing a tall trunk at the expense of yield. Also in closely planted gardens rat trouble may be serious as the rats find easy access from tree to tree due to overlapping of leaves. A spacing of about 25-30 feet between adjacent trees or about 80 to 60 trees per acre may be considered suitable for most places though in certain rich soils under favourable conditions even 100 trees

per acre may be planted with advantage.

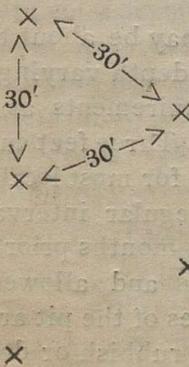
**METHOD OF PLANTING**

Planting should be done in straight rows at regular intervals to facilitate proper cultural operations being carried out with labour saving implements. There are two methods of planting commonly adopted, viz., the square method and the triangular method which are indicated below:—

**Square method:—**



**Triangular method:—**



## COCONUT CULTIVATION

In the triangular method of planting more trees can be put in than in the square method as shown hereunder:—

Spacing in feet.	Number of plants per acre.	
	Square method.	Triangular method.
24	76	87
25	70	80
26	64	74
27	60	69
28	56	64
29	52	56
30	48	60

### DEPTH OF PLANTING

The depth at which seedlings should be planted in relation to the ground level depends upon the nature of the soil and the height of the water table. The higher the water table the more shallow should be the planting. In most red loamy (laterite) soils three feet deep planting will suffice. In hard gravelly soils where the water table is low planting at a depth of even four feet may be necessary. In rice fields and backwater areas which are proposed to be converted into coconut gardens by gradually raising the level of the land by the addition of river silt and sand, seedlings should be planted on mounds 2 to 3 feet high and about 3 feet across raised for the purpose, and the interspaces filled up as the trees progress in growth. Under the dry system of coconut cultivation, in places where the water table is low in summer it is inadvisable to plant

seedlings on the surface of the soil in shallow pits about a foot deep and just sufficient to cover the nut of the seedling. In this system of surface planting, the bole area available for root production is very limited and the roots get exposed and the plants suffer much in the dry weather. It should be remembered that the base of the trunk to a height of 2 or 3 feet is the root bearing region and should therefore be well within the soil.

### PITS FOR PLANTING

Pits may be about three feet wide and the depth varying according to local requirements as already mentioned. Three feet cube pits may be suitable for most localities. Pits are dug at regular intervals about two or three months prior to the time of planting and allowed to weather. The sides of the pit are charred by burning rubbish or dry leaves in the pit to prevent white-ant attack.

## PLANTING

It is a good practice to provide a foot of loose soil made up of earth-sand and ash (10 lb.) at the bottom of the pit while planting. The seedling is kept in position at the bottom of the pit and the nut is covered up with the soil which is pressed down. The best time for planting is during the rainy months. If strong winds prevail, the seedlings have to be held in position by proper supports to prevent them from shaking which hinders root formation. When the sun is rather hot, seedlings have to be shaded by sticking up bits of coconut leaves by their side.

## CARE OF PLANTATION

(a) *Fence*.— The young coconut plantation has to be protected by a suitable fence against cattle trespass till the trees grow tall enough to be beyond the reach of cattle. This is very important for the successful raising of a coconut garden as seedlings eaten up by cattle off and on, seldom grow into good bearing trees. The fence once put up should be periodically attended to and repaired. On the West Coast mud or laterite stone walls are usually constructed along the boundary of a plantation.

(b) *Watering*.— Transplanted seedlings should be watered regularly in the absence of rains till they strike roots and get established. Watering should also be done in the dry and

summer months. The practice is to water the seedlings on alternate days in the first year of planting and once or twice a week in the subsequent years till the plantation is about six years old.

(c) *Cultivation and after-care*.— The garden should be laid out into convenient blocks with proper bunds and drainage channels according to the slope or contour of the land. The soil should be cultivated and kept free from weeds. The seedlings should be frequently examined for any insect attack or fungus disease and remedial measures adopted in time.

## CATCH CROPS

Catch crops are usually grown for about five years after planting. In South India, the common catch crops are colocasia, yam, tapioca, sweet potato, pulses, ragi, varagu, samai, cholam and dry paddy. The best crops are perhaps pulses that renovate the soil or which do not exhaust the soil too much.

## MANURES AND MANURING

For the proper maintenance of coconut plantations, manuring has to be done systematically. The poorer the soil, the greater the quantity of manures required. To make the tree yield properly, manuring has to be done judiciously with a view to get economic returns. The effect of manuring and cultivation on the yield

of the trees can be noticed only after a period of three years, and these operations have to be carried out regularly every year to maintain the good condition of the trees and the yield at a high level.

Ash, particularly that obtained by burning leaves, husks, etc., of the coconut is the cheapest, easily available and the most popular manure used for the coconut on the West Coast. It should be stored properly and should not be exposed to the leaching action of rain. Ash may be applied at the rate of 20 lb. or more per tree per year. The best manure, however, is 3 lb. of ammonium sulphate or 10 lb. of groundnut cake plus 20 lb. of ash per tree per year in addition to raising and ploughing in a green manure crop (cow gram, sunn-hemp, *crotalaria striata*, etc.) besides regular cultivation of the soil. Well-rotted cattle manure at the rate of 100 lb. per tree per year is also one of the best manures. The other manures commonly used are fresh fish (40 lb.), fish guano or meal (10 lb.), green leaves (50 lb.), and potassium sulphate (1½ lb.) in place of ash. Tethering of cattle in the gardens at night and covering up the dung and urine with soil on the following morning as practised in some localities is worth adopting.

*Coir dust* obtained in the manufacture of coir fibre from coconut husk, though it does not contain any

manurial ingredients is a good agent for increasing the moisture retaining capacity of the soils. It can be mixed with other organic manures and buried in trenches about a foot deep between rows of palms.

*Coconut husk* is rich in easily available potash — the most important manurial requirement of the coconut palm. In places where husk is not utilized for coir making and therefore very cheap, it is highly desirable that it is buried in the plantations under rainfed conditions at the rate of about 500 to 1 000 husks per tree. Trenches 6 feet wide and a foot or a foot and a half deep are dug between rows of palms and on layers of dry coconut leaves the husks are spread with the hollow face up along with other farm rubbish. The trenches are then filled up and covered with soil. The effect of burying husks is as good as the application of ammonium sulphate and ash provided a green manure crop is grown and incorporated into the soil every year. The beneficial effect of a single application lasts for about 8 years. Also the husk acts as a "water reservoir" during summer months and helps in the retention of moisture in the soil. The important point to be remembered in this connection is that the husks meant for burying should not have been exposed to rains, for by so doing the easily soluble potash in the husk is washed off.

The proper time for the application of manures or for manurial operations is when there is sufficient moisture in the soil. At the same time care should be taken to see that the manures applied are not washed off during heavy rains. All precautions should be taken in plantations against soil erosion by levelling, terracing and erecting proper bunds wherever necessary. Weeds also should not be allowed to rob the coconuts of their manure. They should be checked by regular cultivation.

The manures recommended here are best applied after the heavy rains. There should be an interval of about a month between the application of ash and ammonium sulphate. The manures may be applied broadcast and then ploughed into the soil. Cattle manure may be applied as a basal dressing at the time of sowing the green manure crop at the beginning of the south-west monsoon rains.

### CULTIVATION

Inter-cultivation in bearing gardens is of the greatest importance as it improves the yield of trees to a remarkable extent even without manuring. At the Agricultural Research Station, Kasaragod, in South Kanara District (under unirrigated conditions) regular inter-cultivation alone without any manuring increased the yield by 171 per cent, while the yield of the uncultivated and unmanured trees declined by 7 per cent.

The importance of cultivation is recognized by many garden owners and they dig the garden with mammuties once or twice in a year. Digging is more costly than ploughing. In loamy soils digging may cost about Rs. 10 or more per acre and ploughing with iron plough may cost only about Rs. 5 per acre. There is also the common practice of digging around each tree to a radius of about 4 or 5 feet leaving the rest of the garden uncultivated. But this has been found by experiment to give only an increase of 2.8 nuts per tree as against 39.9 nuts given by trees in the completely cultivated plot.

The following is the schedule of manuring and cultivation best suited to West Coast gardens and can with slight modifications be adopted elsewhere to suit local conditions of rainfall, cost, availability of manure, etc. :—

**March-April:**— One ploughing with iron plough to prepare the land to receive the summer showers.

**June:**— When there is slight lull in the south-west monsoon, give a basal dressing of ash at 20 lb. per tree or cattle manure at 100 lb. per tree and sow a green manure crop preferably in plough furrows at 25 lb. per acre as a green manure crop.

*September:*— Slash or cut down the green manure and plough it in with a suitable iron plough. If ammonium sulphate (3 lb. per tree) is proposed to be applied, it may be broadcast and ploughed in along with the green manure crop at the first or second round of ploughing. Alternately if cattle manure has not been applied as a basal dressing for green manure crop this may be applied in September and worked in.

*October:*— If ash is not already applied it may be broadcast now and a cultivator worked to incorporate it into the soil. Bunds washed off during rains must be rectified and all drainage vents blocked up.

*December:*— Work the cultivator again to remove weeds and create soil mulch.

## IRRIGATION

Want of sufficient moisture in the soil limits the production of nuts. It is, therefore, very desirable that coconut gardens are irrigated particularly during the summer months if there are facilities for irrigation.

## YIELD AND HARVESTS

Under favourable conditions, coconut palms commence to flower in about five years after planting. In loamy soils it may be in 7 or 10 years and in poor soils it may be as late as

15 or 20 years after planting. In about five years after the commencement of first flowering, the trees begin to yield normally.

As already mentioned, coconut gardens should be regularly cultivated and manured every year and taken care of; neglect of trees even for a year is reflected on the crop in succeeding years.

Properly maintained and regularly cultivated and manured gardens yield from 60 to 100 nuts per tree per year in loamy unirrigated soils. In neglected gardens the yield may be 20 nuts or less per tree per year.

It is a good practice to harvest nuts only when they are fully mature, unless for special markets less mature nuts are required. The husks of fully mature nuts become dry in a short period after harvest and dry husks are not valued for the manufacture of coir.

Coconuts are best harvested once in every month or in forty days. On the West Coast coconuts are harvested six to eight times in a year. When the interval between two harvests is long two bunches are harvested from a tree at a time.

## COPRA

The price of nuts depends upon the quantity and quality of copra that can be obtained from them. Fully mature nuts yield the largest quantity and best quality of copra and give high grade oil when milled. Copra

obtained from immature nuts is inferior and gives oil of poor quality. By harvesting nuts two months before maturity the loss in the quantity of copra is nearly one-fifth. The nuts harvested in the summer months are larger in size and yield more copra and oil than those of other months. Larger quantity of copra per nut is also obtained from manured trees than from nuts from unmanured trees. The copra content of the nut increases by about 3 to 5 per cent when unhusked nuts are stored for about a month or two.

The best quality of copra is made by breaking husked nuts into halves and drying them in the sun for a period of about seven days. Copra made during the rainy season by "smoking" near a fire place is of inferior quality being sooty and the oil expressed from it is coloured and smells of smoke.

Copra is liable to deteriorate very rapidly if it is not dried properly and when stored under ordinary go-down conditions. It is advisable to store only well dried copra in a dry and well ventilated place free from rats and insects. If storage for a long period is necessary it should be periodically dried in the sun.

### TAPPING

Tapping the unopened inflorescences (flower bunches) of the palm for toddy is a common practice in most

tracts where the coconut is cultivated. Three weeks after the commencement of tapping, the juice begins to flow and the flow lasts for about a month. The average yield of juice per palm, per day, is about  $3\frac{1}{2}$  lb. In a tree the maximum quantity of juice is obtained in the third month after the commencement of tapping. Trees which yield a large number of nuts also yield a large quantity of juice. Tapping improves the yield of nuts of poor bearers only; and the beneficial effect of tapping lasts for about four years after it is discontinued. For dry localities tapping should be confined only to the rainy months of the year and discontinued after four seasons.

### UNDER-PLANTING

Under-planting in old gardens is best started when the palms are about 60 to 70 years old. The old trees may be cut down when their yield goes down as low as 10 nuts per tree per year. This affords a better chance for the newly planted trees to thrive. Under-planting of new seedlings should be done sufficiently away from the old trees. It is undesirable to start under-planting too early, when the garden is only about 30 or 40 years old except in surface planted gardens which are short lived, because the newly planted trees compete with the old trees and reduce their yields.

## DISEASES

(i) *Bud-rot*.— This is the most serious fungus disease of the coconut. Often an attack results in the death of tree, unless it is treated in the very early stages of the attack before the tender growing point is affected and gets completely rotten emitting a characteristic fetid odour. During August and September, after the heavy south-west monsoon rains, when conditions are optimum for the prevalence of the disease, trees should be frequently examined. The first symptoms of the disease are characteristic round discoloured patches on the young leaves of the crown. All affected portions of the crown should be cut, removed and burnt and the crown sprayed with 1 per cent Bordeaux mixture. Trees killed by the disease should be cut and burnt to avoid the spread of the disease to healthy trees.

(ii) *Shoot-rot*.— This disease is common in young palms. The leaves begin to rot from the tip downwards and at times the rot extends to the central bud. This can be controlled by cutting off the diseased portions and spraying the crown with 1 per cent Bordeaux mixture. Shoot-rot is most probably a deficiency disease and application of potash manures helps in reducing the incidence of the attack.

(iii) *Fruit-fall or Mahali disease*.— This disease is very bad in arecanut

palms and sometimes it affects coconut trees growing in the midst of areca palms. The nuts rot and drop from the bunches. The disease can be prevented by spraying the bunches with 1 per cent Bordeaux mixture before the setting in of the south-west monsoon followed by another spraying in July-August.

(iv) *Stem-bleeding disease*.— From the trees attacked by the disease, a dark red liquid is seen oozing through cracks in the trunk. The inner tissues rot and in bad cases the tree dies. In the early stages of attack the affected parts of the stem should be completely scooped out with a chisel and crude oil or tar applied to the cut surfaces. The disease is rather severe in soils lacking proper drainage. In such places drainage should be improved by opening proper drainage channels.

## PESTS

(i) *The Rhinoceros beetle (Oryctes rhinoceros)*.— The rhinoceros beetle is one of the most destructive pests of the coconut palm and is very common all over the coconut tracts. The adult beetle attacks the crown, boring into the tender parts. Young flower bunches and leaves are damaged with the result that yield of nuts is considerably reduced. The damage to young trees is sometimes very severe. The place of attack can be located by the presence of lumps of chewed material pushed out of

burrows in leaf axils. The trees should be frequently searched and the beetle extracted from the burrows by piercing it with a sharp thin iron hook about 2 feet long, and killed. Filling of leaf axils with sand is said to reduce the attack. As the beetle generally breeds in large numbers in manure and compost pits and rubbish heaps, these places should be searched at least once a month for the large fleshy whitish grubs, which should be collected and destroyed.

(ii) *Black-headed caterpillar (Nephantis serinopa)*.—This caterpillar pest of the coconut, though sporadic, causes serious damage in certain years. In South Kanara, thousands of acres of coconut gardens are affected periodically and serious damage is caused. The pest appears in large numbers and eats away the leaves leaving the mid-ribs bare. Badly attacked trees present a burnt up appearance. The caterpillar thrives in large numbers in webbed galleries on the under surface of leaflets. All attacked leaflets and in severe cases the entire leaves should be cut and burnt so as to destroy the pest.

(iii) *White-ants*.—White-ants cause serious damage and death to transplanted seedlings particularly in the early stages. The nut of the seedlings and the base of the shoot are attacked. It is difficult to detect the trouble until the seedlings show signs of withering when it is too late to save them. It is, therefore, necessary

to take precautionary measures to avoid white-ant attack. This is best done by covering the nut of the seedling all round by a layer of sand instead of ordinary soil. As a deterrent, crude oil emulsion may be applied at the rate of one pound in ten gallons of water. The treatment may be repeated when necessary till the transplanted seedlings are well established. It is also advisable to search for white-ant hills and destroy the queens.

Co-operative action in combating pests and diseases is much more effective than isolated individual effort.

#### RECOMMENDATIONS

(i) Select suitable land to plant the coconut on a large scale. Avoid very poor soils.

(ii) Obtain good planting material from the Government Coconut nurseries. If this is not possible, the following procedure may be adopted. Select the best seed nuts from healthy heavy yielding trees; raise your own nursery. Select the best seedlings.

(iii) Deep planting is better than surface planting. Triangular method of planting economizes space more than the square method. Planting in straight rows facilitates cultural operations with implements. Trees should not be spaced less than 25 feet apart.

(iv) Fence the garden properly and protect the seedlings from cattle

trespass. Provide necessary bunds and lay out the garden into convenient plots to facilitate cultural and manurial operations and to prevent soil erosion.

(v) Water the transplanted seedlings in the absence of rains till they get established and again in the dry and summer months for about six years.

(vi) Guard against white-ant attack.

(vii) Regular cultivation and manuring of the soil are the most necessary operations. Ammonium sulphate, groundnut cake or cattle manure, ash and a green manure crop form

the best combination of manures for the coconut. Never neglect proper and periodical cultivation of your garden.

(viii) Harvest only fully mature nuts unless immature nuts are required for special purposes.

(ix) Search the trees for diseases and pests and give timely and necessary treatment. Regular search for and destruction of Rhinoceros beetle will increase yields.

(x) Bestow proper care and sustained attention on your coconut garden and a steady income will be assured to you.

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# CEYLON'S COIR FIBRE INDUSTRY

By S. NATARAJA

COCONUT husks are utilized in Ceylon for the extraction of fibre, manurial purposes and, to a limited extent, as fuel. The most remunerative use, however, is in the extraction of fibre. The husk which is the outer covering of the coconut is a by-product of the latter and it will be useful at the very outset,

to assess the world production of coconuts.

Statistics of the world acreage and average production of coconuts, except in the case of the Philippines, Ceylon and India are meagre and of doubtful accuracy. The following, however, is a reasonably accurate summary of the present position:—

Country	Acreage (million acres)	Production (million nuts)
Philippines	2.0	3,500
N. E. I.	1.5	3,200
India	1.5	3,000
Ceylon	1.1	1,600
British Malaya	0.6	850
British South Sea Islands	0.6	750
Others	0.7	900
Total	8.0	13,800

It will be observed that three-fourths the acreage and nearly four-fifths of the production are shared among four countries, viz., the Philippines, N. E. I., India and Ceylon. Nevertheless, India and Ceylon are the only important producers of coir fibre.

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Table I (Please see next page) shows the exports of coir fibre and coir manufactures from India and Ceylon.

Both in India and in Ceylon coir fibre is utilized commercially in two ways, for export as coir fibre and as coir manufactures in the form of yarn, ropes, mats, &c. Ceylon, however, is the only considerable exporter of coir fibre while exports from India are almost entirely in the form of manufactured coir goods.

CEYLON'S COIR FIBRE INDUSTRY

In India fibre is entirely prepared by hand as a cottage industry and in this form it is especially suited for coir manufactures, but not for export as fibre as it cannot be graded. In Ceylon while fibre intended for coir manufactures is prepared as in India, the production of fibre

intended for export is highly mechanised. The entire production is organized in mills and the methods of extraction employed are such that it is possible finely to grade the fibre into bristle and mattress and further subdivide them into other grades according to length, colour, toughness, &c.

TABLE I  
Coir Exports.  
Unit Tons

India			Ceylon		
Year.	Coir Fibre.	Coir Manufactures	Year	Coir Fibre	Coir Manufactures.
1934-45	54	62,681	1334	31,009	5,065
35-36	260	64,864	35	35,144	5,841
36-37	270	61,747	36	40,800	3,922
37-38	197	62,858	37	46,381	6,049
38-39	331	62,485	38	36,593	5,152
Average			Average		
1934-35			1934-38	37,985	5,206
1938-39	222	62,927	1339	44,425	6,017
1939-40	1,039	72,402	40	29,548	4,015
40-41	466	36,543	41	19,919	2,774
41-42	1,075	29,716	42	20,818	2,270
42-43	488	32,053	43	10,894	940
43-44			44	10,898	1,117
44-45			45	12,992	493
45-46			46	27,137	2,098
46-47			47	27,589	3,051

**ORGANISATION OF PRODUCTION**

The entire production of coir fibre, intended for export as such, is organised in mills in a coastal belt about 30 miles wide, north of the Kelani river and extending up to Puttalam.

A pair of drums could handle in an eight-hour working day 2,000 husks and out of a 1,000 husks, on an average, 3 cwt. of mixed fibre or 1 cwt. of bristle and 2 cwt. of mattress fibre could be obtained, the outturn of the two types of fibre being normally in

the ratio of 1:2. On this basis Ceylon's fibre milling industry working 8 hours a day 5 days in the week throughout the year could produce about 89,500 tons of mixed fibre or 29,500 tons of bristle and 59,000 tons of mattress fibre.

The pre-war average exports of both kinds of fibre during the quinquennium 1934-38 was 37,985 tons; in 1947, it was 27,589 tons while exports for this year should be in the neighbourhood of 30,500 tons. It will thus be seen that the estimated capacity of the industry is well in excess of exports—in fact, the highest amount exported during the years 1934-47 was 46,381 tons in 1937 which is only 52 per cent of the estimated capacity of the industry. This means that the mills cannot be operated on an average for about 6 months in the year (at present still longer). As against this, allowance will have to be made for days on which the mill cannot be operated due to weather conditions (both sunshine and an abundant supply of water are essential for the production of fibre), and production for local consumption which by itself is quite negligible compared to exports. Even so, there is not the slightest doubt that there is always chronic unemployment in the industry. This in turn has serious repercussions on costs of production for apart from increasing the prime costs, supplementary costs, too, are increased on account of the high

costs of labour, which naturally prefers more regular though less-paid work.

### PROCESSING BY MILLERS

Once the husks arrive at the mills they are soaked in water. The object of this process which is known as "retting" is to soften the vegetable matter in the husk so that it may be easily separated from the fibre. The period of retting varies between 3 to 6 weeks but time is appreciably reduced if the husks are crushed before immersion in water when they may be ready for the mill within one week.

At the mill the husk is pressed over "drums" which may be described as wheels about 3 feet in diameter with treads about a foot wide into which have been bolted iron nails every  $1\frac{1}{2}$  in. to 2 in. As the drum revolves first one half and then the other half of the husk is held against the nails, as a result of which the nails tear away the short-stapled fibre known as mattress fibre leaving in the worker's hands the long-stapled bristle fibre.

In the next process, the bristle fibre so obtained from 2 or 3 husks is held against a similar drum but into the treads of which have been bolted thinner nails every 1 in. to  $1\frac{1}{2}$  in. The rotating drum combs out whatever short-stapled fibre has not been removed by the first drum. This fibre is now washed by women in clean fresh water and is carefully

laid out to dry. Once drying is complete women comb it by drawing it through steel spikes between 4 in. to 6 in. long, fixed vertically about 1 in. apart, on a table. This process known as "hackling" removes a further quantity of short-stapled fibre and any bits of vegetable matter as may be still adhering to it. This rough-hackled fibre is tied into small bundles or "hanks" by means of a single band of twisted fibre around it. The hanks in turn are made up into larger bundles for transport and sale to shippers as "hackled one tie" bristle fibre. The cord of twisted fibre with which the hanks are tied serves the dual purpose of keeping the fibre together and signifying the grade or quality. At some mills the bristle fibre is not subjected to the hackling process described above but after drying is made up into hanks and sold to shippers. In this case the fibre is known as "unhackled one tie" — the lowest grade of bristle fibre.

It is now necessary to go back to the stage where the short-stapled mattress fibre has been torn from the husks by the drums and cast on the floor. It is wet and has adhering to it a lot of the hard outer skin of the husk and vegetable matter. In order to remove this, it is put into a cone-shaped "sifter" made of wire-mesh, supported horizontally by two iron uprights. The revolving sifter causes the mattress fibre to rub

against its sides and the particles of husk, etc. fall through. When the fibre has been sufficiently cleaned this way it is put into the "teaser". The teaser is a rectangular box the bottom of which is wire-meshed while all the other sides except one of the smaller sides is panelled with wood. The fibre is introduced into the teaser through an opening about 1 foot square on the top and is subjected to a vigorous mechanical beating thus separating from it whatever vegetable matter, etc., may be still adhering to it. This thoroughly cleaned fibre is now dried and compressed into small rectangular bundles or ballots for transport and sale to shippers.

#### AT THE SHIPPERS' STORES.

*Bristle Fibre.*— Once the bristle fibre arrives at his stores in Colombo, the shipper has it weighed and carefully graded according to length, toughness and colour. The commonest quality is shipped without further attention except bleaching and is known as "one tie".

The superior qualities, however, have to receive further treatment. They are handed over to women "hacklers" who comb out all short-stapled fibre in the same way as at the mills but with much greater care, so that all the fibre in one hank lies evenly and smoothly throughout the hank. The hanks with the longest staple (about 12 in. in length) of fine good colour fibre are bound

with three cords of twisted fibre both in order to keep the fibre closely bound and to mark them as "3 tie" or best quality. The next grade of shorter fibre is bound with two cords and is known as "2 tie". Before the fibre is shipped it is usually bleached in order to produce an even colour.

Freight rates are high and it is necessary to compress the fibre into as small a package as possible. The usual form of packing is in "bales" of about 3 cwt. To make these bales, the hanks are laid horizontally in a steel box about 12 feet high and is hydraulically pressed to a height of about 2½ feet and is then hooped and sewn up in jute hessian. Where the foreign buyer specially requests, the fibre is shipped in "ballot" form. That is, the fibre is subjected to the same processes as in the case of fibre shipped in the bale except that it is not hydraulically pressed. Instead it is sewn up in jute hessian and shipped in ballots of about 20 to 28 lb.

*Mattress Fibre.*—Once the fibre has been weighed, it is carefully graded according to colour and stiffness. The best grade mattress fibre known as "No. 1", in the trade, is of a fine golden colour. The next grade known as "Fair Average Quality" or "FAQ" is duller in colour and has less "life" in it, while the lowest grade known as "No. 2" is dark in

colour. Once the fibre has been graded, fibre that requires cleaning is teased. The process is the same as at the mills described earlier. The fibre is now ready for shipment and is packed in precisely the same way as bristle fibre either in the bale or ballot form.

## EXPORTS

*Bristle Fibre.*— Table II on next page shows the exports of Bristle fibre during the period 1934-47 according to the more important destinations.



TABLE II.

## Coir Bristle Fibre Exports

Unit = Tons.

CEYLON'S COIR FIBRE INDUSTRY

Country.	1934	%	1935	%	1936	%	1937	%	1938	% Average % 1934-38		1939	%	1940	%	
	U. K.	1077	10.4	1056	9.4	930	7.6	1137	8.5	1424	13.1	1125	9.7	1919	21.2	1917
Belgium	1769	17.0	1970	17.6	2038	16.8	1799	13.4	1794	16.6	1874	16.2	1352	15.1	43	0.8
France	1116	10.7	1139	10.1	1232	10.1	1213	9.6	1084	10.0	1155	9.9	950	10.6	705	13.8
Germany	907	8.7	829	7.4	1916	15.8	2150	16.0	1842	17.0	1529	13.2	681	7.6	...	...
Holland	469	4.5	317	2.8	455	3.7	449	3.3	497	4.5	437	3.8	715	7.9	30	0.6
Japan	4570	43.9	5455	48.6	5060	41.6	6005	44.8	3414	31.6	4901	42.3	2508	27.9	1570	30.7
U. S. A.	35	0.3	25	0.2	100	0.8	51	0.4	22	0.2	47	0.4	587	0.6	112	2.1
Other countries	453	4.5	419	3.9	409	3.6	587	4.6	738	7.0	518	4.5	263	9.1	725	13.5
Total	10378	100	11210	100	12140	100	13391	100	10815	100	11587	100	8975	100	5102	100
	1941	%	1942	%	1943	%	1944	%	1945	%	1946	%	1947	%	Jan. 1948	%
U. K.	624	22.8	2433	84.0	1870	80.2	1228	67.5	1460	63.8	2105	33.8	2207	43.0	1081	22.2
Belgium	...	...	...	...	...	...	...	...	340	14.9	2373	38.0	932	18.2	538	11.1
France	...	...	...	...	...	...	...	...	...	335	5.4	...	...	...	...	
Germany	...	...	...	...	...	...	...	...	...	...	...	...	...	1184	24.4	
Holland	...	...	...	...	...	...	...	...	...	...	...	397	7.7	673	13.9	
Japan	773	28.3	...	...	...	...	...	...	...	...	...	507	9.8	709	14.6	
U. S. A.	444	16.3	96	3.3	50	2.1	95	5.2	5	0.2	141	2.3	319	6.2	2	...
Other countries	887	32.6	362	12.7	409	17.7	495	27.3	379	21.1	1274	20.5	766	15.1	672	13.8
Total:	2728	100	2891	100	2320	100	1818	100	2284	100	6228	100	5128	100	4859	100

Our exports which had steadily risen from 8,472 tons in 1931 to 13,391 tons in 1937 suffered a set-back in 1938 when exports dropped to 10,815 tons and with the advent of war in 1939 and the severance of our important markets exports continued to decline drastically. The bottom was reached in 1944 when exports fell to as low as 1,818 tons. In the next year, however, after seven years of steadily dwindling trade, exports rose to 2,228 tons but was only 20 per cent of the pre-war average. In 1946 the previous year's recovery was continued and the figure rose to 6,228 tons, but in 1947 there was a set-back when exports dropped by 1,100 tons. Exports for the current year (1948) are expected to about equal last year's figures but this will only be slightly more than 50 per cent of our pre-war average exports which during the quinquennium 1934-38 was 11,587 tons. The extent of the decline in trade could be gauged by the fact that in 1937 Japan alone accounted for 6,005 tons and this was only 44.8 per cent of the total exports for that year.

Apart from the severance of our main markets the serious decline in exports during the years 1940-45 was in no small measure due to the general shortage of labour due to the war effort and the scarcity of essential equipment such as spares for machinery, lubricating oil, nails, etc.

Our more important customers during the pre-war period 1934-38 were Japan, Belgium, Germany, France, the U. K., Holland and the U. S. A. who on an average absorbed 42.3 per cent., 16.2 per cent., 13.2 per cent., 9.9 per cent and 9.7 per cent. respectively of our exports. Japan who accounted for 42.3 per cent. was our most important customer, and after Belgium and Germany, France and the U.K. were of equal importance followed by Holland and the U.S.A. It will be observed that every one of these countries with the exception of U. S. A. was severely affected by the last war, and it is against this background of war-disturbed economies that one has to review the pattern of our post-war trade in coir fibre as in most other commodities. The aftermath of the war, particularly in the form of political and currency difficulties, is still persisting and in the case of at least three of our more important customers is proving somewhat intractable. So long as countries like Japan, Germany, Belgium and France do not purchase fibre in anything like their pre-war amounts recovery is bound to be slow and painful.

The recovery in 1946 was mainly due to the purchase of 2,373 tons by Belgium, our second most important customer during the pre-war years, and the set-back in 1947 was also largely due to the drop in her demand to 932 tons which was only just 50 per cent. of her pre-war average

Even during the current year (1948) she has absorbed only 538 tons for the nine months ending September. Again France who for the first time since 1941 purchased 335 tons in 1946 has since dropped out. For the first time since her entry into the war Japan took 507 tons in December last year (1947). This year, (1948) however she has taken only 709 tons for the nine months ending September which is only 12.5 per cent. of her pre-war average.

In general the figures for the nine months ending September 1948 are more promising if only for the reason that for the first time since

1940 all our more important customers with the single exception of France have come into the market once again. Apart from U. K. who consistently maintained her pre-war average throughout the war years, excepting in 1941 when her purchases dropped to 624 tons, and was throughout this period the mainstay of the industry, Germany is the only other country that has come up to her pre-war level of imports during the current year (1948).

*Mattress Fibre.*— Table III on next page shows the annual exports during the period 1934-1947 according to the more important destinations.

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TABLE III

## Coir Mattress Fibre Exports.

Unit = Tons.

Country	1934	%	1935	%	1936	%	1937	%	1938	%	Average % 1934-38	1939	%	1940	%	
	U. K.	7765	37.6	9890	41.3	10152	35.7	13291	40.3	11047	42.8	10430	39.6	20568	58.0	12492
Australia	1575	7.6	1953	8.1	2143	7.4	2130	6.4	2441	9.5	2048	7.9	2594	7.3	2611	10.7
India	946	4.6	942	3.9	1056	3.7	1061	3.2	1085	4.2	1018	3.9	885	2.4	917	3.7
South Africa	3612	17.5	3664	15.3	2212	15.4	3517	10.6	3304	12.8	3262	12.5	4276	12.0	3721	15.2
Belgium	753	3.6	897	3.7	883	3.0	992	3.0	767	2.9	858	3.3	452	1.3	15	...
France	391	1.9	406	1.7	483	1.7	635	1.9	1129	4.4	609	2.3	1606	4.5	1371	5.6
Germany	1111	5.4	1018	4.2	2202	7.7	3735	11.3	831	3.2	1780	6.8	306	0.9	...	...
Japan	1366	6.6	1081	4.5	1769	6.2	1698	5.1	978	3.8	1378	5.3	285	0.8	83	0.3
U. S. A.	1244	6.0	1779	7.4	3181	11.0	3196	9.7	1493	5.8	2177	8.2	1290	3.6	1606	6.5
Other Countries.	863	9.2	2500	9.9	4577	8.2	2736	8.5	2703	10.6	2676	10.2	3188	9.2	1630	7.0
Total	20626	100	23934	100	28659	100	32991	100	25778	100	26398	100	35450	100	24446	100
Country	1941	%	1942	%	1943	%	1944	%	1945	%	1946	%	1947	%	1948	% Jan-Sept.
U. K.	4561	26.5	7517	41.9	1818	21.2	1425	15.7	3714	34.7	5076	24.3	12748	56.7	7568	41.4
Australia	2999	17.4	3127	17.4	2276	26.5	692	7.6	2025	18.9	4357	20.8	3235	14.4	3792	20.8
India	1126	6.5	1191	6.6	834	9.7	2264	24.9	674	6.3	334	1.6	279	1.2	15	0.1
South Africa	5282	30.7	4717	26.3	3097	36.1	3713	40.8	2368	22.1	4352	20.8	2779	12.4	2647	14.6
Belgium	...	...	...	...	...	...	...	...	...	...	1209	5.8	556	2.5	338	1.9
France	...	...	...	...	...	...	...	...	...	...	165	0.8	155	0.7	65	0.9
Germany	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japan	31	...	...	...	...	...	...	...	...	...	...	...	10	...	...	...
U. S. A.	1688	9.8	980	5.4	...	...	786	8.6	327	3.0	3800	18.2	842	3.7	1841	10.2
Other Countries	1504	9.1	395	2.4	540	6.5	200	2.4	1600	15.0	1616	7.7	1858	8.4	1929	10.5
Total	17191	100	17927	100	8565	100	9080	100	10708	100	20909	100	22462	100	18295	100

Exports which steadily increased from 16,189 tons in 1931 to 32,991 tons in 1937 suffered a set-back in 1938 when it dropped to 25,778 tons, but there was an excellent recovery in 1939 when the amount rose to the unprecedented high figure of 34,450 tons. As was to be expected exports fell in 1940 to 17,191 tons and stood at about the same level in 1942. The bottom was reached in 1943 when the figure dropped to 8,565 tons. The recovery began during the next year when exports increased by about 500 tons and this position has since been steadily maintained. Exports in 1946 and 1947 were 20,909 tons and 22,462 tons respectively while the figure for the current year is expected to reach 26,000 tons.

It will be observed that among the more important consumers of mattress fibre are also included all the important consumers of bristle fibre with the single exception of Holland, while the additions are South Africa, Australia and India.

U. K. has always been our most important customer except during the years 1941, 1943 and 1944 when South Africa, the second largest buyer, assumed this role. South Africa whose purchases were never more than one-third U. K.'s figures

during the pre-war years has maintained this position both in 1947 and during the nine months ending September, 1948. Our most interesting customer, however, is India who although herself is the only other important producer and exporter of coir fibre and coir manufactures, imported on an average 1,018 tons during the quinquennium 1934-38. The largest amount purchased was in 1944 when she took 2,264 tons but since then the figure has steadily dwindled. Her purchases for the nine months ending September, 1948 have been only 15 tons.

The over-all pattern of our trade in mattress fibre although not unlike that of bristle fibre has escaped the violent fluctuations suffered by the latter ever since 1939, mainly due to five countries, viz., U. K., South Africa, Australia, India and to a lesser extent the U. S. A., who have steadily purchased from us throughout this period. It will be observed that apart from the U. K. who holds a very special position in our entire overseas trade, the economy of the other four countries was comparatively less affected by the war. Japan and Germany are the only two important pre-war importers who have still not resumed their trade in this commodity.

PRICES

TABLE IV.  
Average Monthly Prices of Coir Fibre  
in Colombo.  
Rupees Per Cwt.

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Matress Fibre No. 1.													
1938	2.43	2.51	2.44	2.33	2.24	2.25	2.25	2.19	2.25	2.25	2.24	2.21	2.30
1945	6.55	6.50	6.58	6.66	6.78	6.94	7.07	7.38	7.75	8.06	8.18	8.69	7.26
1946	9.45	10.25	11.06	12.00	13.10	14.63	16.85	17.50	16.75	11.80	11.13	11.00	12.96
1947	9.40	9.25	9.69	9.37	9.05	8.13	7.85	8.13	8.00	7.88	6.88	6.30	8.32
1948	6.06	6.13	7.31	7.25	8.13	8.13	8.10	7.88	7.75				
Bristle Fibre "3 Tie"													
1938	3.78	3.41	3.29	3.13	3.20	2.91	2.88	2.88	2.87	2.82	2.78	2.80	3.06
1945	14.30	13.83	14.05	15.13	14.00	14.19	14.56	15.00	16.56	17.19	16.80	17.81	15.29
1946	19.65	25.25	26.63	29.50	35.60	41.63	41.25	32.75	25.38	15.60	14.00	14.38	26.80
1947	15.00	15.94	15.50	13.50	13.50	11.63	10.20	10.00	10.75	9.90	9.44	9.45	12.07
1948	10.44	12.00	13.60	15.07	15.43	15.50	15.50	15.38	15.20				

**BRISTLE FIBRE**

The average Colombo market price of Bristle fibre which in 1938 was Rs. 3.06 per cwt. was only 76 cents more than the average price of mattress fibre and in fact, during September and October, 1939, was even less than the price of mattress fibre. This tendency for bristle fibre to become cheaper both absolutely and relative to mattress fibre which began in 1932 displayed an approximately similar pattern up to the entry of Japan into the war in 1941. Prices recovered in January, 1942, and continued to rise till July, 1944, when the price-level was Rs. 18.50, which was 6 times as much as the 1938 average. Prices declined again till July of the following year when a short lived post-war boom set in and prices continued to rise till the record figure of Rs. 41.63 was reached in June, 1946, when it began to decline once again. This downward trend continued till the beginning of 1948 causing widespread distress in the industry when a Governmental scheme of "floor prices" for both bristle and mattress fibre was introduced in March, 1948, in order to stabilise prices at an economic level. Under this scheme the producer, who as in almost all our other agricultural products is both individually and collectively weak compared to the shippers and consumers, was guaranteed a minimum price for

his product, which in the case of bristle fibre was fixed at Rs. 14 per cwt. for unhackled one tie and at Rs. 7.25 for mattress No. 2. Experience shows that this price-regulation has been of distinct advantage to the producer, the commodity and the country.

**MATTRESS FIBRE**

The Colombo market price which had fluctuated between Rs. 2.19 and Rs. 2.51 in 1938 dropped to Rs. 2.13 in January, 1939, and continued at about this level till the declaration of war in September, 1939, when there was a sharp rise in price to Rs. 3.35. During October and November, 1939, the price remained at Rs. 4.25 when there began a fairly steady decline in price till the entry of Japan into the war in 1941 when an impressive but short-lived rally took place. The peak was reached in September, 1942, when the price stood at Rs. 6.50 but once again there was another decline in price which continued till the beginning of 1944, when the major recovery started. By August, 1946, the price had reached the record level of Rs. 17.50 which was about seven and a half times the 1938 average. After this post-war boom prices continued to drop steadily till it was stabilised at an economic level in March, 1948 by the Governmental Scheme of "floor" prices.

— *The Ceylon Trade Journal*,  
December, 1948.

# THE COCONUT INDUSTRY IN TRAVANCORE

(CONTRIBUTED)

## INTRODUCTION

**C**OCONUT is the most important money crop of Travancore. The vast majority of the cultivators of the State depend on it for their livelihood. It provides all alike, particularly the poor, with food, drink, domestic utensils, material for building houses and money.

Most of the coconut gardens in the State are in small sub-divided holdings and they are ordinarily interplanted with other trees such as arecanuts, jacks, mangoes, plantains etc. Catch-crops such as yams, tapioca, pulses, etc., are also grown in these gardens.

But of all the trees in the garden, the coconut is the one that yields the greatest variety of products. Its wood and leaves, the kernel and shell of its nut and the fibre of the husk covering the nut are all utilised in various ways. It is from the proceeds of the sale of coconuts and their products that the average cultivator in the State buys rice and other necessaries for his daily food. Unlike the other money crops of the State such as pepper, ginger, tea, rubber, etc., a very large proportion of the products of the coconut tree is consumed locally.

Apart from the large number of agricultural labourers who are engaged in cultural operations in coconut gardens, thousands in the State are employed in the processing and marketing of coconuts, copra, coconut oil, coir, etc. Over 30 per cent of the total value of the exports of the State is derived from the export of coconut products. Rubber and tea are two other important commodities figuring in the export trade, but the ordinary cultivator has very little interest in them as these industries are almost exclusively in the hands of capitalists and joint stock companies. Ginger, pepper, etc., though exported, have a very small share at present in the export trade. Coconut, therefore, is the only commercial crop of importance which affects the daily life of the ordinary cultivator of the State.

## AREA UNDER COCONUT

Out of a total area of about 2.2 million acres under cultivation in Travancore, more than 25 per cent is under coconut. Travancore can be divided into three distinct regions according to the lie of the land. They are (1) the lowland consisting of a long stretch of flat land along the

sea coast, (2) the midland area consisting of a narrow unrelated land lying between the lowlands and mountainous regions, and (3) the eastern mountainous area. Coconuts are grown in all these regions, but the bulk of the coconut tracts is found in the lowland and midland regions.

The soils and systems of cultivation in these regions vary considerably. In places like Shertallai and Alleppey, along the coast, coconuts thrive well in the sandy soil of those areas. Some of the best coconut gardens in the State are found in the lowland region. The soils of the coconut tracts lying in the interior of the lowland regions are alluvial deposits in places like Kuttanad, while towards the south they consist chiefly of laterite. In the midland region coconuts are grown mainly along the banks of rivers and in the valleys where the soils are mainly alluvial and gravelly laterite. Some of the slopes of the hills and the

valleys between them in the mountainous region were opened up for coconut cultivation in recent years. The virgin soils in these areas are very rich in humus and other organic material and are well suited for coconut cultivation.

The statement below gives the total area under coconut in the State during the six years, 1941-42 to 1946-47.

Year.	Area in acres.
1941-42	5,50,000
1942-43	5,66,880
1943-44	5,73,184
1944-45	5,75,673
1945-46	5,76,882
1946-47	5,76,612
Average.	5,69,871

All the taluks of the State grow coconuts to a greater or less extent. The taluks of Shertallai, Meenachil, Tiruvella and Neyyattinkara have the largest areas of coconut gardens. The statement below gives the area under coconut in the different Divisions of Travancore during the six years, 1941-42 to 1946-47.

Year.	Area in acres in			Total
	Quilon Division	Kottayam Division	Trivandrum Division	
1941-42	2,77,000	125,000	1,25,000	5,50,000
1942-43	2,87,607	151,045	1,28,228	5,56,880
1943-44	2,87,722	157,004	1,28,458	5,73,184
1944-45	2,88,106	159,064	1,28,503	5,75,673
1945-46	2,88,334	160,015	1,28,533	5,76,882
1946-47	2,88,057	160,021	1,28,534	5,76,612
Average	2,86,137	155,858	1,27,876	5,69,871

**CONDITIONS FAVOURING COCONUT CULTIVATION**

From the point of view of natural conditions such as rainfall, temperature, latitude, altitude, humidity, etc., the bulk of the State is well suited for successful cultivation of coconut. The average rainfall in the State is about 90 in. The amount of rainfall varies from the north to the south and also from the coast to the hills. While in the extreme south near Cape Comorin the annual average is only 35 in., it increases steadily towards the north and at Alwaye it is about 125 in. The average on the coast is about 75 in. which gradually rises towards the interior up to about 150 in. in the hills. The annual variation in temperature is not considerable. It varies from 70°F to 90°F with a mean temperature of 78°F. The average relative humidity is about 80.

**YIELD**

The number of trees in an acre generally varies from 60 to 100, the average being estimated at about 70 trees per acre. The yield naturally depends on factors such as climate, soil, variety of the tree, age of the tree and the method of cultivation. The average yield for the State is estimated as 30 nuts per tree. The total annual production of coconuts during the 6 years 1941-42 to 1946-47 is given below:—

Year	Production of coconuts (in thousands)
1941-42	11,70,992
1942-43	11,90,449
1943-44	12,03,686
1944-45	12,08,913
1945-46	12,11,453
1946-47	12,10,886
Average	11,99,396

**CONSUMPTION OF COCONUTS**

Of about 1,200 million coconuts produced in the State it is estimated that about 2.5 million nuts are used for religious and ceremonial purposes, 630 million nuts in the preparation of copra, 27 million nuts for export purposes and 540.5 million nuts including tender ones for domestic consumption. About 6,800 nuts are required to produce a ton of copra and on that basis the total quantity of copra produced in the State is of the order of about 92,650 tons. Of the copra produced about 72,300 tons are crushed in power-driven oil mills, 5,600 tons in about 800 country *chakkus* or *ghanis* scattered throughout the State and the balance of 14,750 tons are exported. It may thus be stated that about 79 per cent of the demand for copra is from the power mills, 6 per cent from the country *chakkus* and 15 per cent for export purposes. Of the quantities of copra exported two-thirds are for edible purposes and one-third for consumption in the mills. The total quantity of copra used for crushing in the mills included

## THE COCONUT INDUSTRY IN TRAVANCORE

under the Factories Act in the year, 1947 was of the order of about 49,330 tons and yielded about 33,080 tons of coconut oil. The quantities

of copra crushed and the coconut oil produced in the Factory mills in the three Revenue Divisions of the State are given below:

Division.	Quantity of copra crushed in tons	Quantity of coconut oil in tons
Trivandrum	58	23
Kottayam	6,287	3,898
Quilon	42,985	29,159
Total	<u>49,330</u>	<u>33,080</u>

It is thus seen that about 22,970 tons of copra are crushed annually in the non-factory mills, producing about 15,734 tons of coconut oil. The annual output of the *ghani*-crushed coconut oil is of the order of about 3,800 tons only.

### IMPORT AND EXPORT

There are no appreciable imports of coconut and coconut products into the State. The average annual export of coconuts is estimated at about 24 million nuts. The annual export of copra is of the order of about 15,000 tons of which about three-fourths are exported through Alleppey mainly to Bombay and Karachi and about 9 per cent. to Cochin. The bulk of the copra exported from the State is edible copra almost the entire quantity of milling copra being consumed by the local oil mills themselves.

### MANUFACTURE AND DISTRIBUTION OF COPRA

Copra is prepared by cutting the mature coconut into two and drying

the two halves on drying floors with the kernel exposed to the sun. After two days of drying, the shells are separated from the kernel. The kernels are again dried in the sun till the copra is dry and brittle. Good copra is obtained after seven days' drying in the sun. But sun-drying of copra is possible only during the dry months of January, February, March, April, August and September. During the remaining months of the year which are rainy months there are no facilities for sun-drying. Copra is then dried in a smoke chamber, especially in the northern and central parts of Travancore. The quality of copra is lowered considerably by this practice and the oil produced from the copra is inferior in quality as it is yellow in colour and has a disagreeable odour. Some copra manufacturers think that copra produced in this manner weighs more since the smoking process expedites the surface drying of the copra without removing the moisture from its inside.

This practice of giving the kernel a preliminary drying in the smoking chamber before exposing it for sun-drying is also prevalent on the West Coast. There is, however, no doubt that copra dried in the sun is the best. It has better keeping quality and yields better oil.

The superior quality copra is generally sold for edible purposes, the percentage of copra disposed off in this manner, depending on the price parity between edible and milling copra. The bulk of the copra exported from the State is sold for edible purposes in North Indian markets. The demand from country *chakkus* is also for quality copra as they want to produce good quality oil. The oil millers, however, are not particular about the quality of the copra. In fact, they crush all the inferior varieties after meeting the demand for export purposes and consumption in the country *chakkus*.

#### MANUFACTURE OF COCONUT OIL

*Power mills.*—It has been estimated that about fifty mills with about 580 crushers are working in the State, the majority of which are located in the Quilon division. These mills are equipped each with a steam or oil engine, two or three oil tanks of varying capacities fitted with a hand or power pump, a cutter or chopper and a number of rotary *chakkus* or crushers. Copra is diced and put into the *chakkus* and the cake removed from them as and when required

without stopping the mill. The oil pressed flows filtered through a sieve, into a tank where it is allowed to settle for some time after which it is pumped into the storage tanks.

*Country Chakkus.*—It is estimated that there are about 800 country *chakkus* in the State—500 in Travandrum Division, and 150 each in the Quilon and Kottayam Divisions. The country *chakku* consists of a large mortar and pestle of which the mortar is firmly fixed in the ground. The mortar may be of wood or granite and the pestle of hard and heavy wood. The pestle is made to rotate at an angle in the hollow cup of the mortar by the adjustment of a lever which a man or a pair of bullocks pulls round the mortar in a circle. The action of the pestle when it is made to rotate is the double one of grinding and pressing. In the case of *chakkus* in the oil mills the pestle is stationary and the mortar rotates, whereas in the country *chakkus* the mortar is firmly fixed in the ground and the pestle rotates. For country *chakkus* copra must be dried thoroughly in the sun and cut into small pieces. The yield of copra crushed in a country *chakku* is about 60 per cent oil and 38 per cent cake, while in the case of a rotary *chakku* it is 62½ per cent oil and 35 per cent cake. There is a loss in weight of 2 to 2½ per cent during crushing.

**CHARACTERISTICS OF QUALITY OIL**

Important quality characteristics of coconut oil are cleanliness and freedom from fatty acids, moisture and disagreeable odours. Clearness of oil indicates purity and freedom from any foreign matter. The oil will not become rancid if the free fatty acid content is below one per cent. Coconut oil in Travancore is used mostly for edible purposes. It has been estimated that about 3 ounces of coconut oil are daily consumed in an average family of six members living round about the towns. Considerable quantities of coconut oil are used in the temples and churches for lighting purposes. Coconut oil is also used for culinary and toilet purposes by all classes of people. A small quantity of oil is also utilised in the local soap factories for the manufacture of soaps.

The following is an analysis of the utilisation of coconut oil for various purposes in the State:—

- 1) For edible and culinary purposes - 60 per cent
- 2) For toilet purposes - oil bath, as hair oil, etc. - 35 per cent
- 3) For the preparation of soap - 3 per cent
- 4) For lighting purposes - 2 per cent

100

**COIR INDUSTRY**

The coir industry is a very important one in the State and affords employment to a large number of people of whom some are employed in the retting of the husks and its conversion into fibre and coir yarn and others in the manufacture of the yarn into mats and mattings. Mr. K. C. Karunakaran in an article entitled "The Coir Industry" published in "The Indian Coconut Journal" (Vol. I, No. 3) has estimated that about 2 lakhs of people are employed in the coir industry in Travancore.

**HUSK**

The yield of husk from coconuts depends on their size and variety. The most important commercial utilisation of coconut husk is for the extraction of coconut fibre. The best quality coir is made from the husk of mature nuts which are harvested when the husk is still green\*. The husks of immature and dry nuts are generally rejected in the commercial manufacture of coir. It has been estimated that only one-fourth of the total available quantity of husks in the State, that is, husks from about 30 crores of nuts, is utilised in the coir industry. The other

\*Please see in this connection the paper entitled "Copra, Oil and Fibre in relation to the Maturity of Coconuts" by C. M. John, G. Venkatanarayana, C. T. Ittyachan & P. M. Sayed published in "The Indian Coconut Journal" (Vol. I, No. 3).

three-fourths are not utilised in the manufacture of coir mainly due to difficulties of transporting them from the midland and submontane areas, where there are no facilities for retting, to the region of the backwaters where such facilities exist. They are used for burning as fuel or are simply thrown away. Of the husks used in the manufacture of coir about 95 per cent are retted and the remaining 5 per cent are used without being retted.

*Retting the Husk.*— Retting is the process of macerating the husks in order to separate the clean fibre, by soaking them in water for a certain period of time. The period of soaking varies according to the season and the nature of the water employed and generally extends from eight to ten months in saltish water. After taking the retted husk from the pits the outer rind is removed and the rest of it placed on a board and beaten with a wooden mallet till the fibres become separated. The fibres are then collected and washed in clean water and dried, lightly beaten with a stick to remove any adhering particles of pith. The total yield of fibre from the husks of 30 crores of nuts is estimated at 86,000 tons.

*Use of Fibre and Coir Yarn.*— Coir fibre is used for (1) filling mattresses and upholstery, and (2) making brooms and brushes, and coir yarn for ropes and twines in the manufacture of mats and mattings.

The United Kingdom is the most important customer for mattress fibre, mats and mattings and Japan the chief user of the bristle variety used for brooms and brushes. Germany was the chief customer for coir yarn. It would appear that no mechanical devices are generally used in the preparation and sorting of the fibre in the State. The waste matter left behind after the extraction of fibre is not utilised at present for any purpose. It could, however, be profitably used in the preparation of cardboard etc.

*Chemical and Mechanical Retting.*— As already indicated, about three-fourths of the husks available in the State are at present not commercially exploited for want of retting and transport facilities. It is, therefore, necessary to devise ways and means of utilising them for industrial purposes. The possibilities of developing the water transport facilities with a view to transporting husk from the interior regions needs to be examined carefully. It is also necessary to investigate the possibilities of introducing chemical and mechanical methods of retting and extraction of fibre practised in some other countries to overcome the need for transporting the husks to the backwaters for retting.

Coir manufacture is conducted as a cottage industry in Travancore employing mostly women and children, mainly because of the existence

of natural conditions suited for the purpose. The cost of production of coir by this method is, therefore, much cheaper than would be the case if chemical and mechanical methods were employed. But the introduction of chemical and mechanical processes of retting should be possible through co-operative organisations. The question deserves to be seriously examined by co-operative marketing societies.

*Varieties of Coir Yarn.*—There are different qualities of yarn and they are generally known by the names of places where these yarns were originally produced. The different varieties such as Anjengo Superior and Ordinary, Alapat, Ashtamudi, Aratory, Vaikom, Beach etc., have become commercial grades recognised in the trade. The quality of the coir yarn depends on its colour, evenness of twist, absence of pith and sand, dryness, texture, strength, durability and elasticity, resistance to water and decay etc. Those varieties which possess the maximum aggregate of desirable quality factors are considered the best and fetch high prices in the market. Owing to the complexity of grades of yarn it is not possible to assess the value of the different qualities correctly. The producers generally prepare a mixed quality without grading the stuff properly and, therefore, do not obtain the maximum price for the best quality. There is also the shoddy

practice of damping the yarn with water and mixing sand in it. These naturally lower the value of the yarn to a considerable extent. There is, therefore, great need for instituting standard grades for the various qualities of coir yarn and coir products.

*How Coir Yarn is used.*—Quality yarns are generally used in the manufacture of quality mats and mattings, the inferior yarns being employed for making door mats. The various processes involved in the manufacture of mats and mattings are similar to those in vogue in cotton and woollen industries. Alleppey is the chief centre for the manufacture of mats, mattings and other coir goods. There are about 100 coir factories in the State of which about 90 are in Alleppey and its neighbourhood. Out of 85,250 tons of coir available for the production of yarn, 30,000 tons of coir yarn were exported in 1936-37. In recent months as the price of coir has deteriorated considerably, the export market has been seriously affected with the result that many of the factories have been working only partly while others have completely suspended work.

#### COCONUT SHELL

Shells are usually available in large quantities as a by-product in copra-making establishments. The total weight of shells available in the State is of the order of about

1,33,700 tons. These are sold in shops as well as in copra-making establishments for being used as fuel. They are also used in kilns for drying copra. It has been estimated that about 85 per cent of the shells produced in the State are used for these purposes. About 5 per cent of the shells are converted into charcoal for use by goldsmiths and washermen (dhobies) and the balance in the preparation of household utensils such as ladles, bowls, hukkas, fancy articles, etc. There is no systematic commercial manufacture of charcoal from coconut shells. Technological researches on the utilisation of shells for commercial, industrial and other purposes hold out immense possibilities. 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. Besides, the shells yield, on carbonising in a proper plant under scientific control, tar and also acetic acid which is used for coagulating rubber. \*

#### DISTRIBUTION OF SEEDLINGS

The selection of seedlings of guaranteed quality for purposes of planting, in the case of a perennial

\* *Vide* the paper entitled "A Chemical Industry Based on Dry Distillation of Coconut Shells" by S. R. C. Poti in the Indian Coconut Journal, Vol. II, No. 1.

tree like the coconut, the life of which lasts for over 80 years, is of the utmost importance as any mistake committed in the selection is extremely difficult to remedy later on. The Travancore Department of Agriculture used at one time to collect good seednuts and raise seedlings and sell to the ryots. This line of work is now being done on a very small scale in their departmental station at Oachira. A private nurseryman at Kayamkulam was also doing this work to a limited extent about a decade ago, but no work in this direction is being carried on at present. The present position in regard to the supply of coconut planting material in the State is, therefore, quite unsatisfactory. Many of the seedlings that are available for sale at the weekly markets and at fairs and festivals at comparatively cheap rates, are raised from nuts which germinate while in storage during the monsoon months when the season is generally unfavourable for the preparation of copra. In certain parts of the State the small-sized nuts which are usually rejected by coconut vendors are marketed after allowing them to germinate, as seedlings. Cultivators who own fairly large-sized coconut gardens and raise their own seedlings also do not observe carefully all the important points to be borne in mind in the selection of sound seednuts and the raising of seedlings. To obviate this

unsatisfactory situation the Travancore Government organised two coconut nurseries in the State in January, 1945 in conjunction with the Indian Central Coconut Committee, one at Vaikom and the other at Kazhakuttam. But the number of seedlings available for distribution at these nurseries is only 5,000 each per annum. As this number is not able to touch even the fringe of the demand for seedlings of guaranteed quality, the Indian Central Coconut Committee have recently sanctioned 4 more nurseries in Travancore, one each at North Parur, Changanacherry, Kunnathur and Chirayinkil. These nurseries, along with the two already functioning, are expected to distribute 50,000 seedlings per annum. It is, however, estimated that the State's annual requirement of seedlings for purposes of replanting is of the order of 7½ lakhs. It is, therefore, clear that the Committee-sponsored nurseries can only meet a small fraction of the total demand for seedlings, and that there is considerable leeway to be made in the matter of their supply. As the distribution of selected seedlings of guaranteed quality is one of the most effective ways of increasing the production of coconut in the country, the production and distribution of more such seedlings so that the entire demand for them is met, deserves consideration.

#### AGRICULTURAL RESEARCH

There are two experimental stations in the State on which work on coconut is being carried on. One is at Oachira and the other at Kayamkulam. The Oachira Farm which has an area of 4.09 acres was started in 1911-12 and planted with the ordinary Tall variety of coconut. The trees have been planted on the surface and spaced 25 feet. There are at present 223 trees and tree-wax yield figures are maintained. The Station at Kayamkulam consists of 2 private gardens each 4 acres in extent which were leased out by the State Department of Agriculture in 1936 for the investigation and control of leaf and root diseases of coconut. Two other coconut farms, one at Alleppey and the other at Trivandrum where varietal, spacing and manurial trials were attempted were closed down some years ago.

Agricultural Research on Coconut has, however, received a fillip since the Indian Central Coconut Committee was set up. On the recommendation of the Committee three Regional Research Stations have been established, one each at Kumarakom (near Kottayam), Thodupuzha and Neyyattinkara to conduct cultural and manurial experiments to solve problems peculiar to the zone in which the station is set up. The first station is to tackle problems special to the reclaimed clay soils of the back-water area with high water-table and subject to occasional flooding,

the second to deal with problems of the laterite soil of the hill slopes with low water-table and fairly heavy rainfall and the third of loamy soil with fairly low water-table and a rainfall of about 80 inches. The recurring expenditure on the stations is being shared by the Indian Central Coconut Committee and the Travancore Government on a 50:50 basis.

The root disease is the most serious disease of coconut in Travancore and has been in existence in the State for over 70 years. Nearly 2,00,000 acres under coconut are affected by this disease. In 1937 an Indian Council of Agricultural Research Scheme to investigate this and the leaf disease which occurs together with the root disease, was started in the State. From the 1st January, 1946 the Indian Council of Agricultural Research's share of liability regarding the Scheme was taken over by the Indian Central Coconut Committee. From the 1st April, 1948, however, the scheme has been amalgamated with the work of the Central Coconut Research Station at Kayamkulam started under the auspices of the Committee to investigate diseases of the coconut palm. An area of 55 acres of land has been acquired for the station and its foundation stone was laid by H. H. the Elayaraja of Travancore in April, 1947. The construction of the Laboratory and other buildings at the Station is making good progress.

## CO-OPERATIVE MARKETING OF COPRA

The present system of marketing of copra is quite defective and there is no doubt that it could be improved to a considerable extent by the organisation of co-operative marketing societies. The societies could help to increase members' holding power by providing cheap credit against stored produce, obtaining for them better returns, encouraging the production of quality copra, facilitating the installation of hot air kilns and grading copra. They could also arrange to purchase and distribute manures, implements, quality seedlings, coconut cake and other cattle feed for the members, animals and also undertake other ancillary functions. With these objects in view, the Travancore Government have already started on the 1st January, 1946, with financial assistance from the Indian Central Coconut Committee a Co-operative Copra Marketing Society at Vaikom. It has done considerable good to the members and it is hoped that more societies will soon be organised in the State.

## REGULATED MARKET FOR COPRA

It is now a well-established fact that one of the means of enabling producers to obtain a fair price for their produce and buyers to purchase produce of satisfactory quality is to set up regulated markets where the transactions would be controlled by

a properly constituted authority representing the various interests involved. The question of starting a regulated market for copra at Alleppey has been taken up by the Government of Travancore with the Indian Central Coconut Committee. The regulated markets can, however, be established only under an Act passed by the State. Once the Act is passed schemes could be prepared for the application of the Act to particular market areas or centres. The Indian Central Coconut Committee has taken considerable interest in the establishment of regulated markets for copra in the important coconut producing areas and they have appointed a Marketing Officer for studying the present system of marketing of copra in the Provinces and States. The Officer has visited Travancore also for studying marketing conditions in the State and making his recommendations with regard to starting a regulated market for copra at Alleppey.

#### COLLECTION OF STATISTICS

Statistics regarding the acreage under and production of coconut in the State are incomplete and of doubtful accuracy as in the case of similar statistics elsewhere in India. The importance of the role of correct statistics in the development of the industry cannot be over-emphasised. Realising this position the Travancore Government have sanctioned

a scheme "to collect statistics regarding the coconut acreage and production, to conduct a crop-cutting survey of coconuts for the whole State and to study the correlation aspects like size of coconut and age of tree, size of nut and locality and size of nut and copra content and other allied matters". They have appointed a senior officer of the rank of an Assistant Registrar of Co-operative Societies to be in charge of the work and have also asked him to conduct a survey of the production and trade in coir yarn with a view to the future development of the coir industry on co-operative lines. According to the Special Officer for the Survey of Coir and Coconuts the scheme about the collection of statistics of coconut acreage and production is proposed to be based on an experimental survey to be conducted in the Trivandrum Taluk to test whether the plot to plot enumeration method or sampling method based upon zoning should be adopted. A crop-cutting survey will be conducted for the State for a year with the assistance of officers of the Revenue Department. This survey also will be first conducted in Trivandrum Taluk and afterwards extended to the other taluks. It is also proposed to collect data regarding the weight and volume of nut with and without husk, the weight and volume of liquid inside the nut, weight of shell, copra and cake and volume and

weight of oil obtained from a nut. These will be found extremely useful in planning the developments of the various aspects of the coconut industry in the State.

**CONCLUSION**

To sum up: While the coconut industry in Travancore occupies a pre-eminent place in the economic set-up of the State, it cannot be said that all is well with it. Major evils like pests and diseases that beset it have to be fought and eradicated, and research organized on an extensive and intensive scale. Markets have to be regulated, marketing methods improved and grade specifications prescribed for the various coconut products. And, above all, the growers have to be organised and vital and living contact established between them and the institutions working

for the development of the coconut industry, for unless the grower is persuaded to take up and put into practice the improved methods of cultivation and marketing the industry cannot hope to progress.

It is, however, gratifying to note that ever since the advent of the Indian Central Coconut Committee, the coconut industry in Travancore, as elsewhere, has begun to receive a measure of attention and care, it had done never before. The growers too, are evincing an awareness of their lot and an urge to improve on it. And it may not be too optimistic to hope that the coconut industry of Travancore will, before long be so reorganized as to enable it to play its part in bridging the present gulf between the demand for and production of coconuts in India.

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# STRAY THOUGHTS ON COIR\*

BY V. K. ACHYUTHA MENON

**C**OIR is the fibre extracted from the husk that encloses the coconut. The husk is composed of fibre and pith in which latter the fibre is firmly embedded. The extraction of the fibre from the husk is the first process in coir industry. Before the fibre can be easily separated from the pith the green husks have to be completely retted. Retting not only facilitates extraction, but it also improves the quality of the fibre. The method of retting consists of soaking the husks in water for a period of time. Development of the coir industry essentially depends, in the present circumstances of the industry, on the existence of suitable natural retting facilities.

## A LOCALISED INDUSTRY

The total area under coconut in the world amounts to about eight million acres. The Phillipines, East Indian Islands, Ceylon, British Malaya and some of the Pacific Islands are in addition to India important in the cultivation of coconut.

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\* The views expressed in the 'THOUGHTS' are the personal views of the author.

The acreage under coconut in India is less than one-fourth of the total world acreage. But there is a developed coir industry only in India. Even in India the industry is restricted to Travancore, Cochin and the Malabar District of Madras, in which region, of course, there is concentrated cultivation of the coconut palm. This localisation of the industry is directly traceable to the natural facilities that obtain in this region for retting husks. And so long as these conditions remain, the industry will remain a virtual monopoly of this region. At least that is the hope that the area has to cherish, but not from parochial prejudice. But the industry is one of national importance and has to be further developed on proper scientific lines.

## RETTING METHODS

In the coastal districts of Travancore, Cochin and Malabar which form the important coconut area, there is an interspersed system of backwater which provides excellent natural facilities for soaking husks. The exact soil and water conditions suitable for successful retting are not definitely known. The methods of soaking followed in different localities also differ. In certain areas husks are soaked in pits by the side of the backwater where there is tidal

action. In other places the husks are thrown in shallow backwater enclosures. A third method is to collect husks in coir nets and weight them down in backwater with 4 to 7 feet of water. The methods followed are all traditional and no scientific explanations are forthcoming for following the particular methods and their effects on the husks. At the same time the methods give an indication of the general conditions that induce satisfactory retting, and those who are in the trade are aware of them. The following are some of the factors which emerge from the methods:

- 1) Retting is best done in saline water. (Fresh water also can be used, though husks, in this case, have to be removed from the water immediately the retting process is complete; or deterioration sets in. This is not clear to the trade).
- 2) Tidal effect is necessary to remove the deleterious matter produced with the progress of retting.
- 3) Heat is necessary for retting and that is the reason why the process is quicker in months when there is no rain.
- 4) If soaked husks get exposed during low tide the quality of the husk gets poor, which is very often the case with husks soaked in pits.

It is in certain parts of Travancore that the best quality coir is produced which goes to show that retting conditions there are more favourable than in other localities. It would seem that the lie of the backwater itself has much to do with the retting methods. It is essential that these and other matters connected with the industry are given by research a scientific foundation. It would seem that some research has been done; but this has been mostly in other coconut areas than India to see whether they could not develop an industry. India has to see that the industry retains its strong position in the country. The regions mostly concerned, Travancore, Cochin and Malabar, have to be particular to keep their virtual monopoly, in the economic interest of a large number of people dependent upon the coir industry for their livelihood. In all the three areas together three to four lakhs of people are living on coir.

#### NEED FOR LARGE LABOUR FORCE

This reference to numbers engaged in this industry leads to another important consideration which has tended to keep the industry in the coastal districts of South-west India. It takes the services of 600 persons to process one ton of coir yarn, the number increasing with the quality of the yarn produced. The total quantity of coir yarn made in India is estimated at over one hundred

thousand tons. The amount of labour required seems to be tremendous. Unless sufficient labour force is available coconut-growing areas cannot develop a coir industry. This is almost a condition precedent under the present conditions of the industry. The region of the coir industry is one of the mostly thickly populated areas in India which has been an essential condition in keeping the industry localised in this area.

### SELECTION OF HUSKS FOR RETTING

It is noteworthy in this connection that the quality of coir depends on other than retting conditions. The condition of the raw husk has much to do with quality. In fact a fine selection of husks begins from the time of plucking until they are soaked. The coconut palm is valued most for its nut. Perhaps coir is only a bye-product. It is fully ripe coconut which yields the largest percentage of oil. The husks of fully ripe nuts, however, do not give good quality fibre suitable for a coir industry. What is done in the region of the coir industry is to have a judicious plucking so that the husks are still green enough for a successful coir industry and the nuts are sufficiently ripe so as not to affect their oil content. In this area eight to ten pluckings a year are fairly common. This would mean that workers have to do the pluckings by going up individual palms. In coconut areas

where there is scarcity of labour it is not possible to develop a competitive coir industry.

### MECHANICAL YARNING

Man with his superior intelligence has been controlling nature in this as in other departments of human activity. Chemical processes of retting are being researched out. Some of them have been patented also. Mechanical yarning and other processes are being developed. As yet, however, they are only laboratory experiments. At least no commercial coir worked by these processes has as yet, appeared in the market. When Japan became an enemy country during World War II, vegetable fibre in general began to be a scarce commodity. Coir then assumed importance as a war material. Regulated supply of coir articles was a subject of constant discussion between the Supply Department and the Coir Industry. At one of these discussions the Supply Department authorities produced a sample of machine-made yarn produced after chemical retting. The colour of the sample was good and the twist was even. The question of competitive cost was not discussed and this yarn has remained a sample only. Commercial production of such coir appears to be a question of long time. Perhaps this sample was a dramatic intervention to bring down the price of coir. Whatever it may be, the sample indicates the tendency. It

will do well for the coir industry in India to take note of the warning and the possibility—however distant it may be—and organise the industry strong so that it can stand against any threatened competition.

### IF RESEARCH SUCCEEDS

Science is a dynamic force. Research to-day is a continuous factor always aiming at advancement. This force will be playing whether there is immediate advantage or not. In this particular case of coir scientific development is sure to take effect for two reasons. One is the non-existence of a coir industry in some of the important coconut areas of the world and their anxiety to develop the industry. Second is the increasing prices of coir articles. The first will have a double effect on the second. Research *per se*, if successful, aims to reduce cost. The development of the industry in other areas will expand production which also will have an effect on prices. The Indian coir industry has to note carefully the developmental tendencies.

### ELIMINATION OF MIDDLEMEN

Rightly or wrongly an impression has gained ground that the 'monopolistic' Indian Coir Industry has been exploiting the situation and raising prices unconscionably. It is necessary to disabuse the minds of consumers about this. Comparisons are made between pre-war and during-and-after-war prices. The

economic life, as stated already, of a large number of people in the coastal districts of Travancore, Cochin and Malabar is entirely dependent upon coir. It may be stated at once that during the pre-war period the coir workers in this region were only following coir industry as a means of 'living'. The wages for most of them were very low and the industry never gave them a subsistence allowance. There are, however, two redeeming features. One is that a whole family could work at coir and pool their meagre earnings. Secondly, the workers could always supplement their income by small catches of fish. Today, it has to be admitted wages have increased; but only absolutely. Still it is family earnings and fish that carry them on. It is next to impossible to reduce the present wages of the primary coir workers. It is for the industry to consider whether there are other ways by which attempts could be made to reduce the price of coir. As the coir trade is organised to-day there are a series of middlemen between the primary producer and the ultimate consumer. Middlemen play an important part in every trade. It has to be seen whether some of the unwanted middlemen could be removed from the coir trade. There is necessity to study the whole problem in all its aspects and see whether the organisation of the trade could be improved to the

advantage of all concerned. The problem should be approached not individually; but collectively by Travancore, Cochin and Malabar.

### RESEARCH ON COIR FIBRE

Coir fibre is useful for stuffing mattresses etc. Most of the fibre produced in India is, however, utilised for making coir yarn. Yarn is used for various agricultural purposes and for tying packages etc. It is out of yarn that coir ropes, mats, mattings, bags, etc., are made. Coir has keeping qualities in water and ropes etc. of coir are useful for ships. Coir mats and mattings provide good floor coverings particularly in moist temperate regions. The known uses of coir are many and various. To ascertain its suitability for new uses, the limitations and advantages of the fibre have to be closely studied. Its resistance to bacterial attack, its reaction to acids, its deterioration-quality are all aspects of the material which require investigation. There is a vast field for research regarding the chemical and physical properties of the coir fibre. Vegetable fibres play an important part in world economy and there is no fibre industry which has not attached to it, its own research organisation. The coir industry has to take a lesson from the other fibres.

### NEED FOR GRADING

The market for coir products is both inland and foreign. The foreign consumption is double that of India. There are places in India which are not aware of the existence of coir mats and mattings! The United Kingdom and other European countries have been markets for long years. The market has been expanding and today, it may be stated, the whole world is a market for coir. The U. S. A. was late in absorbing coir products. She has now come in and her takings are increasing year after year. Indian Trade Commissioners throughout the world have something to say about enquiries for coir which shows the present market for the product. But their comments on the enquiries should be painful reading to the industry. There is a general complaint that goods are not supplied according to samples. Actually this has had an effect in dwindling the market for coir. The war years were prosperous for the industry. This was the signal for the growth of mushroom factories ill-managed and under-financed. The boom brought its own crash and with the cessation of hostilities many of them are getting closed. This unhealthy competition cannot be allowed to spoil the market. It has to stop.

### DANGER OF SUBSTITUTES

The question of price and quality have raised the question of substitutes. One does not feel very much

agitated about this for the present. The industry, however, cannot afford to neglect this aspect of the question. The proper development of the industry cannot now be left to the trade alone. The local Governments of the coir area have a responsibility in this matter. Like other 'Malabar' products coir is a dollar earner. Its importance as a war material was demonstrated during World War II. The industry is of national importance. The Central Government has to bear its own share in the development of this industry.

### DEVELOPMENT THROUGH CENTRAL INSTITUTION

The various problems connected with the development of the coir require attention from a central institution. The Indian Central Coconut Committee has been constituted to consider questions relating to the development of coconut industry in India. From its very inception coir has not been a coconut product coming within the scope of the activities of the Committee. It is felt, especially in these days of depression, that the coir industry suffers for want of central attention and direction. The question of expanding the functions of the Indian Central Coconut Committee by bringing coir also within its bounds deserves consideration.

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# THE INDIAN CENTRAL COCONUT COMMITTEE AT WORK\*

THE fifth and the sixth meetings of the Committee were held during the year, the former at Ernakulam on the 23rd April, 1947 and the latter at Bombay on the 28th November, 1947. As Sir Datar Singh was away on deputation in London, S. Basu Esq., C.I.E., O.B.E., I.C.S., acting Vice-Chairman of the Indian Council of Agricultural Research presided over the fifth meeting. The sixth meeting was presided over by Sardar Bahadur Sir Datar Singh.

## THE FIFTH MEETING

An important subject discussed by the Committee at this meeting was the regulation of the import of coconuts and coconut products. This question had been considered by the Committee at its third meeting (April 1946) when it was decided "to recommend to the Government of India that should more imports than now of copra and coconut oil from Ceylon and other territories become possible, adequate protection should be given to the local industry so that indigenous producers would get fair

prices for their produce, and that imports should, as far as possible be in the form of copra rather than coconut oil".

The Government of India to whom the recommendation was communicated wanted to be supplied with information on the following points:—

1. "What quantities of copra and coconut oil are considered essential for importing from foreign countries to supplement the local production of these commodities in order to meet the local requirements?"
2. "What rates of import duty are proposed to be levied on the quantities considered essential?"
3. "In case of imports exceeding the quantities considered essential, what is the nature and extent of protection required for the indigenous producer in order to restrict these imports and to retain the prices of the local products at a level which may be remunerative to the producer?"
4. "What rates of import duty are proposed to be levied on copra and coconut oil with a view to encourage the imports of the former?"

After an exhaustive discussion of all the issues involved the Committee decided to recommend to the Government of India —

\* Extracts from the Report of the Indian Central Coconut Committee for the period 1st April, 1947 to 31st March, 1948.

THE INDIAN CENTRAL COCONUT COMMITTEE AT WORK

1. that the imports of coconuts and coconut products should be regulated so as to limit them to 100,000 tons per annum in terms of copra;
2. that the duty should be so fixed as to raise the price of imported copra to 10 per cent above the price prevailing in markets in India; and
3. that the duty on coconut oil should be fixed at a proportionately higher level to encourage the imports of copra, in preference to coconut oil.

Another important matter debated by the Committee at this meeting was whether the price control of copra and coconut oil should be removed or not. The following resolution on the subject was passed by a majority:

“This committee recommends to the Government of India and the Provincial/State Governments concerned to de-control the prices of coconut oil, copra and coconuts and remove all the restrictions on their free movement within India.”

Among other things the Committee also decided—

1. to approve of schemes for the establishment of a coconut nursery each at Pattambi in South Malabar and Kumta in N. Kanara (Bombay Province);

2. to make a recommendation to the Provincial and State Governments indicating the desirability of introducing legislation for the establishment of regulated markets for copra;
3. to sanction the installation of two copra drying kilns of the Ceylon Estate type, one each in the premises of the copra marketing co-operative societies at Vaikom and Narakkal;
4. to issue a leaflet dealing with the advantages of cultivating coconut on a plantation basis;
5. to publish a monthly Bulletin in English and Malayalam to furnish market intelligence and other useful information to those interested in the coconut industry and a quarterly Journal in English called “The Indian Coconut Journal”;
6. to accept the recommendations of the Technological Laboratory Sub-Committee as regards the problems suggested by it for investigation, but to defer for the present the question of the establishment of a technological laboratory;
7. to initiate a “Grow More Coconut” campaign and fix targets of increased production with a view to wiping out the present deficiency in coconut production within a period of about ten years; and



8. to request the Government of India to hand over to the Committee as soon as price control of copra and coconut oil was removed the balance amount in the Copra and Coconut Oil Price Stabilisation Fund to be spent on development work on coconut.

### SIXTH MEETING

At this meeting the Committee considered a comprehensive scheme received from the Government of Madras for establishing new coconut nurseries one each at Aduthurai, Maruteru, Anakapalle and Coimbatore and for increasing the output of the existing nurseries at Nileshtar, Pattambi, Pattukottai and Samalkot and bringing them within the purview of the comprehensive scheme. The annual output of seedlings from the existing nurseries is only 25,000 whereas under the new scheme the total output of all the eight nurseries is estimated to be 1,60,000.

While approving of the scheme, the Committee decided that the receipts from it should be divided between the Committee and the Government of Madras in the proportion of 40:60 and that the seedlings should be sold at 8 annas instead of at 4 annas according to the original nursery policy of the Committee.

The Committee also approved of a scheme for the establishment of a

coconut nursery in Assam on the same terms as those mentioned above and another scheme for the control of the rhinoceros beetle pest in that Province.

It was also decided by the Committee at this meeting —

1. to request the Governments of Travancore and Cochin to take steps to prevent further spread of the root and leaf diseases of the coconut palm;
2. to request the Provincial/State Governments concerned to take immediate steps to implement the earlier recommendation of the Committee regarding the organisation of regulated markets for copra and;
3. to set up, on the recommendation of the Government of Madras, a hot air kiln for drying copra in the premises of the Badagara branch of the Malabar District Co-operative Produce Sale Society, Calicut, and to defer for the present the execution of the Committee's earlier decision to set up a kiln each in the premises of the Copra Marketing Co-operative Societies at Vaikom and Narakkal.

Two Special Sub-Committees were set up at this meeting, one to suggest amendments to the Indian Coconut Committee Act and the other to go into the question of the

stabilisation of prices and make recommendations.

#### MEETINGS OF SUB-COMMITTEES

The Agricultural Research, Marketing and Economics and Technological Sub-Committees met twice during the year, once in connection with the fifth meeting of the Committee and again in connection with the Committee's sixth meeting. The Finance Sub-Committee, besides meeting on the above two occasions, met also on the 19th August, 1947.

#### SPECIAL SUB-COMMITTEES

A Special Sub-Committee which had been set up at the fifth meeting of the Committee to find out the possibilities of acquiring an alternative site for the Committee's Central Research Station at Kasaragod, met at Kasaragod on the 10th May, 1947 and submitted its report.

A second Special Sub-Committee which met and reported during the year concerned itself with the construction of buildings at the Committee's Central Coconut Research Station at Kayamkulam and a third one with the technical programme for the station.

The Special Sub-Committee set up by the sixth meeting of the Committee to make suggestions regarding amendments to the Indian Coconut Committee Act also met on the 30th January, 1948 and its report was ready by the beginning of March, 1948.

#### FINANCE

*Receipts.*— The receipts from coconut cess during the year amounted to Rs. 3,27,580-2-8 as against Rs. 6,07,873-15-3 during the previous year. Receipts by way of subscriptions to the monthly "Bulletin" issued by the Committee and "The Indian Coconut Journal" and sale of pamphlets amounted to Rs. 1,067-9-0. Receipts from the Central Coconut Research Station, Kayamkulam and the Central Coconut Research Station, Kasaragod, amounted to Rs. 5,321-0-8 and Rs. 2,020-13-6 respectively.

*Expenditure.*— The expenditure on administration during the year under report was Rs. 52,870-2-5 as against Rs. 43,460-9-3 in the previous year.

The travelling allowance paid to non-official members amounted to Rs. 9,189-8-0 as against Rs. 6,609-6-0 during the previous year.

Rs. 40,836-8-0 and Rs. 4,154/- were paid during the year as grants-in-aid for the year to Agricultural Research Schemes (including nursery schemes) and Co-operative Marketing Schemes respectively as against Rs. 44,260/- and Rs. 5,743-8-0 paid during the previous year as grant for a period of 15 months from 1st January to 31st March, 1947.

The recurring expenditure incurred on the Central Coconut Research Stations at Kasaragod and Kayamkulam during the year was Rs.

3,984-12-9 and Rs. 10,117-15-3 respectively; while the capital expenditure on Kayamkulam Research Station amounted to Rs. 42,934-13-1. No capital expenditure was incurred on the Kasaragod Station during the year under report.

A sum of Rs. 2,863-13-6 was spent during the year on the scheme for the drawing up of grade specifications for copra and coconut oil.

#### MISCELLANEOUS

Reference was made in the last Annual Report to the Indian Coconut Committee (Amendment) Act, 1946 and it was said that parallel amendments to the Travancore Coconut Committee Act were made in December 1946. Amendments to the Cochin and Mysore Acts were effected in October, 1947 and February, 1948 respectively.

The partition of the country into India and Pakistan in August, 1947 did not seriously affect the Committee. Its only effect was to bring down the area under coconut in India by 42,423 acres, that being the area under coconut in East Bengal and reduce the Committee's revenue by about Rs. 43,000/- per annum, the average annual coconut cess that used to be contributed by the Province of Sind.

#### COCONUT NURSERIES AND DISTRIBUTION OF SEEDLINGS

Six nursery schemes covering in all eight nurseries were in operation

during the year under report in various Provinces and States.

*Madras Province.*— Two schemes were in operation in this Province. The first one was started on the 1st January, 1946. Under the scheme two nurseries, one at Pattukottai (Tanjore District) and the other at Samalkot (East Godavari District) are being run. Under the second scheme a nursery was started at Pattambi in S. Malabar as from the 1st September, 1947. The output aimed at from each of the above three nurseries is 5,000 seedlings per annum.

The numbers of seednuts sown during the year under report were 7,500 at Samalkot and 7,733 at Pattukottai as against 2,622 and 4,829 respectively during the previous year.

Of the nuts shown during the previous year, 2,236 germinated in the Samalkot nursery and 4,400 in the Pattukottai nursery.

There was very good demand for seedlings from the Tanjore, East Godavari and neighbouring districts. The total indent for the seedlings came to 9,809 from 19 applicants at Samalkot and 17,051 from 55 applicants at Pattukottai. But the number of selected seedlings supplied from Samalkot and Pattukottai during the year under report were only 1,879 and 3,783 respectively.

Up to the 31st December, 1947, 720 parent trees had been selected for the collection of seednuts for the Pattambi nursery.

The Committee's share of recurring expenditure on the two schemes for the year under report was Rs. 7,472/-

*Orissa Province.*— The Orissa nursery scheme started functioning from 1st January, 1946 and is being worked partly at Puri and partly at Cuttack. The Agricultural Overseer in charge of the scheme is assisted by two Fieldmen, one of whom was stationed at Puri and other at Cuttack. The output target of this scheme is 10,000 quality seedlings a year.

The number of seednuts collected between 1st January, 1947 and 30th June, 1947 was 11,763 and between the 1st July, 1947 and 31st December, 1947, 8,197 as against 1,000 and 2,994 nuts respectively for the corresponding periods in 1946. The number of seedlings sold during the period under report was 1,411.

The Committee's share of expenditure on the scheme for the year ending 31st March, 1948 was Rs. 6,117.

*The Mysore State.*— The Coconut Nursery Scheme for this State was initiated on the 5th January, 1946. The nursery is located at Arsikere and the output target is 5,000 seedlings per annum. About 7,000 seednuts were collected during the year

1947. The number of seednuts sown during that period was 1,755.

The Committee's share of expenditure in respect of the scheme was Rs. 6,123 during the year under report.

*Travancore State.*— Two nurseries are functioning in Travancore, one at Vaikom in North Travancore and the other at Kazhakuttam in South Travancore. The output aimed at from each is 5,000 seedlings per annum.

During the year 1947, 6,000 seednuts were sown in the Vaikom nursery as against 1,994 in 1946 and 3,431 seednuts in the Kazhakuttam nursery as against 2,782 in 1946. During that period 1,539 seedlings were sold from Vaikom and 551 from Kazhakuttam.

The Committee's share of recurring expenditure on the two nurseries was Rs. 5,760-8-0 during the year 1947-48.

*Cochin State.*— The nursery in this State, started at Irinjalakuda on the 1st September, 1946, aims at producing 20,000 quality seedlings a year. The number of seednuts sown during the year 1947 was 5,015. There was no sale of seedlings during that period.

The Committee's share of recurring expenditure on this nursery for the year ending 31st March 1948 was Rs. 2,584.

### THE COCONUT RESEARCH SCHEME, MADRAS

During the period under report the study of the performance as adult trees of the seedlings raised from nuts obtained from different types of palms by the three methods of pollination, namely, 'self', 'natural' and 'cross', observation on button-shedding and investigations into the suitability of husks obtained from nuts of different stages of maturity for making coir fibre were continued.

The Committee's contribution to the scheme during 1947-48 was Rs. 4,780.

### SCHEME FOR THE INVESTIGATION OF DISEASES OF THE COCONUT PALM IN S. INDIA, TRAVANCORE

The above scheme came into being in March 1937, financed jointly by the Indian Council of Agricultural Research and the Government of Travancore. The Indian Central Coconut Committee took over the Indian Council of Agricultural Research's liabilities as from the 1st January, 1946. The scheme was then due to expire on 31st March, 1947, but was extended by the Committee up to 31st March, 1948 with the stipulation that the work be merged with that of the Committee's Central Coconut Research Station at Kayamkulam as early as possible. Steps were taken during the year for the amalgamation of the scheme with the Research Station

at Kayamkulam as from the 1st April, 1948.

The Committee's share of expenditure on the scheme during 1947-48 was Rs. 8,000/-.

### THE CENTRAL COCONUT RESEARCH STATION, KASARAGOD

As was referred to in the last annual report, one of the decisions of the Committee at its 3rd meeting (April, 1946) was to set up two Central Coconut Research Stations of its own, one at Kasaragod in South Kanara District for work connected with the fundamental research and botanical and genetical aspects of coconut cultivation and the other at Kayamkulam in Travancore State for the control of pests and diseases affecting the coconut palm.

The Madras Government were requested to place their existing Coconut Research Station at Kasaragod with all available facilities at the disposal of the Committee free of cost to form the nucleus of the Committee's Central Research Station at Kasaragod and to acquire for the Committee 110 acres of adjoining land for developing the station.

The Madras Government, however, were not prepared to transfer their Research Station to the Committee free of cost, but were willing to sell it to the Committee and to acquire for the Committee 110 acres of adjoining land for developing the station.

This was agreed to by the Committee and the station was transferred to the Committee on the 16th November 1947. The staff of the station consisting of a Farm Assistant, a Junior Research Assistant, a clerk, a fieldman, a peon and four permanent coolies was also placed at the Committee's disposal under the appropriate service conditions. They worked under the technical control of the Oilseeds Specialist to the Government of Madras. This arrangement is to continue until the Committee appoints a Director *cum* Coconut Specialist to be in charge of the station. Besides the Director *cum* Coconut Specialist, the station is to have a Cyto-Anatomist, an Agronomist and an Analytical Chemist who will be assisted by four Senior and four Junior Research Assistants, two Farm Assistants, one Statistical Assistant, one Artist-Photographer, eight Fieldmen and two Laboratory Assistants. The question of the appointment of the four officers mentioned above was under correspondence with the Government of India when the year ended.

When the question of the acquisition of 110 acres of adjoining land was mooted objections were raised by neighbouring land owners. The Government of Madras, therefore, wanted to know whether the Committee could not suggest an alternative site. Thereupon a special sub-committee consisting of the Director of Agriculture, Madras, the Oilseeds Specialist, Coimbatore, the Collector of South Kanara District, Rao Sahib A. K. Menon, Rao Bahadur K. T. Alwa, Mr. K. R. Narayana Iyer and Mr. K. Gopalan was set up to find out the possibility of securing an

alternative site. The sub-committee after thorough investigation was, however, of the opinion that there was no alternative site which would meet even the bare requirements of the proposed Central Research Station. However, as recommended by the sub-committee an inhabited area of 10 acres was excluded from acquisition and an alternative plot of 10 acres proposed to be acquired. In order to speed up the acquisition the Government of Madras agreed to appoint at the Committee's cost a special acquisition staff for a period of 8 months. The special acquisition staff consisting of a Tahsildar, 3 Special Revenue Inspectors, two surveyors, one lower division clerk, one typist, four measurers and six peons started work in February, 1948.

#### THE CENTRAL COCONUT RESEARCH STATION, KAYAMKULAM.

As already mentioned, the Committee at its 3rd meeting (April, 1946) decided to set up the above station to investigate the diseases of the coconut palm. The Government of Travancore were requested to acquire an area of 56.69 acres at Krishnapuram, near Kayamkulam, to set up the station. The whole area was acquired during the year under report, but only 45.18 acres had actually come into the Committee's possession by the end of March, 1947.

The foundation stone of the station was laid by His Highness the Elaya Raja of Travancore on the 24th April, 1947 in the presence of a large and distinguished gathering.

Plans and estimates for the construction of the Laboratory and rest house at the station were finalised in August, 1947 and tenders for

their construction were invited. The lowest tender was that of Messrs. T. K. Varghese & Co., Kundara, who had quoted Rs. 1,78,238/-. This was accepted by the Committee at its 6th meeting (November, 1947) and later approved by the Government of India.

With the permission of the Government of Travancore, Dr. K. P. V. Menon, Plant Pathologist, Quilon, was put in charge of preliminary arrangements connected with the setting up of the station.

A technical programme sub-committee consisting of Mr. T. C. Kochunni Pillai, Director of Agriculture, Travancore, Mr. C. M. John, Oilseeds Specialist, Coimbatore, Dr. K. P. V. Menon, Plant Pathologist, Quilon, Dr. U. Sivaraman Nair, Professor of Statistics, Trivandrum, Mr. M. K. Varghese, Mycologist, Kayamkulam, and Mr. K. Gopalan, Secretary, Indian Central Coconut Committee was constituted to draw up a technical programme for the station. The sub-committee which met on the 20th July, 1947 was of the opinion that the Research staff of the station should be appointed forthwith as the detailed technical programme could be drawn up by them alone.

At its sixth meeting the Committee sanctioned the immediate appointment of the Joint Director and Coconut Pathologist (who is to be in charge of the station), the Plant Physiologist, the Entomologist, the Soil Chemist, four Junior Research Assistants and part of the office staff, the remaining staff for the station being appointed as and when found necessary. The Committee also decided to amalgamate the Coconut Diseases Investigation

Scheme, Travancore, with the work of the Central Research Station, Kayamkulam, with effect from the 1st January, 1948 and to request the Travancore Government to place at the disposal of the Committee the services of the temporary staff as well as those holding permanent posts in the Travancore Department of Agriculture, working in the scheme, under the appropriate service conditions. The Committee further decided to request the Travancore Government to permit the Committee's staff to continue to make use of the laboratory and equipment at Quilon and experimental farms at Kayamkulam and Oachira even after the amalgamation, until the Committee's buildings and laboratory at Kayamkulam were completed.

As the sanctions of the Governments of India and of Travancore were received late, the amalgamation could not be effected with effect from the 1st January, 1948. It was accordingly decided to give effect to it from the 1st April, 1948.

Sanction of the Government of India was received towards the close of the year for the appointment of Dr. K. P. V. Menon, Plant Pathologist as Joint Director and Coconut Pathologist in charge of the station and for the posts of Plant Physiologist, Entomologist, and Soil Chemist. Applications were invited for the last three posts and a few others and they were coming in when the year ended.

The Travancore Government's sanction was also obtained before the end of the year transferring to the Committee the staff of the scheme except the Plant Pathologist

and permitting the use of the Laboratory at Quilon and the Experimental Coconut Farm at Kayamkulam and Oachira as from the 1st April, 1948.

### TECHNOLOGICAL RESEARCH

In the last Annual Report mention was made of a special sub-committee that had been set up to consider which individual technological problems required to be investigated and to put up proposals regarding the establishment of a Technological Research Laboratory. The problems listed by the Sub-committee for investigation were given in Appendix VI of the last annual report.

This special sub-committee's report was considered by the Committee at its fifth meeting (April, 1947) and it was decided to accept for investigation the problems listed but to postpone for the time being the question of the establishment of a Technological Laboratory.

As decided at the Committee's sixth meeting, correspondence was begun during the year under report to collect information from foreign countries on research work done in regard to the following subjects:—

- (1) Preservation of coconut oil for a long time without getting rancid.
- (2) The nutritional qualities of coconut oil and how they could be made equal to those of ghee.
- (3) Utilisation of rubber, plastics, etc., in the manufacture of containers for coconut oil.
- (4) Removal of impurities in commercial coconut oil.

### STATISTICS OF ACREAGE AND PRODUCTION

Acreage and production statistics for 1945-46 were collected during the year and they are given below along with the figures for 1944-45 published in the last Annual Report.

#### Area under and production of coconuts in India.

S. No.	Province/State.	Area under coconut (in acres).		Estimated production of nuts (in thousands).	
		1944-45	1945-46	1944-45	1945-46.
1.	Madras	615,411	6,13,997	14,83,100	15,36,400
2.	Bombay	25,070	24,675	53,000	53,000
3.	West Bengal	16,448	16,448	22,205	22,205
4.	Orissa	10,950	10,949	21,900	19,073
5.	Assam (excluding Sylhet).	3,546	3,600	20,995	21,534
6.	Travancore.	575,673	5,76,882	12,08,913	12,11,453
7.	Mysore.	170,180	1,75,796	2,72,288	2,81,272
8.	Cochin.	66,642	64,988	1,33,284	1,29,976
9.	Pudukottai	1,492	1,569	149	157
10.	Others.	1,000	1,000	2,000	2,000
Total:		14,86,412	14,89,904	32,17,834	32,77,070

### STATISTICS OF COPRA CRUSHED, OIL EXTRACTED AND CAKE PRODUCED

The quantities of copra crushed, oil extracted and cake produced in

copra-crushing mills coming under the definition of factory under the Factories Act were collected during the year. The figures collected for 1946-47 are given below:—

THE INDIAN CENTRAL COCONUT COMMITTEE AT WORK

TABLE I. Quantity of copra crushed from 1st April 1946 to

Province/State	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Madras	9,405	14,117	6,376	6,986	4,332	5,360	6,570	8,857
Bombay	37,300	21,088	7,591	4,325	2,522	572	10,176	13,975
Travancore State **	96,023	1,08,454	74,732	76,868	85,499	70,886	76,778	78,906
Cochin State	53,310	32,306	19,003	25,829	28,420	25,574	18,580	16,306
Total	1,96,038	1,75,965	1,07,702	1,14,008	1,20,773	1,02,392	1,12,104	1,18,044

TABLE II. Quantity of coconut oil extracted from

Province/State	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Madras	5,868	9,358	4,041	4,325	2,835	3,505	4,647	5,625
Bombay	22,763	12,944	4,513	2,557	1,506	343	6,316	8,746
Travancore State **	61,910	69,739	48,108	49,421	52,648	42,670	47,533	44,196
Cochin State	31,283	20,821	11,402	16,153	17,676	15,060	11,622	10,233
Total	1,21,824	1,12,862	68,064	72,456	74,665	61,578	70,118	68,800

TABLE III. Quantity of oil cake produced from

Province/State	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Madras	3,005	4,341	1,839	2,335	1,364	1,636	2,189	2,784
Bombay	13,809	7,674	2,809	1,690	971	218	3,687	5,044
Travancore State **	33,138	37,274	25,683	26,339	29,436	24,881	27,074	27,836
Cochin State.	18,368	11,462	6,453	9,016	9,637	8,721	6,458	5,615
Total	68,320	60,751	36,784	39,380	41,408	35,456	39,408	41,279

THE INDIAN CENTRAL COCONUT COMMITTEE AT WORK

31st March 1947 in mills included under the Factories Act (in cwt.)

Dec.	Jan.	Feb.	March	Total.	Remarks
7,785	6,719	15,997	20,400	1,12,904	
23,371	21,452	3	*	1,42,375	* Returns not available.
47,913	56,532	72,814	69,351	9,14,756	** Does not include figures for Kottayam Division for April to July 1946 which are not available.
18,226	18,501	20,289	22,718	2,99,062	
97,295	1,03,204	1,09,103	1,12,469	14,69,097	

1st April 1946 to 31st March 1947 (in cwt.)

Dec.	Jan.	Feb.	March	Total.	Remarks.
4,127	4,305	10,536	12,697	71,869	
14,365	13,054	2	*	87,109	* Returns not available.
27,475	34,974	43,161	43,308	5,65,143	** Does not include figures for Kottayam Division for April to July 1946 which are not available.
11,507	10,569	12,793	14,309	1,83,428	
57,474	62,902	66,492	70,314	9,07,549	

1st April 1946 to 31st March 1947 (in cwt.)

Dec.	Jan.	Feb.	March.	Total.	Remarks.
2,031	2,257	4,845	7,278	35,904	
8,476	7,634	1	*	52,013	* Returns not available.
15,486	19,749	24,324	24,262	315,482	** Does not include figures for Kottayam Division for April to July 1946 which are not available.
6,278	6,024	7,012	7,823	1,02,867	
32,271	35,664	36,182	39,363	5,06,266	

**GRADE SPECIFICATIONS**

The scheme for the analysis of samples of copra and coconut oil with a view to drawing up grade specifications for them began to function from the 10th July, 1947.

The Madras Government were good enough to permit the analysis being made under the control and supervision of the Oilseeds Specialist in his laboratory at Coimbatore. The scheme which was sanctioned for a period of 10 months made provision for a chemist and a laboratory attender.

Samples of copra and coconut oil pertaining to the months of July, October and January were collected and analysed during the year under report.

Copra samples included samples of milling copra and edible copra (cups and balls).

Samples of milling copra were obtained from Quilon, Alleppey, Vaykom and Parur in Travancore State, Ernakulam and Narakkal in Cochin

State, and Ponani, Calicut, Badagara and Mangalore in Madras Presidency. A few samples of milling copra from Ceylon and the Philippines were also analysed.

Edible copra (cups) was collected from all the above places particularly from Alleppey and Badagara.

Edible copra (balls) samples were collected from Muthupet, Amalapuram, Rajahmundry and Coconada in Madras Presidency, Arsikere and Tiptur in Mysore State, and Bombay, Karachi and Delhi.

Coconut oil samples were collected from Quilon, Alleppey and Shertallai (Travancore State), Ernakulam (Cochin State), Calicut, Tirur, Ambajipet and Tanjore (Madras Presidency) and Bombay and Karachi.

A few samples of Ceylon coconut oil and country chekku oil were also collected.

The following table shows the number of samples of the different varieties of copra and coconut oil analysed during the period.

	Copra.			Coconut oil.			
	Milling (cups)	Edible (cups)	Edible (balls.)	Ceylon (milling)	Mill	Chekku	Ceylon
July	29	26	20	2	20	8	Nil
October	24	11	17	4	16	8	2
January	26	21	22	Nil			

**CO-OPERATIVE MARKETING OF COPRA**

The two schemes for the co-operative marketing of copra started in January, 1946 at Vaikom in Travancore and Narakkal in Cochin State functioned during the year under report.

*The Travancore Scheme:* The Vaikom-Shertallai Copra Marketing Co-operative Society Ltd., which was started under the scheme started functioning on 1st January, 1946.

The following statement shows the business transactions of the Society from the date of its commencement to 31st December, 1947.

Particulars of Expenditure.	Rs. As. Ps.		
	Pay & allowances of staff.	7,174	0
Contingencies	15,683	0	0
Interest on loans	3,508	0	0
Purchase price of copra	9,32,642	0	0
<b>Total:</b>	<b>9,59,007</b>	<b>0</b>	<b>0</b>

Particulars of Sale proceeds.	Rs. As. Ps.		
	Sale proceeds	9,24,946	0
Stocks on hand	25,767	0	0
Gross loss	8,294	0	0
<b>Total:</b>	<b>9,59,007</b>	<b>0</b>	<b>0</b>

The transactions of the Society thus showed a gross loss of Rs. 8,294 during the two years of its working. During this period it, however, received a subsidy of Rs. 9,362-8-0 from the Travancore Government and the Committee. If this amount is taken into account, the Society would be showing a profit of Rs. 1,068-8-0. The loss incurred by the Society has been accounted for by the uncertain conditions in the copra market and the fall in copra prices consequent on decreased demand from the soap industry which was

faced with short supply of caustic soda.

The Committee bore 50 per cent of the recurring expenditure on the scheme and its share for the year under report was Rs. 2,415/-.

*The Cochin Scheme:* Under this scheme the Narakkal Coconut Marketing Society, Ltd., was started on the 26th January, 1946.

The following statement gives an idea of the business transactions of the Society from 26th January, 1946 to 31st December, 1947:—

THE INDIAN CENTRAL COCONUT COMMITTEE AT WORK

Particulars of expenditure	Rs. As. Ps.			Particulars of sale proceeds	Rs. As. Ps.		
	Purchase price of coconuts.	35,985	0		0	Sale proceeds of copra	67,804
Cost of copra purchased	41,386	13	0	-do- of husks.	2,023	6	3
Labour charges for dehusking coconut etc.	310	4	3	Sale proceeds of shell etc.	1,079	9	0
Labour charges for making copra	1,241	11	1	<i>Estimated value of stock</i>			
Sales-tax paid	485	0	0	Coconuts - 101	15	0	0
Total	79,408	12	4	Copra, 12 candies, 10 mds. and 21 lbs.	3,093	6	6
				Husks, 1,53,342	4,581	0	0
				Shell, 15,311	107	0	0
				Loss	704	7	4
				Total	79,408	12	4

The above does not take into account the cost of administration of the Society which was of the order of Rs. 6,237-7-2. The gross loss to the Society (including cost of administration) would, therefore, be Rs. 6,941-14-6. As against this the Society received a subsidy of the order of Rs. 7,355-8-0 from the Committee and the Government of Cochin. If this were also taken into account the Society would be showing a small profit of Rs. 413-9-6.

The Committee which bore 50 per cent of the recurring expenditure on

the scheme contributed during the year under report a sum of Rs. 1,739/-.

Prices of coconuts and coconut products had a very chequered course during the course of the year under report.

The price control of copra and coconut products introduced on the 15th December, 1946 by the Government of India was in force at the beginning of the year. The ceiling prices for copra and coconut oil fixed by the Government of India at various places were as follows:—

	Copra (per ton)	Coconut oil (per ton, without containers)
	Rs.	Rs.
Cochin ...	884	1,390
Madras ...	936	1,456
Bombay ...	934	1,462
Calcutta ...	978	1,483
Karachi ...	948	1,475

The floor prices of copra and coconut oil were fixed at Rs. 800 and Rs. 1,230 per ton for the producing areas.

The price of coconuts was controlled by the Madras and Travancore Governments. The former had fixed the wholesale price of coconuts at Rs. 125/- per 1000 in Malabar and S. Kanara, and Rs. 170 per 1000 in the other districts.

The Government of Travancore had fixed the floor and ceiling prices of coconuts without husk at Rs. 13-8-0 and Rs. 16/- per 100.

The Government of Cochin had not controlled the price of coconuts and the market quotation for coconut (husked) in Cochin at the beginning of the year under review was Rs. 145/- per 1000.

Control of prices cannot be said to have been popular. There was demand for its removal from various

quarters and at its fifth meeting held on the 23rd April, 1947, the Indian Central Coconut Committee, by a majority vote, passed a resolution recommending to the Government of India and the Provincial/State Governments concerned "to decontrol the price of coconut oil, copra and coconuts and remove all restrictions on their free movement within India."

Control was lifted on the 20th June, 1947. The immediate effect was for prices to shoot up. This was, however, only a temporary phenomenon, for prices began to climb down gradually and there were times when they touched levels far below the floorings fixed by the Government during the control period.

The average monthly prices for coconuts, copra and coconut oil at Alleppey, Cochin and Calicut during the period under report is given below:-

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THE INDIAN CENTRAL COCONUT COMMITTEE AT WORK

STATEMENT SHOWING THE MONTHLY AVERAGE PRICES OF  
COCONUT, COPRA, COCONUT OIL AND COCONUT OIL CAKE  
AT COCHIN, ALLEPPEY AND CALICUT DURING  
THE PERIOD APRIL 1947 TO MARCH 1948

**(1) Coconuts (price per 1000 nuts)**

Months.	Cochin (Husked)		Allepey (Husked)		Calicut (Husked)		Calicut (unhusked)	
	Rs.	As.	Rs.	As.	Rs.	As.	Rs.	As.
April 1947	145	0	*		125	0	130	0
May "	145	0	*		125	0	130	0
June "	163	12	157	8	128	12	133	12
July "	186	4	172	8	140	0	145	0
August "	174	6	150	0	135	0	140	0
Sept. "	145	8	136	14	132	0	137	0
Oct. "	128	12	118	8	112	8	118	12
Nov. "	121	4	121	14	121	0	129	0
Dec. "	120	8	127	8	115	0	120	0
Jan. 1948	120	0	120	10	114	0	119	0
Feb. "	117	8	113	12	105	0	110	0
March "	110	4	95	8	91	4	96	4

**(2) Copra (price per ton)**

Months.	Cochin		Allepey				Calicut							
	Office		Smoked		Sundried		Office		Nottam Rasi		Dilpasand			
	Rs.	As.	Rs.	As.	Rs.	As.	Rs.	As.	Rs.	As.	Rs.	As.		
April 1947	*		*		1212	7	880	0	880	0	880	0	880	0
May "	*		861	15	1105	3	880	0	880	0	880	0	880	0
June "	981	12	993	4	1324	0	972	0	996	0	972	0	988	0
July "	1370	15	1184	7	1223	13	1280	0	1372	0	1280	0	1344	0
August "	1206	2	1083	2	1108	13	1204	0	1372	0	1204	0	1260	0
Sept. "	960	8	958	10	999	6	1054	6	1465	10	1068	13	1196	13
Oct. "	925	2	872	2	899	7	904	0	1344	0	855	0	1016	0
Nov. "	901	9	882	6	899	15	905	9	1305	9	864	0	979	3
Dec. "	898	0	893	15	911	7	959	0	1312	0	912	0	984	0
Jan. 1948	900	4	863	9	880	10	873	9	1084	13	850	6	937	10
Feb. "	821	8	761	0	776	5	812	0	872	0	788	0	864	0
March "	720	11	651	11	668	12	676	0	726	8	666	5	710	0

\* controlled and prices not quoted.

THE INDIAN CENTRAL COCONUT COMMITTEE AT WORK

(3) Coconut oil (price per ton)

Month	Cochin		Alleppy		Calicut.	
	Rs.	As.	Rs.	As.	Rs.	As.
April 1947	*		*		1392	13
May "	*		1330	0	1392	13
June "	1469	6	1566	0	1524	10
July "	1901	10	1863	7	1936	0
August "	1742	0	1679	13	1884	0
Sept. "	1445	6	1431	9	1638	6
Oct. "	1351	3	1259	15	1352	0
Nov. "	1268	15	1229	1	1331	3
Dec. "	1338	7	1292	12	1364	0
January 1948	1267	8	1219	12	1254	7
Feb. "	1124	4	1090	1	1192	0
March "	1008	1	973	3	968	0

\* Controlled and prices not quoted.

Coconut oil cake (price per ton)

Month	Cochin		Alleppy	
	Rs.	As.	Rs.	As.
April 1947	*		*	
May "	*		*	
June "	272	1	270	7
July "	357	14	243	3
August "	287	11	202	8
Sept. "	252	11	252	8
Oct. "	292	0	290	11
Nov. "	328	14	387	11
Dec. "	358	0	349	6
January 1948	388	12	364	3
Feb. "	373	3	342	4
March "	325	13	247	10

\* Controlled and prices not quoted.

Many factors such as lack of transport facilities and unsettled conditions in Upper India were responsible for the fall in price, but the principal reason was the short supply of caustic soda for the soap industry, which reduced the usual large flow of oil to that industry to a considerable extent.

At its sixth meeting on the 28th November the Indian Central Coconut Committee took a serious view of the declining prices and set up a special sub-committee to go into the question of the stabilisation of the prices of coconuts and coconut products. A questionnaire was issued to ascertain the views of the various interests concerned and the replies were still coming in when the year under review closed.

#### REGULATED MARKETS

At its fifth meeting the Committee considered the question of setting up regulated markets for copra and decided to make a recommendation to the Provincial/State Governments indicating the desirability of introducing legislation for the establishment of regulated markets for copra. The Governments of Madras, Mysore, Travancore and Cochin were accordingly addressed in the matter.

The Madras Government replied that the matter was under their consideration.

The Mysore Government's reply was that they had already enacted suitable legislation (The Mysore

Agricultural Produce Markets Act, 1939) to provide for the establishment of Regulated Markets for all agricultural commodities including copra and coconut, and that the question applying the Act to Tiptur and Arsikere towns in respect of copra and coconuts, among other agricultural commodities, was under the active consideration of the Government.

The Travancore Government also had the matter under their consideration when the year under report closed.

The Cochin Government referred the matter to their Registrar of Co-operative Societies who was asked to submit a scheme for the establishment of regulated markets for copra, in consultation with the Director of Industries and Commerce and the Director of Agriculture. At the instance of the Director of Agriculture, a conference attended by the above three officers, Mr. K. P. Madhavan Nair of the Ernakulam Mills and a member of the Committee, Mr. R. Krishna Iyer, Assistant Manager, Tata Oil Mills Co., Ltd., and the Secretary, Indian Central Coconut Committee, was held on the 31st March, 1948 in the office of the Indian Central Coconut Committee, Ernakulam, to discuss the subject. The consensus of opinion of the conference was that there was scope for organizing a regulated market for copra in Cochin,

but that its success would be enhanced if Travancore and Malabar also fell in line. It was, therefore, decided to hold at Ernakulam on the 17th April, 1948 a conference of the representatives of the coconut industry (including growers, merchants, millers and others) in Cochin, Travancore and Malabar to discuss the whole matter.

### PROPAGANDA

At its fifth meeting the Committee decided to publish a monthly "Bulletin" in English and in Malayalam and a quarterly Journal in English.

The "Bulletin" began its publication from August, 1947 and eight issues were brought out during the year under review. The monthly "Bulletin" publishes useful articles on various aspects of the coconut industry and also gives a review of the market conditions and prices during the previous month. The subscription is only six annas per annum (inclusive of postage). Both the English and Malayalam editions have become very popular among coconut growers and others interested in the coconut industry.

The quarterly in English is called "The Indian Coconut Journal" and the first two issues relating to the quarters October-December 1947 and January-March 1948 have been published. The annual subscription for

the Journal is Rs. 2/- only inclusive of postage.

As decided by the Committee at its sixth meeting, 2,500 copies in Malayalam and 1000 copies in English of the pamphlet on the "Advantages of Cultivating Coconut on a Plantation Basis" prepared by Mr. C. M. John, Oilseeds Specialist, Coimbatore, was printed during the year and supplied to the Provincial/State Departments of Agriculture for distribution. The Kanarese, Tamil, Telugu and Oriya versions of the pamphlet were under preparation when the year ended.

Two other pamphlets in Malayalam were also issued during the year. One was on "Coconut Cultivation" by Mr. K. Gopala Marar, Economic Botanist, Cochin, and the other on "Diseases of the Coconut Palm" by Dr. K. P. V. Menon, Plant Pathologist, Quilon. Both were reprints of articles published in the "Bulletin".

Through the kind courtesy of the Department of Agriculture, Madras, copies of the "Bulletin", "The Indian Coconut Journal" and the pamphlets issued by the Committee were placed on sale in the departmental staff at the All-India Agricultural and Industrial Exhibition, Tellicherry, held in February, 1948. Samples of quality coconut seedlings were also exhibited in the stall.

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6. BANGALORE: Arcot Srinivasa-char Road.
7. HYDERABAD (Dn.): B2, Block 4, Shah Rahe Usmani, Sultan Bazar.
8. COCHIN: Calvetty Road.
9. DAVANGERE: Mandi Peth.
10. MANGALORE: 20/165, Nireshwallaya Road.
11. TUTICORIN: 15, Victoria Street.
12. VIZAGAPATAM: 18/10 Sivalayam Ward Main Road.

# Kerala Coconut Industries (Travancore), Ltd.

(Incorporated in Travancore with limited liability)

## CAPITAL

Authorised .....	.....	.....	.....	Rs. 20,00,000
divided into 2,00,000 shares of Rs. 10 each				
Present issue .....	.....	.....	.....	Rs. 12,00,000
divided into 1,20,000 shares of Rs. 10 each				
payable Rs. 5 on application				
Rs. 5 on allotment				

## DIRECTORS

V. C. SUBBIAH GOUNDER Esq., Mill Owner	Director, The Ganambika Mills Ltd. V. C. Vellangiri Gounder Bros. Vellakinar, Coimbatore.
H. HOLCK LARSEN Esq., Engineer	Managing Director, Larsen & Toubro, Ltd. Director, L & T (Management), Ltd. Engineering Construction Corporation, Ltd. Biochemical Products, Ltd. Viking Transports, Ltd. Iwacom, Ltd. Art Bangle, Ltd. Alu Capsules, Ltd. India Crown Cork Company, Ltd. Etc.

Dougall Road, Ballard Estate, Bombay.

K. K. KURUVILA Esq.,	Director, Industrial Managers, Ltd. Vijaya Luxmi Oil Industries, Ltd. Kannukuzhyil, Kottayam.
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### Factory Site:

Willingdon Island, Cochin Port.

### Managing Agents:

Industrial Managers, Limited,  
Post Box No. 18  
Kottayam.

The Company proposes to manufacture Desiccated Coconuts,  
Khopra and other Coconut products.

*For further particulars apply to the*

**MANAGING AGENTS**

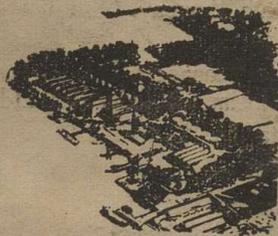


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TATAPURAM, COCHIN STATE.

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**TATAPURAM & BOMBAY.**

TI 1097 (Revised)

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