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SURVEY OF COTTAGE INDUSTRIES

IN THE

MALABAR, SOUTH KANARA AND THE NILGIRI DISTRICTS

BY

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M A D R A S

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PRELIMINARY REPORT ON THE SURVEY OF COTTAGE INDUSTRIES IN THE MALABAR, SOUTH KANARA AND THE NILGIRI DISTRICTS.

I submit my report on the survey of Cottage Industries in the three districts of Malabar, South Kanara and the Nilgiris which form a contiguous group. Of the three districts, Malabar and the Nilgiris were surveyed by me while the third was done by a Special Tahsildar under my supervision. The survey of the group was commenced in the latter half of April and completed by the beginning of July 1928. The Nilgiris is the smallest district in the Presidency and has practically no indigenous industries worth the name with the exception of the manufacture or extraction of Eucalyptus oil from the leaves of the Eucalyptus Globulus.

The two districts of Malabar and South Kanara are situated along the coast of the Arabian Sea stretching to a length of about 300 miles from north to south consisting of hills and dales and spreading from the foot of the western ghauts to the sea. The Wynaad taluk lies above the western ghauts and its north-eastern boundary merges almost imperceptibly into the Mysore Plateau. The Laccadive and Minicoy Islands are attached to these districts and the northernmost group known as the Amindivis forms part of the South Kanara district. The islands, being more than 100 miles away from the coast, were not visited by me for making a survey.

The districts are exposed to the full force of the south-west monsoons and the rainfall is copious and ordinarily unfailling. The hills are clad with forests of rich timber and the country is prosperous with extensive plantations of cocoanut palms, the products thereof furnishing materials for several industries flourishing in the districts, chief among them being cocoanut oil-pressing, and coir industry. The talipot, sago, arecanut palms and other trees such as palmyra afford sufficient materials for various industries while the long sea coast has given occupation for a large number of fishermen and given an impetus to such industries as fish-curing and manufacture of fish oil and guano, the latter commanding a large trade on account of its manurial value. The main industries that are common to the two districts are the manufacture of coir yarn and rope and the making of metal wares, mostly from copper, while cocoanut oil crushing and kora mat weaving are done more extensively

in Malabar. Weaving as an indigenous industry is of little importance and Malabar and South Kanara have fewer weavers in proportion to the population than any other district in the Presidency except the Nilgiris. Among other industries carried on in these districts jaggery manufacture from cocoanut, palmyra and sago palms, umbrella making from talipot leaves, manufacture of palm-leaf hats, mats and baskets from bamboo and palmyra, cocoanut shell carving, match industry at Palghat, clog or wooden sandals manufacture and palmyra fibre making require more than a passing reference in this report. The two districts are specially favoured by nature in possessing a kind of clay which has given rise to the establishment of a large number of factories for manufacturing building tiles which are exported to all parts of India and Ceylon.

Cocoanut Fibre Industry.

Of the total population of 3,098,871 in the Malabar district, 71,529 people or 2·1 per cent of the population are engaged in the manufacture of fibre and coir from the cocoanut husks. This is the most important expanding industry of the district next only to agriculture, which is carried on mainly by Tiyyans and Vettuvans in the southern and sea-coast taluks. Garden lands are devoted to the cultivation of the cocoanuts, arecanuts, etc. Cocoanuts are cultivated with great care and after the initial outlay which is heavy and the first few years when they are unproductive, they cost very little to keep up and are very remunerative. Cocoanuts have of late years proved such a paying crop that planting has taken place extensively even on paddy lands especially in the coastal amsams of North Malabar and Ponnani. The Malabar Tenants' Compensation Act while tending to increase the area under plantation has had the baneful effect of making the tenants to plant too closely regardless of the harm resulting from inadequate spacing in their anxiety to get as much compensation as possible which under the provisions of the Act is calculated on the number and age of the trees planted without reference to their yield.

There are several varieties of cocoanuts due to varying conditions of soil and climate, the difference between them being noticeable chiefly in the shape, size and colour of the nuts and also the yielding power. The latter largely depends upon the locality where the trees are grown. The yield of those grown at the sea level near the coast is said to be much greater than the trees grown inland at higher elevation. It is commonly believed that the cocoanut grown in Travancore is superior to that in Malabar on account of the more favourable climatic and soil conditions in the former. The palm when cultivated under proper conditions is a prolific yielder and attains maturity to bear fruits in about seven years after plantation.

The average yield appears to be 50 to 60 nuts per tree in a plantation of 50 to 60 trees to the acre, which is the normal spacing for the trees. Planting in excess of this number would result in overcrowding which affects the yield injuriously.

In most localities where the cocoanut is grown some sort of rope or cordage is made for local use by freeing the fibres of the husk from the accompanying cork-like matter and spinning them. In Malabar, the production of fibre is not merely for local use but for export overseas. The fibre products of the West Coast districts are superior to those produced elsewhere except in Travancore and Alleppey. The value of coir fibre as a rope-making material is due to the fact that it is slightly liquefied, is elastic and withstands the action of water very well. It is supposed to wear better in sea water than an iron chain which gets oxidised by the action of sea water and hence the great value of the former as cordage in seafaring ships.

The source of the fibre is the thick fibrous husk surrounding the fruit of the palm, the outer skin or epicarp of the husk being smooth and consisting of a layer of highly resistant long fibres. The fibres vary in length and thickness according to their position in the husks in which they lie. In the fresh condition the interior of the husks is light coloured and fairly soft and as drying proceeds it becomes harder and the mass gets redder in colour. The condition of the husks varies with the progress of ripening in the nut and it is said that the best fibre is obtained from nuts not fully ripe. Generally, cocoanuts take a year to ripen and if they are left unplucked for this period the outer skin loses its green colour and becomes dry.

In general, the nuts are gathered at intervals of about 45 days when they are about ten months' old and just before they are fully ripe, but there are cases in which there are twelve pluckings in a year when the gathering should be done at an interval of 20 to 23 days but not left to the end of 30 days. They are often left to lie for a short period after plucking and then husked but from experience it is found that the shorter the time allowed to lapse between the plucking of the nut and the placing of the husk under water the lighter will be the colour of the coir which can be produced, but to obtain the best results the husks should be peeled off immediately after the pluckings are made and soaked in water without exposure to the sun. The conditions under which the cocoanut husk is retted to prepare it for the separation of fibre vary somewhat in different localities but one condition holds good in all, viz., the foul water is expelled and fresh water is let in periodically. Sites for retting are accordingly chosen along backwaters so that the slight tidal rise and fall which occurs in the backwaters might bring about the change. Government

charges 4 annas per cent of land in backwaters occupied for the purpose. The following are the common methods employed in keeping the husks under water :—

- (a) In staked enclosures in shallow water,
- (b) In submerged 'fields' through which the water flows at each tidal ebb and flow, or
- (c) In pits dug close to the channels, the sandy soil permitting the entrance and exit of water by percolation.

The degree of salinity of the water will vary with the distance of the soaking place from the 'sea entrance to the backwaters and this affects the colour of the fibre'. The market value of the separated fibre seems to be gauged by considerations of colour and fineness and the quality of the yarn which is spun from it. The separation and spinning into yarn is carried on as a cottage industry on the spot and the yarn is collected by dealers and sold to shippers who grade it into different qualities for the manufacture of mats, etc., and for shipment. The husks when placed to soak, tend to float at first but are kept down by the weight of earth thrown on the leaf fronds or grassmats with which they are covered. Soaking is continued from 10 to 12 months so that the retting may be complete, but in rare cases particularly when the husks are set to soak in winter the period exceeds one year but the fibre loses its brightness and looks grey. In very many cases the husks are removed soon after six months' time is over as small capitalists can hardly afford to wait for the full period. When the soaking is completed, the husks are lifted, rinsed in fresh water to free them from mud and dirt, and when drained and dry, are beaten to separate the loosened pith from the fibre. The general impression appears to be that the nature of the water has a material effect upon the rate of retting and the colour of the fibre ultimately obtained, and salt water is supposed to quicken the pace and improve the colour but it is after research that an authoritative opinion can be expressed in the matter. Husks coming from the interior parts of the district will take time to reach the spot of soaking and are consequently exposed to the sun and rain. The fibre obtained from them therefore differs in colour and strength.

In the interior of the district where there are no facilities for soaking the husks, the dry process of extracting the fibre is followed. The husks without being soaked are beaten so that the fibres may be loosened from the outer skin. In this process of extraction of fibre it is difficult to get rid of the pith and consequently the fibre is inferior to the soaked yarn both in colour and strength; but even for this there is considerable demand as it is used as inner lining for big ropes made of soaked yarn. There are about 25 varieties of

unsoaked yarns mostly taking their names after the villages of manufacture and known as 'Kallai, Parappanangadi, Kadungou, etc.' They are exported in large quantities to foreign countries specially to Europe, and America by the European firms at Calicut and Cochin who alone purchase the dry variety. Besides, the export of soaked and unsoaked yarn, loose fibre pressed and baled is also sent overseas in large quantities for use in European countries in filling up cushions and mattresses. Unsoaked yarn takes the dye better but is not as suitable as soaked yarn for making mats and mattings.

Unlike in Travancore the cleaning of the fibre after beating from husks is invariably done by hand. As soon as the fibres are beaten they are teased by hand and exposed to the sun for drying. In Travancore, small willowing machines are used which consist of a drum in which iron machines are used which consist of a drum in which an iron shaft is made to revolve carrying a number of blades set spirally, on its axis. While the shaft is revolving at a high speed, the fibres are fed at one end of the machine and are seized by blades as they pass through a grid at the top of the machine which scrapes off the pith from the fibre. Spinning into coir or thread is done mostly by Mappilla and Hindu women. They do the whole work by hand. Twisting of strands into yarn is done either on their laps or between the two palms whereas in Travancore spinning into coir or thread is done by machine driven by hand. A big wheel on a wooden board is turned by a handle which puts two other smaller wheels into motion to which is attached a hook-like spindle. Two persons each holding one sliver begin by introducing the fibre into the spindle. They go backwards as spinning proceeds and after a given length is reached the two farther ends are joined to a similar spindle and twisted. The two threads are held in position in the grooves of a triangular piece of wood to facilitate the twisting as it proceeds and to prevent entanglement of the strands. Twisting by machinery is not known in Malabar on account, perhaps, of the fact that fibre made out of unsoaked husks cannot stand the strain of twisting by machines and that loosely twisted soaked or unsoaked yarns by hand are in as great demand as machine twisted yarns.

The chief centres in which cocoanut husk is converted into fibre are Bepore, Parapanangadi, Ponnani, Tirurangadi, Tikkoti, Quilandi and many other places from Thorappal to Feroke in Calicut taluk. Even in inland villages fibre is extracted by what is known as the 'dry' process. There is very little matting manufactured in the district except by one or two Muhammadan merchants at Calicut who manufacture an inferior variety of matting mostly in demand for drying fish guano or coffee seeds. Such matting costs about Rs. 3 per 20 yards and is made of yarn extracted by the

dry process on a frame loom of the ordinary type. Fine matting is made by a Labbai merchant who has three looms in his yard and he does it against orders placed with him. This matting which is made of dry yarn costs about Rs. 20 for 20 yards. The weaver is paid Rs. 2-12-0 for making this and it occupies him one and a half days. Warping has to be done by himself and he warps the yarn by taking it round the pegs driven in the ground. Dyeing is done by soaking the yarn in the required dye bath and the weaver has to meet the cost himself which with the charges for warping comes to 12 annas per matting of 20 yards. In British Cochin and Alleppey, there are European firms that manufacture rugs, mattings, belting and brush mats, etc. The bulk of the coir industry as carried on in Malabar consists in extracting fibre and making it into thin yarn for export overseas to Europe and America. Fibre is twisted into ropes to a limited extent; and there are only about half a dozen rope walks in Calicut where ropes are twisted by hand-driven machinery. The trade is mostly in the hands of European firms who have branches in Calicut, Cochin and Alleppey. They get their supplies of yarn through Indian merchants. The latter collect yarn from middlemen and spinners and sell the stock to the European firms who assort them according to colour and quality and fix the price. The middlemen who are widely spread over all parts of the district collect the yarns from spinners and sell them to the Indian merchants. The most rapacious among the middlemen are the village petty shop-keepers who purchase yarn from needy workers in exchange for some necessaries of life which they vend from the village shops. These shop-keepers keep a stock of husks with them and sell them to the spinners at a profit and purchase yarn at cheap price. Some merchants who purchase fibre in loose condition employ labour to spin it while others who have facilities for carrying out retting purchase husks and carry on the further operations with hired labour.

The price of yarn mainly depends upon the price which the foreign market could offer to the Indian exporters. The owners of gardens have now realized the commercial value of husks and are demanding enhanced prices. The price which was Rs. 10 per 1,000 of soaked husks a few years ago has now gone up to Rs. 15 or Rs. 16. Between the owner who wishes to get the highest price for his husks and the merchants who are unwilling to reduce their profits, the actual spinners are the sufferers. It is he or she that labours hard to beat the husks into fibre and spin into yarn and his or her earnings in a day hardly exceed As. 1-6. The profit resulting from an increase in price when it comes is often distributed between the owner of the husks and the middlemen and it is seldom that any portion of it goes to the spinner.

Economics of the industry—

	RS.	A.	P.
The cost of 1,000 unsoaked husks	7	0	0
	to 8	0	0
Soaking charges	1	0	0
For beating 1,000 husks into fibre at As. 3-6 to			
As. 4-0 per 100	2	3	0
	to 2	8	0

1,000 husks yield 200 lb. of fibre but nuts plucked in summer yield about 250 lb. The up-country middlemen who collect the yarn wet it with water and sell at Rs. 35 to Rs. 40 per candy of 700 lb. to merchants who have contracts with the exporting firms. The latter assort and dry the yarn and sell it to the exporting firms at Rs. 65 to Rs. 70 per candy. Fibre is generally twisted by women into thin yarns and their wages vary from Rs. 20 to Rs. 22-8-0 per candy according to the quantity and quality of work turned out. Twisting of fibre into yarns is done mostly by women as part-time occupation during their leisure hours and in a day of 10 hours they are able to twist 10 palams or 140 tolas weight. Working only in her spare hours a woman is able to spin only half the quantity and gets 10 pies per day. A man could with ease husk 1,000 coconuts in a day and earn 8 annas. The beating of husks into fibre is ordinarily done by women who beat about 100 in a day and earn 3 annas to 4 annas. In the Central Jail at Cannanore, the convicts beat about 75 soaked husks and 25 unsoaked ones but their labour is unwillingly given.

There are only a few rope walks in the district and the ropes made are exported to Bombay and Karachi. Ropes of varying thickness are made by machinery turned with hand similar to the ones used in Travancore in making yarns from fibre. For twisting 35 lb. 10 annas wages are given to the coolies employed.

The yarn trade is said to be in a flourishing condition and is expanding as there is good demand for the material. Germany is said to be one of the biggest purchasers in the European market. The exporting firms have now begun to realize that they are not getting an adequate supply of nuts to meet the increasing demand for yarn. The shorter supply is attributed to the decreased production of cocoanuts for the last two or three years when compared with the previous years as the owners of gardens are not taking as much care of them as before to secure a better yield. Three years ago the price of the yarn per candy was Rs. 30 to Rs. 40 but has now gone up to Rs. 60 or Rs. 70. The yarn suitable for carpets sells at Rs. 120 to Rs. 130 per candy. The yarn used for weaving mats is all hand twisted as machine twisted yarn is not considered suitable for weaving but the latter finds a ready use in making ropes. The industry has

advanced to such an extent that banks lend money on the mortgage of yarn by individuals, as well as by rural co-operative societies of which there are a few in the district. In order that the help should reach the majority of workers who live in the interior subject to the influence of the middlemen there seems to be considerable scope for the expansion of the activities of the Co-operative department.

South Kanara District.

Coir-making is a cottage industry of an appreciable magnitude carried on in the coastal villages of the district giving employment to a large number of Mappillas Navayatha, Billavas, Roman Catholics Malayali Billavas and Adi-Dravidas. The chief centres are Uppinda, Marvante, Uppinakudru, Karavadi, Koni near Coondapoor, Tonse West, Malpe, Tenka Ekkar, Ullal, Manjanadi and Telangeri. The workers in the Kasargod taluk are all Mappillas while they belong to different castes in the other taluks. Like the district of Malabar, South Kanara is rich in cocoanut palms. Cocoanut plantations are found along the fringe of the whole coast line extending up to four or five miles in land. The number of trees planted to an acre is about 100 while each tree is said to yield 100 nuts but this estimate seems to be far too high. When the nuts are 9 to 10 months old and just ripe they are gathered and husked and the husks are retted in the same way as in Malabar. The weight of the husk is approximately one-third of the weight of the whole nut and the weight of the dry fibre extracted from five coconuts is about 1 lb. The difficulty lies in separating the fibre from the mass of the highly elastic cork-like tissue with which it is covered, but it is done by the retting process by which the nuts are soaked in the backwaters for nearly six months and beaten when the pith has become loose. The soaking of the husk is done by men while the beating and the spinning is done by women. The yarn that is spun by this process is loose but undergoes further twisting on a wooden wheel frame to make it closer. With the yarn, ropes, halters, noose threads, cattle ropes, door mats, mattresses, etc., are made at Koni near Coondapoor and in a few villages of the Mangalore taluk.

In Malpe and Tonse West and Uppinda it was observed that one man could make 7 lb. of coir rope in a day. A woman could spin 500 feet or 100 *marus* of coir yarn weighing $4\frac{1}{2}$ lb. per day of 8 hours and earn As. 1-3. The total outturn at Malpe alone was found to be roughly 500,000 lb. worth about Rs. 60,000. In Tonse West which contains about 200 families of coir makers, the daily production is said to be worth about Rs. 250. The coir yarn, ropes and other articles are sold to traders in Mangalore and in shandies round about. They are exported to Bombay and the Mysore State

where they command a large sale. One pound of twisted coir rope 16 feet long costs 2 annas at Coondapoor. At Tonse West the cost of ten marus of rope weighing about 3 lb. is 4 annas.

The following is a rough calculation of the cost of making coir rope :—

	RS.	A.	P.
The cost of the husk of 1,000 cocoanuts	4	8	0
Coolie for soaking them in water	1	0	0
Removing and rinsing and employing four men for a day at 4 annas each	1	0	0
Coolie for beating (1 woman can beat husks of only 200 to 250 cocoanuts)	1	4	0
Removing the fibre (for a man)	0	5	0
Dyeing, willowing, carrying the fibre (2 days)	0	8	0
Spinning the fibre at As. 1-3 for 100 marus (3,500 marus or 17,500 feet is the length of the yarn that is made out of 1,000 cocoanuts)	3	0	0
Twisting on wooden frame for making 100 marus into 25 marus of rope	2	12	0
Total ..	15	5	0

Rupees 15-5-0 is the cost of 875 marus or 4,375 feet of rope weighing 150 lb. made out of the fibre of 1,000 cocoanuts according to the above calculation. This quantity is sold from Rs. 17 to Rs. 20 and the gain ranges from Rs. 2 to Rs. 5. On an average each workman in the several processes of coir-making earns 5 annas a day. The owner when he himself does the business secures the profit for himself. His wife and children earn Rs. 3 that is paid for spinning the fibre. The grown-up boys in the family engage themselves in soaking the husks, removing, rinsing and beating. This work is occasionally done by coolie labour also. The skill also in the spinning is learnt by the girls as a part of the family life. This industry is supplementary to the cultivation of coconut palm and fishing in the sea and is attended to in spare hours. The average earning of a family of a husband, wife and two boys or girls is about 12 annas to Re. 1 a day.

Handloom Weaving.

The population of Malabar as per last census is 3,098,871 of whom only 49,321 or 1.27 per cent are weavers. Even among the above, only 14,457 are actual weavers and the rest are dependents. The bulk of the weavers belong to the Chalyan caste with a sprinkling of a few Kaikolans (Tamil speaking) Chetties, and Rowthans in Palghat and Walluvanad. There are about 12,000 looms in the whole district of which about 4,500 are fitted with fly shuttle and the latter kind are found mainly in organized handloom weaving

factories. Most of the fabrics woven are greys with a very small proportion of coloured sadi which are mostly woven by the classes other than Chalyans.

The district of Malabar presents peculiar features which are met with in no other district so far surveyed. Side by side with the cotton handloom weaving, there is the well organized factory system run on modern lines with all up-to-date appliances worked by hand and also by machinery where weaving is done by power. These institutions demonstrate what a well organized system could do for the development of an industry. The cottage workers in the district have benefited themselves very little from the demonstrations that are carried on at the very door and their conditions of living bear very little comparison with those of the people employed in factories and mills. While the workers in the mills and factories are able to earn wages ranging from 12 annas to Re. 1 or more, the cottage workers have to be content with a pittance of 6 annas, to earn which they have to work for a comparatively longer time with the members of their family. Most of the people employed in factories and mills for working looms are Tiyyas and Christians who are found to be more reliable than the professional class weavers of the Chalyan class, who at the slightest sight of a favourable season give up the factory work and take to weaving on their looms and are not therefore employed as being irregular and unpunctual. Even the well organized handloom factories working on modern lines and adapting themselves to meet the constant changes in the fashion, style, etc., of the consuming public find it very difficult to compete with mills worked by power and while such being the case the condition of the cottage workers who do not in the majority of cases weave anything but cheap short towels and veshtis and display no skill in the art cannot but be gloomy. In a district where the weavers are expected to show more activity in their avocation to counteract the handicap caused by the comparatively longer duration of the wet weather they have unfortunately acquired a dilatory habit of refraining from work on the pretext of holidays. Onum, Vishu, and Dasara are some of the important festivals which keep them idle and during the Onum festival, they do not work from ten to fifteen days and in some places the holidays extend even to a month. The economic condition of the weaver even where he is toiling hard is obviously low and it is further worsened by the prolonged holidays during which he earns nothing but spends much. It is therefore no wonder that his womenfolk go abegging and accept menial domestic service, a feature which is characteristic of Malabar weavers only; and if they are at present carrying on the industry it is because they are unfit to do anything else. They are slowly giving up the caste pride and taking to service and agriculture.

In the parambas in which they live, they grow pepper vines, coconut palms, plantains, arecanuts and jacks which bring them some additional income with which they supplement their living.

The weaving in Malabar may be broadly divided under three heads, viz., (1) weaving of coarse grey towels called *mundus* and *thundus* which is the largest and most common variety made by the Chalyans, (2) weaving of coloured cloths such as sadis, to a very limited extent, of coarse counts by a class known as Kaikolans or Devangi Chettis and lungis by Muhammadans in a few centres and (3) weaving of coating cloths, shirtings, bedsheets, etc., to a very large extent in mills and factories by the most up-to-date and improved machinery driven by hand or power in centres like Calicut, Cannanore and Tellicherry.

Weaving of Greys.

The one striking peculiarity that one from the East Coast would observe in the dress of the people of the district is that both men and women clothe themselves only in grey and the varieties of coloured cloths which are common in the Eastern and the Central districts as well as in the adjoining South Kanara district are not to be seen here at all. There is hardly an amsam in which there is not at least a few looms weaving the fabrics required for local consumption. Chalyans as a class are the poorest among the various classes of people in the Malabar district, and their average daily income rarely exceeds 6 annas. The common counts of yarn in use are 10s, 20s, 30s and 40s of which 20s are largely consumed. Generally two kinds of cloths are woven one for male wear and the other for female wear. The first variety is 4 cubits long and $2\frac{1}{4}$ cubits wide while the other is 8 cubits long and $2\frac{1}{4}$ cubits wide. Most weavers could weave a piece of 12 yards in two days and earn about Re. 1-0-0 as wages. In Panniagara and Kacheri, suburbs of Calicut town, there are about 500 families of Chalyans with about 1,200 looms all engaged in weaving the grey cloths common to the district. The weavers here are independent workers in the sense that they purchase yarn in the bazaar mostly on credit, weave cloths, sell them in shandies and repay their debts. When the yarn is obtained on credit, not only is the yarn sold at a higher price but also interest at 18 to 24 per cent is charged on the dues remaining unpaid after the stipulated period, which is generally a month. The yarn is sized twice in some parts of the district, once before and again after warping but this double sizing is limited to cases where only single threads are used in the warp. At Badagara and other places the merchants who supply yarn on credit to the weavers take back finished goods at rates previously agreed upon

which of course must be lower than the price which the weaver could get if he himself sold the cloths in the market. As he is too poor to buy the yarn himself he has to depend upon the merchant who supplies him with it. At Kannambra of Palghat taluk there are about 30 houses of Mappillas with 50 looms all fitted with fly shuttle slay, a feature uncommon to rural parts of the district. They also weave only greys of common variety and earn wages of As. 7-6 by making three to four *mundus* a day. At Kizhekethera of the same taluk there are about 2,000 Kaikolars who weave only the common *thundus* from 20s and 22s. The condition of the weavers here is comparatively worse than that of their brethren elsewhere and their average income is by far the lowest in the district being only 2 annas as they are not able to weave more than three *mundus* a day. The wages paid here are 6 annas per 12 *mundus*. In Kattalangadi of Ponnani taluk the weavers use the starch of onions or some wild yams instead of ragi or rice kanji and the quantity of onions required for a bundle of 10 lb. of 20s is 10 seers costing 4 annas. In this village as well as in Puthentheruvu, an adjoining hamlet, there are two co-operative Societies started by the Devadar Reconstruction Trust for the benefit of the weavers but the League is unable to redeem them entirely from the hands of the sowcars as it is not financially strong enough to supply the yarn required for the continued working of the weaver throughout the year. Sale of goods produced in competition with merchants who are prepared to undersell when necessary to crush the activities of the society puts the latter in a sad plight at times. When the society hesitates to advance yarn for fear of glut in their stock, the private merchant readily steps in to draw the weaver to his side and make him his tool. At Palapuram of Walluvanad taluk there are 200 looms all owned by the Tamil speaking Kaikolans. A fair percentage of these looms are fitted with fly shuttle slays and the fabrics woven here are also the common whites besides coloured sadis on a small scale. There is a co-operative society formed exclusively for the benefit of the workers who are well organized by the educated gentlemen of their community. They jointly purchase the yarn required for their consumption at wholesale prices from mills and avoid the middleman's profits. The fabrics made here are sold locally and also sent to Trichur of the Cochin State. The success of the society, what little it has achieved, is obviously due to the active interest and enthusiasm evinced by its president who is one of their own community and has made personal sacrifice in slowly freeing them from the sowcars by undertaking to discharge their debts. The other important centres are Taliparamba, Chirakkal and Tellicherry where the methods and conditions do not differ from other places. At Karumpuzha of Walluvanad taluk greys of finer counts are woven with lace for borders and kongus. The weavers are Devangis and

they get their required yarn from Palghat and lace from Coimbatore and Cochin. Artificial silk is also used for borders which they get from Coimbatore. Among the weavers themselves one or two who are rich act as middlemen and supply the weavers with yarn which they generally get from Palghat. They sell yarn for cash and credit and also take the finished product in lieu of the dues. Interest is charged on the price of yarn supplied if the weaver fails to reimburse the merchant in time. Ordinarily the charges paid for weaving include the charge for warping, winding and sizing. All these processes are done by the weaver himself with the assistance of his womenfolk who toil hard all day long to earn a slender income for the family.

Weaving of Coloured Fabrics.

It is practically limited to a few centres and that to a very small extent. This is done in places where there are weavers of other than the Chalyau caste. The few centres where coloured fabrics are woven are Palghat, Tellicherry, Quilandy and Badagara. In the last centre Muhammadan Rowthers weave lunghis and kailis. Kizhekethara and Palapuram are places where Devangi Chetties weave coloured sadis of very cheap variety. The yarns used for lungis are all 20s, 22s and 30s. At Palghat there are 150 looms engaged in weaving lunghis by Muhammadans. A piece of 17 cubits long and $2\frac{1}{2}$ cubits wide is woven in two days and the wages paid for weaving it is Re. 1-0-0. No dyeing is done locally but coloured yarn is obtained from Madura. It is said that Palghat was once famous for its coating checks but the weaving of these cloths is not to be seen at all anywhere now. Kindas or cloths worn by Mappillas are also woven here from 40s but the time taken to weave a piece of this kind is four days and the wages paid is Rs. 2-0-0. Thus the average wages earned by a weaver is only 8 annas per day including the incidental charges for warping, sizing, etc. At Quilandy, a masterworker keeps about twelve looms all fitted with fly shuttle slay and gets lunghis woven. The wages are paid by piece rates at 2 annas per yard of 45 inches width and for shorter widths at As. 1-9 per yard. Ordinarily a weaver is able to weave 5 to 6 yards in a day and earn about 10 to 12 annas. The annual output is about Rs. 4,000. The fabrics manufactured are sent to Ceylon, Burma, Mesopotamia, etc. At Badagara also there is a factory with twelve looms in which lunghis and kailis are made out of 40s, 30s, $2/3$ 2s and $2/1$ 2s. Herein mercirised yarn is used for warp and artificial silk for weft, and a piece of four *mundus* of $4\frac{1}{2}$ cubits long and 42" wide is sold for Rs. 12. For weaving cotton lunghis the wages paid here are 3 annas per yard which is a little more than what is paid at Quilandy but the weaver is not able to

weave more than three yards a day and thus the net wages earned by him in a day are practically the same as those earned by his brother at Quilandi. Coloured yarn is mostly imported from Madura but also a small portion of the yarn used is dyed locally. About eight bales of yarn is consumed. At Tellicherry also there are three factories weaving lungis of 40s yarn mixed with artificial silk and the wages paid are the same as at Badagara, viz., 3 annas per yard for 45" width and annas 2, and As. 2-6 for 28" and 30" respectively. All the goods manufactured are exported to Ceylon.

Ordinary sadis of 18 cubits long and $2\frac{3}{4}$ cubits wide are woven with coloured yarns of 20s, 30s and 40s obtained from Madura by 10 Devanga families of weavers at Kizhekketera. A sadi costing from Rs. 3 to Rs. 3-8-0 is woven in three days for which yarn worth Rs. 2 is required. The average wages earned by a worker with his family are about 8 annas per day including all charges.

Weaving in Factories.

There are about 9 factories in Calicut and about 4 or 5 in Cannanore engaged in the manufacture of coatings, shirtings, tablecloths, bed-sheets and bath towels. There are about 1,500 looms all fitted with fly-shuttle slay but a large number of them are driven by power in the power mills at Cannanore. Chief among the handloom factories are the 'Commonwealth Trust, Ltd.,' 'M. N. Nair & Co.,' 'The Standard Cotton and Silk Weaving Company,' Calicut. There are two knitting factories at Calicut and one at Feroke where banyans are made by knitting machines with yarns of 2/30s. The factories employ the most up-to-date labour-saving machines and effect production on a large scale with hand-looms. The yarns used in them are generally 20s, 14 $\frac{1}{2}$ s and also Japan yarns of 2/30s and 2/40s. To some extent, artificial silk and mercerised yarns are used for weaving shirtings and coatings. The weavers employed are mostly non-Chalyans and are paid wages at piece rates according to the quantity and quality of the cloth woven. The rates for weaving range from As. 1-6 to 3 annas per yard according to the designs used and the average weaver is able to make from Re. 1 to Rs. 1-4-0 per day, 12 annas being the minimum wage that he could earn in a factory. The yarns required for weaving are obtained from mills at Madura, Tinnevely or Kallayi and the dyeing is done locally in the dye houses attached to each factory. No sizing is done in handloom factories as mostly double yarns are used but in cases where single yarns are used for warps sizing is done gently on the loom as the weaving proceeds. The main market for the goods manufactured in these factories is Northern India. Each factory has got its own agents in every important centre through whom sales are effected.

The wages paid for warping in factories where no power plant is used are 12 annas for 100 yards. The average daily production of cloth on a power loom is about 30 to 35 yards whereas on a handloom fitted with a fly-shuttle slay it is only 4 or 5 yards of closely woven texture while on a loom fitted with jacquard harness it is as low as 2 or 3 yards a day.

The handloom factories working as they do on well organized lines with improved appliances are unable to compete successfully with mills and the owners of the factories complain that they get little or no encouragement from Government as no large orders are placed with them for goods required for use in the Government departments. They, however, admit that the mill-made goods are a little cheaper than the goods manufactured by them but consider that in the interest of fostering an indigenous industry, which is likely seriously to suffer for want of proper support from Government, larger patronage should be shown them.

Dyeing and Printing.

The dyeing of yarns is done only by weaving factories on scientific methods. Dyes used are synthetic dyes drawn from coaltar. Generally, before dyeing, the yarn is boiled in water and then rinsed and put into rice powder ganji or potato gruel containing 10 per cent epsom-salt. Gruel is put in according to the strength of the yarn. Sulphur black is used for black colour. For other colours aniline and alizarine dyes are used. At Tellicherry, cloths worn by Mappillas known as 'Kachis' are dyed by a single house. These are bleached or unbleached pieces of long cloth dyed with indigo border in thick lines of 1 inch broad or with stripes in indigo with white lines in the middle. The edges are waxed and designs are printed with metal blocks mounted on wooden pieces. Where only edges are dyed streaks of it are allowed to extend into the white ground and this kind is specially said to be liked very much by the Mappillas. To produce streaks, the dyer beats the waxed cloth so that when a dye bath is given the colour might pass through the cracks created while beating. Ordinarily the colours used are pink, indigo, alizarine and nephtol red. The Mappillas as a class like mixed colours and accordingly their cloths are dyed in indigo, violet and red all blended together in patches of uneven dimensions. The cloths dyed measure 2 yards long and 44 inches wide and are commonly worn by both sexes. The process of dyeing is simple enough. The border to be dyed is first waxed leaving the lines that are to appear white unwaxed. Then the cloth is folded vertically and beaten on slabs. In each fold of the cloth streaks will be produced. The folds are tied together by strings and dipped in synthetic indigo bath. Then the white ground takes the colour as also the creaks formed therein.

The wax is removed by putting the cloth in hot water and washing it. For giving a finishing to the cloths they are folded in flaps and beaten on a smooth wooden surface with a smooth wooden club. This process gives a polish to the dyed cloths.

The printing of cloths with black designs is done with an iron solution (iron pieces allowed to ferment in jaggery solution for 5 days). The cloth to be dyed is first dipped in myrabolan solution and over it the design is printed with blocks dipped in hot wax. The portions to be dyed are dipped in the solution or the solution is smeared over them.

For dyeing and printing kachis 2 yards long and $2\frac{1}{2}$ cubits wide, the charge varies from Rs. 6-4-0 to Rs. 10 per twenty kachis according to the design. There is a good demand for these cloths especially during the Bara-Wafat and other festive occasions, when the mere dyeing charges come to Rs. 100 per day. The requirements of Mappillas are also met from Tiruppur, Vaniyambadi, Salem, Kumbakonam and Kulasekarapatnam.

South Kanara District

Handloom weaving in rural areas is not in a flourishing condition in this district. The number of weavers is small and the slight increase in the recent years is due to the influence of the Basel Mission which has done much to improve the industries of the district. Old type of pit looms are found in a few villages largely in Kasaragod and Mangalore taluks. The workers belong to the hereditary weaver caste of Saliars and Jadars or Devangis. Frame-looms, which have been introduced owing to the influence of the Basel Mission, are used by the Christians, Muhammadans, Billavas, Bants, etc. The pit-loom weavers generally make *mundus* as in Malabar (cloths for men's wear 4 cubits \times 2 cubits) and *podavais* for women (8 cubits \times 2 cubits) and *dhotis* (white cloths for men 6 or 7 cubits \times $2\frac{1}{2}$ cubits) while other class of weavers make coloured striped saris for women and *dhotis* for men of the lower classes. They also make shirting cloths and bed-sheets. Frame-looms are seen in large numbers in Udipi and Mangalore, about 400 and 800 respectively, and are fitted with fly-shuttle slays and 75 per cent of them with 'dobbies' for making designs in borders. The pit-loom weavers work in family groups, and the others work in a factory under a master workman or capitalist. All of them are whole-time workers working on an average eight hours a day.

Except in Nileshwar where handspun yarn is woven on about 10 looms, the yarn that is used in this district is all mill made of 10s, 20s, 30s and 40s, imported from Bombay and sold by yarn merchants in Mangalore and Udipi. The weavers of Kasaragod taluk

get their yarns from Cannanore: *Vaishtees* and *dhotis* are made with 40s while coarser counts are used for *mundus*, *sadis*, towels and striped cloths for women. Grey yarns of 10s cost Rs. 6 to Rs. 6-4-0 per bundle of 10 lb. while 20s. of the same weight costs Rs. 7-8-0 to Rs. 7-12-0, 30s. Rs. 11-8-0, 40s. Rs. 13. Dyed yarn is sold in the market at a higher price and some factory owners at Udipi and Mangalore dye their own yarn with German dyes according to the directions issued to them by the vendors of dyes.

The frame-loom weavers warp yarn on warping mills of which there are about 40 to 50 in Mangalore and 35 in Udipi. The sizing of cloths is not done in streets as in the other districts but warp threads are generally sized on the loom with a brush about a cubit in length. But in the case of pit-looms, the warping is done on peg boards and the sizing in the streets. The winding of yarn for the weft and the peg warping is done by women while the actual weaving is done by men only. On a pit-loom 64 square yards of *mundus* costing Rs. 12 is woven in 19 days out of a 10 lb. bundle of yarn of 20s. The daily earnings of a weaver are about 5 annas and those of his wife who does warping and winding 2 annas. Both together earn only a hand to mouth living.

In the case of frame-loom workers the wages are different. They range from As. 1-4 to As. 2-6 per yard and a weaver weaves daily six yards on an average, and earns 8 annas to 14 annas a day according to the texture and the border of the cloth. A *sadi* measuring $6\frac{1}{2}$ yards weighing 2 lb. made in a day costs Rs. 4-8-0 to Rs. 6 according to the texture, colour and design of the border. Other cloths, such as bed-sheets and shirtings, cost from 6 annas to 12 annas a yard, and the quantity woven in a day is also six yards on an average. The master workman or the owner of the factory who employs weavers gets a profit of one anna per square yard woven. A master workman who owns four looms gets about Rs. 35 per mensem in Mangalore and Udipi.

The woven cloths are disposed of in shandies or the traders hawk them. Some of the capitalists have got their own shops at Mangalore where they keep them for sale. There is no system of making advances to the weavers. They have to work on the looms provided by the employer and earn wages for the work done.

There has been no decline in this industry. On the other hand, it is making a gradual progress. *Mundus* and *podavais* which have a fairly large demand are also woven on frame-looms. The difference in cost between the mill-made cloth and that woven on handloom with mill-made yarn is not very much and it is popularly believed that the hand-made cloth is more durable. There is a large demand for sarees made on handlooms and in all shandies these hand-made products may be seen in hundreds. Bed-sheets and shirting cloths

are sparingly made as they are not cheaper than the cloths made by power mills at Cannanore and other places. The advantages of a fly-shuttle frame-loom and warping mill are being appreciated by the weavers and in a decade the use of modern appliances may become more common. Mercerised yarn cloths with designs on borders are also made for the middle classes, and the skill was acquired by the weavers apprenticing themselves under men who worked for the Basel Mission.

The weavers complain that the prices of yarn are varied frequently by the bazaarmen and desire that some steps may be taken by Government to minimise the fluctuations. The only remedy open is to organize co-operative buying. But the weavers are very poor generally and are not sufficiently educated to appreciate the advantages of joint effort. A co-operative society was started on their behalf at Nileshwar and a sum of Rs. 2,000 was borrowed for buying yarn. The weavers began in right earnest but the little that they borrowed was not put to proper use and they are unable to repay the debt and the society is consequently under liquidation. There seems to be little use in lending credit to the weavers unless there is an organization to receive and sell their finished goods. They cannot be trusted to repay the debt voluntarily out of the sale proceeds of their manufactures.

Hand Spinning.

It was said that hand spinning of cotton existed long years ago in a few villages of the Kasaragod and Puttur taluks but disappeared with the advent of the mill-made cloth and yarn. An attempt has been made to revive it at Nileshwar by the All-India Spinners' Association which gives work to the spinners and runs the show.

The spinners are old women about 100 in number and a few young girls belonging to the caste of 'Jadars' whose professional business is weaving. They have taken to this work being unable to do any other work and labour for six hours a day.

The cotton required is grown in a few eastern villages of the Kasaragod taluk and sold at Nileshwar at $2\frac{1}{2}$ annas a pound. The All-India Spinners' Association also distributes cotton to some of the spinners and gets yarn from them.

The yarn is coarse and is spun on wheels of the kind found in the Ceded districts. There are about 100 such wheels and an equal number of hand-ginning machines to separate the seeds from the cotton. A woman spins 500 yards weighing five tolas in a day of six hours. When carded cotton is given the time required for spinning 1 lb. is at least four days and the wages for spinning it is 5 annas. A pound of unginned cotton gives $\frac{1}{4}$ lb. or ten tolas of

ginned cotton. For ginning and carding only, the wages for 1 lb. is 6 pies. A woman could clean and card 4 lb. of ginned cotton and prepare slivers from them. The cost of one bundle of 10 lb. is Rs. 10-13-0 as detailed below :—

	RS.	A.	P.
Value of 42½ lb. of unginned cotton	6	11	6
Add charges for ginning and carding at six pies per lb.	1	5	3
	<hr/>		
	8	0	9
Deduct cost of 31¾ lb. at 20 lb. per rupee ..	1	9	6
	<hr/>		
Cost of 10½ lb. of ginned cotton	6	7	3
Add for preparing slivers at 2 annas per pound for 10 lb.	1	4	0
Wages for spinning at 5 annas a pound	3	2	0
	<hr/>		
Total ..	10	13	0
	<hr/>		

One bundle of mill yarn of the same count costs Rs. 6. It is evident that though the handspun yarn is nearly cent per cent dearer than the mill-made yarn the spinning is kept going on as the Association gives the old women work and the latter finding nothing better to do.

In Marpadi of Karkala taluk a few schoolmasters have been learning spinning for the last four months with a view to the introduction of hand spinning in the local board school. They have eight spinning wheels which they work for half an hour a day in the evenings each producing about 150 yards of yarn. The yarn is coarse and heavy approaching ten counts. One of them is able to make finer yarn but his production is very small. Ginned cotton slivers are obtained from a ginning factory at Hubli at the rate of 14 annas a pound. The yarn is given to the local weavers who weave a coarse kind of cloth from it which the teachers themselves use for bed-sheets, shirts and coats.

Mat Industry.

Manufacture of mats from various materials such as kora grass and screw-pine leaves is carried on in almost every place in the two districts of Malabar and South Kanara and these mats are mainly intended to cater for local needs. There is some export trade in these mats especially the finer varieties. The industry is largely dependent on the availability of the raw material near at hand. The two districts do not, however, draw their supplies of raw material from outside as both kora and screw-pine are grown in the districts themselves, the former on the slopes of hills and the latter along hedges

of janmi lands and banks of water courses. There are several forest tracts rich with bamboo growths near Nilambur and Shoranur which also afford material for making mats. Mats are also made from the leaves of the palmyra tree which occurs in the two southern taluks of Malabar.

Kora Grass Mat Industry.

This industry is found to exist on a large scale in Palghat taluk of the Malabar district and to a certain extent in Walluvanad taluk also. It is not carried on to any extent in the South Kanara district except in Melanthabettu and Bangadi near Beltangadi where 10 or 15 families of the sect of Kijikaru make a thick variety of sedge mats.

In Palghat taluk, mats are made of kora grass in about 20 villages round Palghat town by a class of people called Koravans and the workers number about 730 men, 660 women and 220 children. They are all full time workers and turn out mats of exquisite fineness and workmanship. The kora required for the manufacture is obtained from the wild growth in the neighbouring hills and river sides. During the rainy season it is available in large quantities and is collected free by the workers themselves who go in batches to the spot where it is available and bring headloads. Generally the grass grows to a height of six feet. After cutting, each blade is teased into three or four strands and then dried. Ezhavas and Mappillas also cut these grasses from the hill sides and channel bunds and sell them to the mat makers at 12 annas per headload from which three mats of $6' \times 2\frac{1}{2}'$ could be made. Before the kora is dyed, it is well cleaned, preferably in running water, to remove the dirt from it and then dried. Then it is put in a kettle containing maddichekka, alum and water, or cheppangu bark and kasa leaves and boiled to give the reeds a red colour. To give them a black colour, the red coloured reeds are immersed for a time in a thick solution of silt earth locally available. For other colours such as green, blue, etc., chemical dyes are used. For warp both aloe fibre and cotton yarn are used, the latter chiefly for finer mats and occasionally silk threads are also used when the mats of a very high quality are made to order. Aloe fibre is extracted mostly by the womenfolk by scraping the leaves after they have been soaked in water for some days, with a coconut shell to remove the pith. It is then twisted into threads by means of spindles. The looms used for the manufacture of mats are similar to those in use elsewhere and the process of weaving is also the same. A mat measuring $6' \times 2\frac{1}{2}'$ can be woven in a day and this is sold from 10 annas to 12 annas. In Perintalmanna of Walluvanad taluk and other places the weavers are nomadic tribes who have no fixed abode but move about from one place to another. They go to

Nilambur forests to bring the kora grass, when they cannot get it in the neighbouring forests of their temporary dwellings. In a month, the workers are able to manufacture 10 mats of fine quality which may sell from Rs. 1-8-0 to Rs. 2-0-0 and 20 of the ordinary kind which may sell from Re. 0-10-0 to Re. 0-12-0 each. The Palghat workers are able to manufacture on a large scale mats of both the ordinary and superior varieties and supply them to the merchants at prices previously agreed upon, which of course, are lower than the prices which the product can fetch in the open market and the concession is shown since the merchant guarantees a regular purchase and also makes advances whenever they are in need of money either for living expenses or for the purchase of the raw material for the industry. The mats manufactured in Palghat taluk find a ready sale as they are fine and well designed. A large quantity is exported to places like Madras, Singapore, Bombay and other centres. The average earnings of a worker do not exceed Re. 0-10-0 a day. The chief centres in the taluk where this industry is carried on are Kalleyppulle, Vadavanur, Kannambara, Kizhamannam, Perayeri and Kothakod.

Screwpine mats.

In the southern parts of the Malabar district especially in Ponnani, Kurumbranad and Calicut taluks where screwpines abound, mats are manufactured from the leaves of this tree and used for a variety of purposes including packing. These are of a cheap make and a mat of 6' x 3' costs three to four annas. The raw material is available in plenty and often obtained free of any charge. The mats made in Malabar and South Kanara are far inferior to those produced in Travancore and Cochin, where very soft mats for use as bedspreads are made with double fold weaving. The strands for the upper fold are cut into small ones and well cleaned. The important centres manufacturing these mats are Payyoli in Kurumbranad taluk and Chowghat in Ponnani taluk where the Pulayas make them in considerable quantities during their off hours.

Mats are also made on a large scale of palmyra leaves intermixed with coconut leaves and find a sale locally. They are woven generally by the women of the blacksmith class, during their spare hours and sold at Re. 0-4-0 to Re. 0-6-0 a mat. A woman earns about Re. 0-1-6 to Re. 0-2-0 a day from this work.

Bamboo mats.

Bamboo mats are manufactured in large quantities in Palghat taluk especially in the village of Vadakancheri and its neighbourhood and in parts of Walluvanad and Ernad taluks of Malabar where there are large private forest areas of bamboo growth. A greater

portion of the demand of the southern districts for these mats is met by Malabar. Bamboo is cut from forests on payment of a certain fixed fee to the owner of the forest or to the contractor who has taken it on lease. The chief centres to which mats are exported are Dindigul, Madura, Trichinopoly, Tanjore and other places. The bulk of the mats manufactured in various places are collected at Palghat by merchants who export them outside the district. At Vadakkancheri, a village in Palghat taluk, there are about 30 families of Kavaras whose sole occupation is plaiting of mats from bamboos. They also use bamboos for making other articles for domestic use. The raw material required for making mats, etc., is obtained from the adjacent forest in the Cochin State, the right to cut bamboo therefrom has been taken on lease by a contractor. Workers have to pay a monthly cess of one rupee to the lessee for permission to cut one headload per day. In addition to this fee, they have to bind themselves to sell him or his agent all the mats they manufacture at four annas per mat of 12' \times 6'. The 'Kavara' splits the bamboos cut by him in the forest and brings home the teased parts useful for weaving mats. Mats are woven by the womenfolk and in a day a woman can weave two mats of 12' \times 6'. A worker with his family earns on an average Rs. 10 to Rs. 12 per month. The mats that are purchased by the contractor at Re. 0-4-0 could fetch, if sold in the open market, Re. 0-5-6 or Re. 0-6-0 each and thus the difference which now goes to the middlemen if allowed to be earned by the workers themselves will add considerably to their income. But this is not an easy problem as the workers being ignorant and poor have not sufficient means to purchase bamboo coupes jointly and increase their earnings. A co-operative society at Vadakkancheri or in its neighbourhood, for the benefit of these workers may prove useful.

South Kanara District.

There are certain low classes of people in this district who make a living by making mats. Sometimes farmers make mats during the off season and the raw materials used are date and screwpine leaves and grasses. Three kinds of mats are usually made in this district, viz., the grass mat, the date and the munduka screwpine mat.

Grass mats.

These are made only in two villages, viz., Melanthabettu and Bangadi, three miles from Beltangadi. There are 10 to 15 families of Kijikaru who make a thick variety of sedge mats against orders placed with them. They are agriculturists by profession and devote their spare moments in the manufacture of mats. They cut the stout sedge grass grown on the banks of the jungle stream and use

it as it is, without drying it and riving the strands. Aloe fibre extracted from plants grown along hedges and unreserves and obtained free is used as warp. The mats generally measure 6 feet by 3 feet and it takes ordinarily two to three days to make a mat which sells locally from 10 to 12 annas.

Date mats.

These are made in the villages of Hosur, Kadattur, Kenjur, Heradi, Battamballi, Haravur, Chappala, Jeddu, Palandi, Padematta, Marumadi, Kokkurabailu, Arabettu, Katteribettu and Nalkuri of Udipi taluk. There are more than 1,000 families making mats in these villages and Hosur alone has 200 families. While men attend to agriculture, women and boys make mats, learning the trade as part of their family life.

This district has a wild growth of dwarfed date trees which do not grow well owing to the moist climate of the region. These trees are found in unreserved jungles and the leaves are removed free of charge. They are dried and stocked in summer for use in the rainy season, when it is practically impossible to go out. The leaves are plaited to the required length but with a narrow width of 3 inches and a number of them are tacked together lengthwise to give the required width. One person working from morning till nightfall can make a mat of 5×2 cubits dimension and sells it at three annas. The mats are sold in shandies and traders also go to the villages to buy them for export to other places, as they are largely used for packing jaggery and tobacco and for spreading on the floor. On an average a family can make two mats a day and earn about five annas to supplement its agricultural income. The industry is more or less in a flourishing condition.

Munduka mats.

In Hebri and the surrounding villages of Karkala taluk and in parts of Udipi, Mangalore and Coondapoor taluks, the leaves of the screw pine (a kind of hedge plant with long and narrow leaves with rows of thorns at their edges) are used for mat-making by the Asari women who belong to the carpenter's sect. The plant is grown in unreserves also. When the leaves are obtained from private hedges, the practice is to give one or two mats per year to the owner of the hedges in lieu of their value. This kind of mat is plaited from one end to the other similar to the date mats and is generally $5' \times 2\frac{1}{2}'$ in dimension. A woman makes two mats in three days working three or four hours a day in her spare time. The mats are sold locally in shandies. The traders who buy them take them to Mangalore and other places for sale. Each woman earns about Re. 0-1-4 to supplement the income of the family and buys

with it sundry articles of food. There is a large demand for mats of this kind as there is no better kind available locally. The long munduka leaves are nice and soft to the touch. Nicer kind of mats could of course be made, but the workers are backward and stick to the old patterns only.

The mat makers on the West Coast may be said to be practically outside the influence of the middlemen. The materials required for their industry are given by Nature and very little or no capital is required for their business ; and even if some advances are made to dealers, the amount of advance does not often exceed a few rupees owing to the fact that the majority of the makers are wandering tribes who have no settled abodes and there is always some risk involved. Again if the workers sell their wares at a slightly cheaper rate to the dealers, it is done so more with a view to secure a steady and regular customer than to any undue influence on the part of the sowcar. When costly mats are made to order the persons who place the order make advances to the workers. Generally these workers do not go beyond the local markets and have practically no touch with the outside markets. Messrs. Whiteaway Laidlaw & Co. are, I understand, anxious to get into direct touch with the makers but this does not seem possible as there is no organization which is interested in the advancement of this class of workers.

Match Industry.

It is somewhat surprising that notwithstanding the abundant growth all along the Western Ghats of several species of woods probably suitable for match manufacture there is practically no match factory of any magnitude in existence in the area excepting the small factory at Palghat. The forests of South Kanara and Malabar abound in numerous species of both soft and hard woods and the waterways and railways traversing the district afford sufficient facilities for transport of timber at a very cheap cost.

The firm at Palghat makes matches to meet the very limited local demand but exports ready made veneers, boxes and sticks chiefly to the following factories in the Madras Presidency :—

- (1) The South Indian Lucifer Match Works, Sivakasi,
- (2) The Vellore Match Works, Vellore,
- (3) The Avanasi Match Works, Avanasi,
- (4) The Swadesi Match Works, Madras, and
- (5) The Standard Match Manufacturing Co., Satur.

The proprietor apprehends that before long he might find it difficult to supply the materials required by these firms at the present cost as the supply of wood from forests near by is becoming

exhausted and as the longer lead to be covered if wood is to be brought from a considerable distance might enhance the cost. The only kind of wood that is now used is *Bombax Malabaricum* but it is not as good as the foreign *Aspin* wood. The janmis who own large private forests have of late realized the usefulness of the wood for match manufacture and have taken to unduly raising the fee to cut the wood. As it is, a candy of wood measuring $12\frac{5}{8}$ c.ft. and costing Rs. 6 is sufficient for making 50 gross match boxes with splints. The matches made locally which are inferior both in size and their ignition properties are put into the market at 14 annas per gross which price is slightly lower than that of the imported matches. As the cost of wood is increased, the cost of matches will also be enhanced and the possible slight difference in price between the indigenous matches and the imported ones will be more than offset by the recognized superiority of the latter. This may affect the indigenous manufacture adversely and give a set-back to it. It might be worth while examining the several species of wood available in Malabar and other places and determining which of them are suitable for match manufacture and what facilities could be given to the indigenous manufacturer to enable him to obtain supplies of wood at remunerative rates.

The proprietor who has been conducting the factory at Palghat has no special training but has picked up some knowledge and has installed machinery costing about Rs. 12,000 which consists of a circular hand saw for sawing the wood, another for peeling the wood into thin slices and a third for cutting the thin sheets into splints. There are small hand machines by which the various parts of the boxes are made. There are about 50 persons employed in the factory, most of whom are women. The average daily production is about 250 to 300 gross of match materials and 30 to 50 gross of matches. About 5 candies of wood are consumed in a day, the waste being used as fuel for the boiler which generates power for working the machinery. The chemicals required for the manufacture are mostly obtained from Bombay and sometimes from Madras. Wages paid range from Re. 0-3-0 to Rs. 1-8-0 per day according to the nature of the work done by each individual. The factory is able to supply the match materials to the match works in South India from Rs. 25 to Rs. 30 per 100 gross boxes.

I have devoted some space to this industry as, though it is organized on factory lines and is worked by power, it has still some features of a cottage industry. The machinery is used only in peeling and chopping the wood. The further processes, e.g., box making, arranging the splints in sizes, frame filling, etc., are all done by cottage workers.

Metal Industry.

Metal workers of Malabar are of three classes known as Kannars, Musaris and Goa Christians. The latter are immigrants settled in the district. They have specialized in working in copper while the other two sects work in bronze and bell-metal castings. Very little of brass work is done in the district. In Palghat brass wares are found in large quantities in metalware shops but they are imported from Kumbakonam, Trichinopoly, Tanjore and other places.

In Ponnani taluk, there are a large number of Kammalans who have specialized in making dining dishes from bell-metal. They are made at Kattuparutti, Irumpalayam, Kuttipuram, Cheruvarangadi, Poruttur, Naduvattam and other places. Kozhapa desam of Ernad taluk, Calicut, Kallayi are some more centres where these dishes are manufactured. The workers employed in this manufacture are doing work solely for the benefit of traders who supply them with all the materials required for carrying on their trade, and pay them wages at piece-work rates. The dishes are sold largely in Malabar and South Kanara and are used by a large population for eating their food. Formerly they were sent to Madras, Coimbatore, Trichinopoly and other places, but there is no demand for them now from these quarters.

The plates are made out of a composition of copper and tin mixed in the proportion of 100 : 28. Sometimes old worn out plates also are purchased at three-fourths value of the metal and melted for making new plates. The alloy is formed by melting in crucibles copper and tin in the said proportion and casting the molten metal in hollow depressions made in a sand bed. After the molten metal cools down, the pieces are taken out, heated and beaten by 4 or 5 hammermen. At first one piece is beaten and when it assumes a rough shape of a dish, 10 or 12 plates which have been previously beaten to that shape are put together and beaten with hammers while a smith turns them by an iron catch. This process is repeated until the plates assume the required shape. A workman can turn 10 thulams or 5,375 tolas weight of alloy into finished articles in a month and deliver them to the sowcar working himself with one or two coolies employed occasionally. The smith himself has to bear the resultant wastage in metal in casting it which is roughly 5 per cent and cost about Rs. 5. For working 10 thulams he is paid Rs. 30 out of which he spends Rs. 8-8-0 for wages, Rs. 3-12-0 for charcoal and Rs. 5 for reimbursing wastage and gets the balance for himself as his wages. As members of his family are also engaged in the process of beating, etc., a portion of the wages paid for beating, etc., adds to his family earnings. The finished articles cost the merchant Rs. 15 to Rs. 16 and he sells them at Rs. 20 per thulam on credit to

hawkers who hawk them from village to village throughout the district. When sold for cash a profit of Re. 1 to Rs. 2 per thulam is charged. The workers are all indebted to the merchants and are obliged to work for them.

The other class of workers are those who prepare kujas, kindis, tumblers, kuthuvilakkus or lamp stands and other domestic utensils. They live in a number of villages in Palghat and in a few villages of Ernad and Walluvanad taluks. The workmen in Palghat taluk are controlled by merchants for whom they make the wares. They all work on piece wage system under a contract to the merchant at Re. 1 per lb. which includes charges for charcoal. The worker has to return an equal weight of the finished article, himself bearing the loss of metal in casting. For superior metal wares the proportion of alloy of copper and tin is 10 : 3, while for bronze articles the proportion is a little less of tin or even lead is added sometimes. In order to reduce the price of these articles, gunmetal which has a large proportion of lead (composition 10 : 8) is used for making handles of kujas or other parts which do not require a costly alloy. Articles made of bell-metal are superior and consequently costlier. The process adopted in casting bell-metal moulds does not differ from the methods followed elsewhere.

In other taluks where these workmen live scattered and in smaller numbers, they make the wares against orders placed with them and do not bear the loss or wastage in casting. Perintalamanna is a big centre next to Palghat where castings out of bell-metal or bronze are made on piece-work system as at Palghat. The wages allowed here are As. 14 per lb. but the workers are not charged with the wastage in metal. This privilege would therefore raise their wages to As. 15 per lb. or even to a rupee.

In Trichur, where the Cochin Government have been getting bell-metal wares made in their industrial school the wages paid per lb. are As. 15. The charcoal required for work is supplied by Government, which also does not charge the worker with wastage. Cost of charcoal required for working a lb. of metal is about one anna. Thus the rate of wages paid for the workers by Government and private merchants is almost the same.

In the whole district of Malabar except at Perintalamanna the trade and manufacture of copper vessels is conducted exclusively by Catholic Christians who have migrated to these parts from Goa of the Bombay Presidency. At Perintalamanna, the merchants engaged in the trade are both Muhammadans and Hindus of the locality. The Goanese are a class of hardworking people who have acquired skill in the manufacture of various articles from copper plates. They cannot work in brass. They get the necessary plates from the local wholesale merchants who import them from Bombay or Madras.

Generally they purchase a few plates at a time on credit, manufacture articles and pay back the price of the raw materials as they sell the finished product. Each masterworker employs a few assistants who are his own castemen from Goa and get the wares made in his own shop. The workers are lodged and boarded by him. In addition they are paid monthly salaries ranging from Rs. 9 to Rs. 10-8-0. In Perintalamanna where Muhammadans and Hindus keep shops and engage workers, they pay salaries ranging from Rs. 15 to Rs. 25 according to the skill of the worker, and an apprentice is paid Rs. 6. The wages paid by these merchants are higher but the fact remains that those who work in shops run by the Goanese are their own countrymen who are allowed to participate in the profits of the business. The chief articles manufactured are 'kuttechembu' or vessel for boiling water weighing about 8 lb., kudams and various kinds of articles for domestic use. A vessel generally consists of three parts, bottom, body and the neck and these are joined together and soldered. To give stiffness to the neck of kudams iron rings are inserted and covered over with copper plates and beaten but in selling the article the whole weight including the weight of the iron is charged at the selling rate of copper. Copper plates are purchased at Rs. 63-8-0 per cwt. of 112 lb. and the articles manufactured are sold at As. 11 per lb. or at Rs. 77 per cwt. Boys engaged for blowing the bellows are paid at Rs. 2 to Rs. 3 per month. The workers are strong and sturdy people and labour for about 10 hours a day and in seasons of demand they work longer still. At such times the shopkeeper or the masterworker pays them an additional remuneration not exceeding As. 4 a day which is intended for a drink. Apart from selling the wares in their own shops these people and especially Muhammadans at Perintalamanna sell the wares to the hawkers at one anna less than the market rate to enable them to take the wares into the interior parts of the district. Charcoal required for making these articles is obtained locally.

I could not find any satisfactory reason why Malabar and South Kanara had a partiality for copper wares while Kumbakonam, Trichinopoly and other places preferred brass. Preference was perhaps shown to the former as it was a superior metal and could fetch half its price even when the articles became unserviceable but the same thing could not be said of brass. This may be so but the fact that the workers who are Goanese do not know how to work in brass is perhaps one of the main reasons for the exclusive use of copper wares in the districts.

South Kanara District.

Copper.—The making of copper utensils, kudams, handas, chombus, etc., has been the occupation in this district of many a Christian from Goa. Proximity of Bombay by sea has made copper

sheets available to the workmen and every taluk headquarters and every small town has got a number of shops where copper utensils are made and sold. These enterprising Christian workmen have also gone to the southern districts. They have their own smithies attached to the shops and work in groups. Coondapore, Brahmavar, Udipi, Karkala, Mangalore, Bantwal, Puttur and Kasaragod are large centres.

Copper sheets are imported by merchants at Rs. 48 to Rs. 52 per cwt. and sold with a profit of 10 per cent in Mangalore and Udipi. Charcoal is purchased in villages at As. 12 a sack.

A workman can prepare small utensils weighing 14 lb. in one day or 28 lb. of big ones in $1\frac{1}{2}$ days with the assistance of two boys. On an average the daily output of one group of workers consisting of a masterworkman and two assistants is 28 lb. The total annual outturn at Udipi is said to be about 200 to 250 cwt. costing about Rs. 25,000. A workman gets a wage of Rs. 3 for making utensils weighing 28 lb. He has to meet the cost of charcoal and soldering material which is worth about As. 12. The remaining Rs. 2-4-0 is earned in $1\frac{1}{2}$ days. He has to pay As. 5 a day for each of his assistants. The average earning of a workman is about Re. 1 a day. In Udipi some of them are paid salaries by their employers at the rate of Rs. 20 a month in addition to free boarding.

The finished articles are sold in shops run by them or their employer. They are also taken to jatharas and shandies for sale. There is a large demand for these vessels even from rural population, as clay pots are not readily available in villages and they find metal wares more durable and economical in the long run. There is no export trade to other districts.

The industry is gradually assuming large proportions because of the increasing demand. The workmen may organize themselves and make good profits by co-operative efforts. But they are generally backward except a few among them who are selfish and use others for earning profits for them.

Brass.

Brass articles are not made on such a large scale as copper ones. They are to be seen only in Udipi and Bantwal. At Udipi the industry is of recent origin. There are only three groups of workers each consisting of a master workman with two assistants. There is also an old brass smith who makes brass chombus and thambanams for sale in copper vessel shops at Bantwal. The workmen at Udipi are all Konkannese except one who is a Brahman. With brass sheets they make cash chests, boxes, suit cases, trunks,

jewellery boxes and cradles. One of the workmen is a mechanic. He started making cash chests in brass and sell them locally. Others have copied him. There are now ten good workmen who can make the above articles.

Brass sheets are sold in Mangalore and Udipi at Rs. 13 per maund of 28 lb. Clips, padlocks and handles are sold locally and sometimes obtained from Bombay. A gross of clips got from Bombay costs Rs. 8. Aligarh padlocks cost from Rs. 4 to Rs. 12 a dozen.

On an average, each workman makes articles weighing about six maunds in a month. A trunk weighing eight seers costs Rs. 7 and is made in a day and a half. The materials cost about Rs. 5. The average daily earning of a workman is Re. 1. The workman at Bantwal gets a coolie of Rs. 5 for making vessels weighing one maund which takes him five days. His average earning is about As. 10 a day and his assistant gets As. 4.

The articles made at Udipi are sold locally. They are purchased largely by the pilgrim population. There is no regular advertisement except what is secured through pilgrims and the workmen are unable to expend money on advertisement on account of their slender resources.

Bell metal.

The important places for bell metal works are Kasaragod, Bantwal, Udipi and Angalli. At Bantwal there are three families of workers. At Kasaragod there are three workmen who make tumblers and drinking vessels. There is one furnace at Angalli where a group of nine workmen make bell metal plates. In Udipi small drinking vessels are made in three places. All the workmen except at Kasaragod, are Goa Christians. Those at Kasaragod belong to the Tulu Asari caste of smiths whose hereditary occupation has been metal work.

The bell metal is made by mixing copper and tin in the proportion of four to one and melting the mixture in crucibles. The required copper and tin are purchased in the markets of Udipi and Mangalore at the rate of As. 4 and Rs. 1-8-0, respectively, per seer. The required charcoal is got locally in the villages at As. 6 per mura of 42 heaped seers.

For making plates the molten material is cast into small circular discs which are heated and hammered till they come to the proper size. They undergo the process of scraping with iron scrapers and then polished on lathis. In making drinking vessels and kijas the metal alloy is cast into moulds made on wax models. They also undergo the same process of scraping and polishing on lathis. Vessels weighing about four seers are made on an average by one

workman in six days. The finished article is sold at Rs. 1-8-0 a seer. After deducting the cost of alloy, fuel and wax, the actual daily earning of a workman is about As. 12. The total output at Kasaragod and Udipi may be about 2,000 seers of bell metal vessels excluding the large imports from Malabar, Madura and Kumbakonam.

The vessels made at Kasaragod and Udipi are sold locally and at Mangalore. There is a large demand at Udipi as it attracts a large pilgrim population.

The industry is only of recent origin in the district. As the demand increases, there is scope for making larger quantities of different varieties which are now being imported from other places. It must be said that the workmen have not devoted as much attention to the bell metal articles as they have done to copper vessels as the latter have a greater demand.

Wood and Underwood manufacture.

Industries making use of timber and underwood as their raw material are to be found in every district ; but Malabar and South Kanara are pre-eminently notable for the supplies of timber and underwood and for the development of industries depending upon their supplies. There are certain factors which play an important part in determining the situation of industries but proximity to the source of supply is a point of prime importance as wood is a heavy and bulky material and a good deal of it must be waste into whatever article it is made. Industries using heavy timber require large capital and machinery and could therefore be developed only on factory lines and the examples of this kind are the timber sawing mills at Kallai and Olavakkot where large capital and huge machinery are employed for sawing timbers into parts convenient for export by rail. In the case of underwood industries, the local demand for the articles determines the site of the industries and their very bulk in comparison with their monetary value may stand against their being exported to long distances. Turnery, clog making and cabinet making are instances of the kind. The latter two are met with in all important towns, viz., Calicut, Cannanore, Tellicherry, Manjeri, Tirur, Ponnani and other places. Turnery is found only in Tirur and five or six families of carpenters are engaged in it. Clog making is done on a large scale and the industry is flourishing on account of the cheap light wood available in the forests of Malabar and Cochin and to the usefulness of the clogs as a suitable foot-wear in a district which receives copious rainfall for a greater part of the year.

Turnery.

There are six Asari families in the town of Tirur who are engaged in the manufacture of domestic utensils of various descriptions, such as holy ash trays, cradles, sandals, etc. They are carpenters labouring for daily wages, but carry on the turnery work in their homes when they are not employed otherwise. Though jack wood is available throughout the Malabar district in any quantity, yet this particular kind of industry is confined only to this place. The articles are sold at the Tirur Railway station platform by a vendor who purchases them from the workmen. The wood is purchased at Rs. 15 to Rs. 20 a candy and cut into sizes required for making the articles and then shaped by turning on a lathi. The inner wood is scraped away by chisels and smoothed with sand paper. The articles are then coloured to give an attractive appearance. The vendor at the Railway station usually supplies these workers with necessary wood and colours and pays them wages according to the time and skill involved in making the articles. A worker seldom gets less than As. 12 a day. On every article worth As. 8 the vendor makes a profit of As. 2. As the demand for these articles is limited owing to the rapid replacement of the wooden utensils by more durable and cheap metal wares, the industry is likely to die out ere long.

Clog Manufacture.

In almost every important town and village of the Malabar district the manufacture of clogs or wooden shoes provided with wooden pegs and leather straps of two inches wide to keep the foot in position is carried on by a class of people called leather kollans. This foot-wear is used largely by all classes of people in Malabar, rich and poor, as they are found to be a better suitable wear in the rainy season which lasts for a longer time in Malabar than in any of the East Coast districts. They are not uncomfortable, nor are they unduly heavy. These clogs are of two kinds. The first kind is provided with a small smoothly shaped wooden peg and the clog is held on by this peg by the big toe and the one next to it, while the other kind is kept in position by an upper leather strap. The former which is made very light is mostly used by the gentry, while the latter is used by the middle and poorer classes as a substitute for shoes. Of the various places where this industry is carried on, the chief centres are Calicut, Tellicherry, Cannanore, Manjeri, Tirur, etc. Two kinds of woods are used for making clogs, viz., the 'kotta' and 'pala', but 'kotta' is considered to be superior as it is comparatively lighter and stronger. The 'pala' is available throughout the district in the forests but the other species is obtained from Ernakulam of the Cochin State and from Chowghat of

the Ponnani taluk. To minimize the transport difficulties, clog blocks are cut from wood in these places and exported to the centres of manufacture, there to be shaped into clogs with soles cut. These blocks cost Rs. 25 per 100 at Calicut and from there they are distributed to other places. Carpenters who are engaged in shaping them are paid Rs. 12-8-0 per 100 pairs and their daily earnings come to As. 12. For smaller sizes the wages paid do not exceed Rs. 6 per 100 pairs. After the blocks are shaped, they are given to the leather kollans who cut the soles and put up the leather straps. Two people working together can prepare three sets and earn As. 12 together, leather being supplied by the merchant. Sandals of pala wood variety are made at Kondotti in Ernad taluk at Rs. 12-8-0 per 100 pairs, including the making charges, which come to Rs. 6. These foot-wears are in great demand in Malabar and the pala variety is sold from As. 6 to As. 8 and the kotta variety from As. 10 to As. 12 per pair.

Cabinet-making.

Malabar District.

Cabinet making is found on a large scale in this district than anywhere else except Madras City on account of the availability of good underwood timber in the district itself. Every important town has a number of cabinet-makers and Kallayi is the most important centre where furniture of all kinds, chairs, almirahs, shelves, cots, etc., are made. The workers belong to the Asari caste of carpenters and are employed on daily as well as monthly wages. Each carpenter earns not less than Rs. 1-4-0 per day on an average. Capitalists run the concerns and sell the makes locally and also export them outside the district. The tendency has been for this industry to concentrate in towns more and more as articles of furniture which are costly are in greater demand in urban areas where western style of living has been more largely copied.

South Kanara District.

There are a large number of carpenters in this district unlike other districts except Malabar and the reason, perhaps, is the existence of good timber in abundance. They belong to the castes of Asaris who make carts and ploughs to the villagers, besides making tables, benches, chairs, almirahs and other articles of furniture. Their number is now going down as timber is not available to them to the same extent as it was formerly and they are obliged to migrate to towns where they find work. What was once a rural industry in this district has gradually been transferred to towns but in a few villages, however, like Beltangadi they are still found in appreciable numbers. They work in groups as well as in family circles. A

workman working eight hours a day can make articles worth Rs. 3 or Rs. 4 and earn about Re. 1. But as there is no sufficient work for all the members of the community, they find it difficult to make a living by carpentry. The wood that is used generally is jack, teak, blackwood banupu, teerva, maruva and nandi. It is got from proprietors of estates who own depots and also from private owners of forest lands. The carpenters find it hard to purchase the required wood for cabinet manufacture on account of their poverty and have therefore taken to pith work and toys in village and earn a precarious living, instead of employing themselves more lucratively. It would do well for them to organize themselves and seek help from co-operative societies for financial credit.

Charcoal Burning.

There are a good many varieties of wood such as Iruli, Punna, Poovan, etc., in private janmi forests which cannot be used otherwise than as fuel. There is not much demand within the district for wood to be used as fuel, not only because that any quantity of cheap wood is available but also dry coconut shells which are cheaper than any wood fuel are found in abundance as a substitute. As the cost of transporting wood to distant places for sale as fuel is not profitable, it is reduced in bulk by conversion into charcoal and made easy for transport. This is largely done in the Walluvanad and Ernad taluks, mostly by Muhammadans. The forests containing junglewood are taken on lease from Jenmies by Kanamdars who get the wood cut and converted into charcoal. They pay the labourers at As. 4 per bag of charcoal prepared and delivered at the roadside, the distance from the burning place to the road side being 2 to 3 miles. A cartload of wood is turned into charcoal of $1\frac{1}{4}$ to $1\frac{1}{2}$ gunny bags and 35 such bags can be loaded in a bandy. The charges for conveying charcoal by cart are more favourable than those for carting wood fuel and the only deciding facts in the manufacture of charcoal are the cost and convenience of transport, the value of wood itself being negligible as periodical clearance of forests of jungle growth is necessary. All the charcoal prepared in this district, a large proportion coming from Walluvanad is exported to Coimbatore, Tiruppur and other places where it is sold at As. 12 to As. 13 per bag. The net cost of a bag of charcoal including the transporting charges and railway freight to Coimbatore is about As. 8 on an average. Locally a bag is sold for As. 8.

The Process of Manufacture.

A pit of 5 feet long, 4 feet broad and $1\frac{1}{2}$ feet deep is dug in the area where the jungle growth is to be cleared. The wood selected for charcoal burning should ordinarily be of 1 foot to $1\frac{1}{2}$ feet in

circumference and is cut in pieces of 2 to 3 feet long. The pieces are piled up in the pit in the form of a cone. Underneath the wood, fire is placed and when the heap is burning with flame, just at the time when it shows signs of collapsing, earth is thrown over the pile to extinguish the fire. Within three hours thereafter, the charcoal will be cold enough for storing in bags. In a day a worker could prepare $1\frac{1}{2}$ bags of charcoal and earn about As. 6 wages.

There are two Mappilla merchants at Perintalamanna who export charcoal and the monthly average is from 3 to 4 wagons. The industry is followed as a subsidiary occupation mostly in dry weather.

Umbrella Manufacture.

Due to the situation of the districts in an area where there are heavy rains for a good portion of the year, the necessity for the protection of the people from the rains is obvious. It is a feature of the West Coast districts, especially of Malabar, that all classes of people including the poor have taken to use some kind of protection to their heads and it is seldom that one can see people walking in streets without an umbrella of some kind or other. Even on non-rainy days they use some protection against the sun's heat owing to the humid atmosphere of the area. It is further a custom among the Tiyas to present an umbrella to every one who attends a marriage and it is rarely that one can meet a person of this community walking without an umbrella in a marriage procession. The umbrella industry in the districts owes its origin to this custom and the peculiar climatic conditions obtaining there. Umbrellas are made both from talipot palm leaves and from cloth and there is a considerable trade in them. Talipot leaf umbrellas are used by the poorer classes while cloth umbrellas are largely in demand by the middle and the higher classes.

The manufacture of cloth umbrellas is carried on in the town of Calicut where there are three factories engaged in the business. The biggest of them is run by power supplied by a 25 B.H.P. Boiler. All the parts of the umbrella, viz., cloth, iron ribs, etc., are obtained either from Germany or England and the operations at Calicut are confined to the making of sticks and handles from thin bamboos which are grown in plenty in the adjacent forests. Bamboo poles of 6 feet long are purchased at Rs. 15 per 1,000. They are first dried in the sun and then cut to sizes suitable for sticks. Three inches long bores are made by a machine at one end of the sticks after which a red hot splinter is pressed through the bore to the required length. An iron rod is inserted in the groove to prevent the breakage of the bamboo while that end is bent to serve as a handle. To make it bend the end of the iron rod is heated in a furnace and while hot is

put on a small steel wheel and turned while the other end is kept down by a stout iron piece attached to the plant. In order that the hot end might bend it is tightly held down in position over the wheel by a monkey spanner. When it is bent it is fastened by an iron wire at the end. Bamboos which are not straight are straightened by heating and putting them through certain holes obliquely cut in a wooden board and slanting them. The bamboo is filed at the grains and made smooth by a file worked by power. Handles are generally made of bones and buffalo horns with sockets or bores at one end. The handle and the sticks are further rubbed by boys either with files or with sand paper to make them smoother. A boy can file 12 dozens a day and earn wages ranging from Rs. 7-8-0 to Rs. 10 a month. Steel sticks are imported from Germany and other places. When the stick and the handle are thus made ready, the other parts are joined together. Cloth stitching is done by sewing machines worked by power and each tailor engaged in stitching earns about Rs. 20 to Rs. 24 per month. The prices of umbrellas manufactured here compare very favourably with those imported direct from outside. The two important factors that go to lessen their price are the comparative cheapness of the bamboo and of the labour. The goods command considerable sales locally and a large quantity is also exported to the various parts of the Presidency.

So far as I am aware no serious attempts appear to have been made in the past to produce in the Presidency the cloth required for umbrellas. The cloth that is likely to be suitable should be closely woven with a large number of picks and finished and calendered by a machinery. If such cloths could be produced by Indian Mills and sold at favourable rates there is every hope of the industry progressing rapidly. I understand, however, that the manufacture of hollow ribs will not be a practical proposition in view of the very costly machinery required for making them.

Leaf Umbrellas.

Leaf umbrellas which are an absolute necessity for the poor are made in almost every village or amsam. The profession is followed as a hereditary one by a class of people called Panans. Their population as per last census was 11,264. The leaf required for making umbrellas is either grown by them in their yards or purchased from others who grow them at 4 annas each. Out of one leaf two umbrellas can be made. The frame is made with bamboo splints which serve as ribs to which the leaves are stitched. The price of one umbrella is about 5 annas and sometimes during the period of heavy rains it goes up to even 8 annas. The actual cost of one umbrella to the maker is 3 annas and he gains 2 annas thereby. In a day two umbrellas are made by one man, who thus

earns 4 annas. The makers are wholetime workers and are engaged in the industry throughout the year. They sell their finished products either at their doors or at the weekly shandies and get in exchange their daily necessaries of food. There is always demand for this kind of umbrellas and the workers rarely suffer from want of work. The economics of the industry are given below :—

	RS. A. P.
Cost of one leaf of koda pana or talipot ..	0 4 0
Cost of two bamboo sticks of 6 feet each ..	0 2 0
	0 6 0
Two umbrellas are sold for—and they are made by one man in a day	0 10 0
Net wages of the worker per day ..	0 4 0

South Kanara District.

Umbrellas made in this district with palmyra and dhupa leaves are of two kinds :—‘ Korambus ’, i.e., coverings made of dhupa leaves for the head and back and ‘ Chattries ’ made with palmyra leaves, and they last for one season only. Some big centres for this make are Koteeswara and Hangluru, three miles from Coondapoor but almost every village has one or two families of the sect called Paneru making umbrellas for use by the villagers. In Koteeswara the umbrella makers are all Mappillas who combine with that occupation the making of coir and fire works (with licences). Women prepare ribs for the umbrellas with bamboo and men plait them with leaves. On an average one Mappilla prepares three umbrellas a day costing from 4 to 8 annas each and earns thereby about 6 to 8 annas.

A head load of sixteen palmyra leaves costing Rs. 4 is used for making thirty umbrellas. The bamboo that is required is purchased at Coondapoor at ten for a rupee and one bamboo supplies materials for four umbrellas. Baine or wild sago fibre is used for stitching the leaves. The raw material for each umbrella costs about 2 annas. The makers work only for three months in the year, i.e., June, July and August and they sell the articles as they are made in the shandies at Coondapoor, Basrur, Kota and Brahmavar. A Mappilla family produces about 500 umbrellas a year. The total production at Koteeswara is about 10,000 umbrellas worth about Rs. 4,000 per year. As cheaper Korambus are made from dhupa leaves, the demand for this kind of umbrella is not large although it is by no means insignificant.

Korambus are made in almost all villages by a class of people called ‘ Mahratties ’ and ‘ Holeis ’ and sold in shandies. One

Korambu costs As. 1-6. An adult can make three Korambus in a day. The materials necessary are a few wild reeds and dhupa leaves found everywhere in the district. A Korambu maker earns 5 to 6 annas a day for about three months before the rainy season.

Coconut Shell Carving.

Quilandy is noted for its manufacture of fine artistic wares of brass carvings inlaid with coconut shells. The industry has been in existence from a very long time and was confined only to two families of blacksmiths known as Musaris ; but of recent years five more families have taken to it. Their ordinary avocation is the making of knives, locks, keys and other sundry articles. They follow their usual avocation only when the high class and artistic work of carving on brass and shells does not keep them continuously engaged. The two ancient families have earned a reputation for good work and command patronage of the Victoria Technical Institute, Madras, which has been their chief customer. The articles manufactured are hooka pots which have a fair demand from Muhammadans of Tellicherry, Cannanore and Calicut, lamp stands in brass and coconut shell, candle sticks of various designs, flower vases, ash trays, finger bowls, photo frames, cigarette and cigar cases made of rosewood and coconut shell inlaid in brass with shellac, hunting knife with horn handle containing decorated brass work, paper weights of brass representing scorpions, frogs, lizard, etc., and presentation caskets of exquisite workmanship. The workers are able to execute high class artistic work according to the specification and design given, but keep no articles ready made. There is no regular demand for them on account of their high value, and less utility. Even the Victoria Technical Institute which was at one time purchasing articles worth Rs. 3,000 to Rs. 4,000 per year has curtailed its demand considerably.

Among the numerous articles produced, the more popular are the hookas. Orders for their manufacture are largely placed by the Mappilla merchants of Calicut and Quilandy who send them to the various parts of Asia such as Arabia and Persia. Formerly when only two families were making it, a hooka was sold for Rs. 25 but now on account of the competition it is sold for Rs. 10 with the consequent result that the quality and workmanship have deteriorated. The materials required for making these fancy articles are coconut shells and brass. Shells of ripe coconut alone are useful. When the surface of a shell is carefully scraped it gives a fine black colour. An alloy of copper and zinc is formed as a substitute for brass in the proportion of 10 : 5. Waste copper bits too small to be used for any other purpose are purchased at half the price of the metal and melted

with zinc to produce the alloy. Further it is said that this alloy could be more readily cast and worked to a greater polish and finish than brass.

The process of manufacture is complex and much labour is spent on artistic work. The articles required are cast in moulds which are prepared beforehand with soft earth. Over the mould a coating of wax is given which is again covered with earth and dried. The mould is first heated to melt the wax and create a hollow space to receive the molten metal which, when poured into the mould, takes the place occupied by the wax and assumes the form of the mould. Often, however, the casting does not come out as anticipated and if there be any flaw, it should be recast which entails double labour and waste of materials. There is a considerable amount of skilled work to be done after a mould is taken involving high class workmanship with fine chisels, and polishing with lathe. The nature of the work to be done is so complicated that the cost of the labour is nearly one and a half times or double the value of the material used in an article. In fact, the time spent on an article is the important factor that determines its price and the makers generally calculate a rupee as their legitimate wages per day.

The workers are fairly well-to-do in position and do not require financial help to further their industry. At present the demand for their articles is quite unsteady and very often they have to revert to their ordinary work of making knives, etc., much against their will. If a steady demand could be ensured, the workers may be relied upon to cope with it, provided adequate time is given them to meet the orders but the very nature of the articles and their high price stand in their way of commanding a general demand that would give employment to them throughout the year. Much more advertisement than has been given hitherto seems necessary. It appears that there is a contract or an understanding between the Institute and the workers that the former should have a monopoly of their wares. Such an understanding is not likely to help the workers in broadly advertising their makes and stabilising the industry. It is possible that some firms in Madras who deal in fancy and artistic wares might be willing to vend these articles and what seems necessary for the development of the industry is to create a demand for them by proper advertisement.

Basket Making.

Basket is an agricultural and domestic necessity and basketry in some kind or other, has existed in every district. Every village either makes its own baskets or gets them from other villages where they are made and the localization of the industry in any place on

a large scale depends upon the availability of the raw material near at hand. In the South Kanara district cane baskets are made in some portions of the taluks adjoining the Western Ghats, viz., Puttur, Karkala and Coondapoor where canes are found in abundance. In other places like Udipi and Mangalore, they are made out of rods and creepers called 'engerigabelu' which are found in the neighbouring jungles. Baskets made of the latter material are used for feeding cattle, storing grains and carrying articles from one place to another.

Rod and Creeper Baskets.

One of the chief centres for this kind of baskets is Sivapur, three miles from Hebri. They are made at Karkala also on a large scale. The workmen belong to the Koraga caste of Adi-Dravidas whose hereditary occupation is basket making. Some, however, go for coolie work but make baskets when they find no employment. Men, women and children all make them in family circles. The rods and creepers required are available in unreserves and in kumki lands and removed free. While green, they are boiled and split into long pieces of ribs for making baskets. Thick rods are used for the ribs of the baskets and the finer stands are filled dexterously between them. The instruments used are only a bill hook and a stout knife for cutting and riving the creepers and shaping them. A whole-time worker can make two baskets worth 8 annas. The baskets are sold in the villages where they are made and traders buy them. They are not exported outside the district. There is no sowcar or a middleman who controls the workers by making them advances. The daily earnings of a Koraga man or woman is about 3 to 4 annas and is just sufficient with the earnings from agricultural coolie to support a family of a husband and wife. There is no competition in basket making by other than Koragas and the industry is flourishing.

Cane Baskets.

The making of baskets from rattan canes is not in proportion to the growth of cane in the district. It is followed only in a few villages near the Ghats by Malaikudais (hill tribe Bhairavis), Kanarese speaking Adi-Dravidas and by Mahrattas of Coondapoor taluk all numbering about 100 families. They make baskets for about four months in a year for removing earth, carrying fruits and vegetables and also boxes in rattan with lids when they are disengaged from cultivation of their forest lands. On an average a workman makes one or two baskets (26" × 15" × 13" 7½ lb. weight) worth 5 annas each. He takes four or five days for making a crude box which is worth Rs. 1-8-0 to Rs. 2. The daily earning of a workman is about 5 annas. The forest contractors give permits

to the workmen once in eight days. The latter get the required cane from the Ghats, make the articles and hand them over to the contractor who pays them at the above rates, himself selling them in towns at double the price paid for them. Baskets and Pittaries (boxes) find ready sale and the contractors readily give permits to the workmen for the mere asking. The contractor plays thus the part of a capitalist who gives the raw material and takes back the finished product. The workmen have necessarily to accept the prices offered by him. Spasmodic attempts, however, seem to have been made in Mangalore to give some training to Koragas in making better articles of different varieties but all the same the industry has not advanced for lack of proper organization.

Malabar District.

Bamboo baskets are made in almost every village in Ernad, Walluvanad and Palghat taluks by a class of people called Parayans and Perumparayans. Bamboos required for the work are purchased from the owners of parambas at the rate of 3 to 4 annas per bamboo of about 40 to 50 feet long and 6 inches circumference at the bottom. They are cut from parambas and brought home and riven into thin parts for weaving. The workers are full time labourers and their women make articles such as winnows, sieves, etc., and also go for coolie labour when they have no sufficient work. Baskets made in Manjeri and Perintalamanna are particularly strong as they are used for storing grains and are made of thicker ribs besides being fitted with strong gratings. Generally five paddy baskets costing 3 annas each or eight baskets intended for carrying earth costing 2 annas each are made out of one bamboo. In a day three paddy baskets or six baskets for carrying earth can be manufactured by a worker and the average earnings is about 6 to 8 annas a day. In Vattathur amsam of Walluvanad taluk, a large number of these people are engaged in manufacturing baskets, winnows, sieves, etc., and they are purchased by the merchants from different parts of the taluk who trade in them. The implements used by them are ordinarily long knives which do not cost more than a rupee.

Here also as in South Kanara baskets are made of pliable reeds for rough use or for carrying heavy loads.

This is one of the few industries in which the importance of the middlemen has not been felt, owing to the universal and recurring demand which these articles by reason of their utility command at the very door of the makers.

Beedi manufacture.

Manufacture of beedi is one of the important cottage industries practised in Malabar. Though tobacco and leaves which are required for wrappers are not available within the district the industry is stil

flourishing on account of the large export trade it has with Ceylon and other places and the cheap labour procurable during the rainy season when preference is shown to indoor work. The chief centres of manufacture are Calicut, Tirur, Palghat, Tellicherry, Ponnani, Manjeri and Badagara, though some more towns of less importance have also fostered this industry. There are about 5,000 workers in Calicut taluk alone. They are employed by capitalists who supply them with tobacco and leaves and pay them wages according to the number of beedies wrapped in a day. The coolie earned by an average worker is about 8 annas a day but a more skilled worker may earn even a rupee.

Leaf and tobacco for manufacture are obtained from outside the district. Palghat and Calicut are the chief places where merchants stock them and sell to the retail traders. Beedi leaves are got from Cuddapah, Kurnool, Hyderabad and Nagpur. Thousand bundles of leaf, each bundle containing 80 to 100 leaves which are obtained from Cuddapah and Kurnool, cost from Rs. 15 to Rs. 20 whereas those obtained from Nagpur and Hyderabad cost Rs. 60 per 1,000 bundles. Each bundle of the first variety will yield wrappers for 50 to 100 beedies while the latter will give four times that number. Tobacco in finely broken pieces required for making beedies is mostly obtained from Neppan in the Belgaum district of the Bombay Presidency and from Surat, Sangli, Gujarat and Mysore. Local tobacco is not used as it is said to be not suitable for the purpose. A thulam of 32 lb. costs Rs. 14 to Rs. 16 exclusive of the railway freight which comes to Rs. 2-8-0 or Rs. 3-0-0. The quantity of tobacco used in filling 1,000 beedies varies with the sizes and the medium-sized beedies of 2 inches long consume 1 lb. They are sold by the wholesale merchant at a profit of 1 or 2 annas per 1,000. Tobacco though obtained in cut pieces is further cut and sifted in sieves. The dust is sold for smoking hooka while the fine powder is used for filling beedies.

Oil-pressing.

Due to the extensive growth of cocoanut palm in the Malabar and South Kanara districts, the industry of pressing oil from cocoanuts is in a flourishing state though a very large quantity of dried cocoanut is exported out of India. There is not one village or amsam in these districts which does not possess a few wooden ghanis for pressing oil driven by bulls. In Badagara, West Hill and other important centres, there are presses worked by power for expressing oil. The people engaged in oil-pressing by country wooden ghanis are Chekkans and they produce cocoanut oil which is largely consumed by all classes of people for cooking their food and besmearing their body. It is also largely used for making soaps. Most of the Chekkans own their own ghanis and bulls; but it is also very common

to work them with hired bulls and servants. A ghani will crush four thulams of copra (a thulam is equal to 34 lb.) in a day. The hire paid for the bulls is 14 annas and the two workers who are engaged are paid 15 annas. Two thulams of copra can be crushed in a ghani at one time and the yield is $41\frac{1}{2}$ lb. of oil and 20 lb. of poonac the remaining $3\frac{1}{2}$ lb. being waste in pressing. Ordinarily, copra sells at Rs. 6-4-0 per thulam and the oil at Rs. 9 per thulam. A large bulk of the cocoanut grown in the district is crushed in mills worked by power. There is an Anderson oil expeller at West Hill near Calicut and also a number of iron ghanis. An iron ghani worked by power yields three-fourths candy of oil in ten hours. The yield of oil is generally five-eighths of copra and the balance is poonac with a wastage of $2\frac{1}{2}$ per cent. Copra poonac is given as food for cattle and sells at Rs. 37 per candy.

Similarly, pressing oil from groundnuts and morati seeds is also done in oil mills. Groundnut is imported from Pollachi, Coimbatore and other places and the proportion of the yield of the oil and poonac to seeds crushed is 40 per cent and 55 per cent respectively, 5 per cent being the wastage. In the case of morati seeds the yield is 1 maund of oil and 2 maunds of poonac for every 3 maunds of seed pressed. The wastage in 3 maunds is about 1 lb. which is negligible. These oils are used for the manufacture of soaps especially the morati which is the cheapest among the oils pressed. Poonac from morati and groundnut is used for manure and Messrs. Pierce Leslie & Co. are the biggest purchasers.

(a) *Manufacture of Soaps.*

The production of cocoanut oil on a large scale has given rise to the industry of soap-making in the Malabar district to an extent which is not found elsewhere. There are two methods of manufacturing soaps known as "the cold process" and the "boiling process." The latter is more elaborate than the former and requires external heat which is essential in the boiling process. The former process viewed from the standpoint of the cottage worker is more advantageous than the latter, in that, the capital required for the plant is very small, no skilled labour is necessary and that small quantities of soaps can be made at a time more economically, while the glycerine contents in the oils can be retained in the soap. Naturally the cottage worker has shown greater preference to the method of making soap by the cold process. The oil mainly used in this process is cocoanut oil, which possesses a high saponification value. Groundnut oil, cotton seed oil and others have no such value when used by themselves but are often mixed with cocoanut oil to reduce the cost of production and resorted to more commonly when the price of

cocoonut oil rises above the normal. The oil that is commonly mixed with cocoonut oil is morati oil which is the cheapest that is produced in Malabar.

The process of manufacture is so simple that no elaborate plant is required. All that is wanted is a small tank for dissolving caustic soda and a pan for mixing the oil, some caustic soda solution and a frame or box for cooling the soap. These are made of wrought iron. Sometimes wooden planks are used but iron pans are preferable as they are less liable to the action of caustic soda.

A suitable size of the pan is one which will hold about 3 to 5 cwt. of materials and the frame, one with a capacity of 2 cwt. or less. It is generally made of removable sides by unscrewing the nuts which fit them together and for convenience they are mounted on small wheels for moving from one place to another. The pans and frames may cost about Rs. 50 to Rs. 60. The only apparatus required are a hydrometer and a tall glass tube to test the strength of the lyes and the cottage workers are able to test the same.

There are a number of houses in Calicut and other important places where soaps are made by the cold processes. Four tins of cocoonut oil weighing 134 lb. are mixed with a solution of caustic soda and soda ash 50° strong in which the materials weigh about 45 lb. The process of mixing is very gradually done and the whole mass continually stirred by a wooden rod. Some essential oils are added to give perfume to the soaps. In 24 hours the oil combines with the caustic soda and forms soap. The yield from this quantity is 3 cwt. of finished soap and scraps of $\frac{3}{4}$ cwt. which are made into bar soaps. The soaps are finely cut into sizes, impressed with stamps showing the name of the maker and the variety of soap, neatly rolled up in papers and packed in boxes for sale. All these processes are done by hand. A cwt. of soap is sold at Rs. 20 while the cost of manufacture is Rs. 17. There is a clear profit of Rs. 3 per cwt. A large number of petty and unscrupulous manufacturers have entered the trade and are deliberately adulterating materials by mixing chalk and other soluble materials which are injurious to delicate fabrics to bring about an unhealthy competition to the disadvantage of genuine producers. Some steps to check the injurious product being put into the market may be desirable in the interest of the genuine manufacturers and of the consuming public.

(b) *Fish Oil Manufacture.*

Oil from fish is extracted on a large scale in the coastal parts of Malabar where a large population is engaged in fishing as their main occupation. Malabar alone has 18.1 per cent of the whole population that is engaged in fishing in the Presidency. A large quantity

of the fish captured is pressed for oil and guano. Fish oil is used for making soaps and medicinal purposes. The season for catching fish for the manufacture of oil and guano is from November to February when a large quantity of fish capable of yielding oil is caught. There are about 100 fish oil presses in and around Badagara which are extracting fish oil. The press-owners purchase fish from the fishermen to whom they advance money previously. Some of the fishermen are too poor to own their nets and boats. Such people are provided with nets and boats by dealers in fish who in return for their supplies get daily half the day's catch. The quantity of oil obtained from pressing varies with the quality of fish pressed, the percentage of yield ranging from 5 to 20. The yield of guano is only 20 per cent and the rest is water. Deodorized fish oil sells at Rs. 500 but crude oil sells only at Rs. 150 per ton. The latter variety is red in colour but when treated with caustic soda it becomes colourless. Refining charges for a ton of oil is about Rs. 50. Unadulterated guano sells at Rs. 140 per ton but the bulk of the guano that is put on the market is of low quality containing large percentage of sand and mud mixed with it. Consequently it does not fetch more than Rs. 100 per ton.

The plants used are not costly and process of extraction of oil is simple. Iron cauldrons with a capacity for holding about 30 to 35 baskets of fish are used in small factories. They are fixed on masonry ovens. Fish variety known as matty or sardine are put into the cauldron with sufficient water to completely immerse them and then heated from below for about an hour and a half. When the fish is well boiled the fish and the water are allowed to pass into a masonry cistern covered with a wooden grating. The boiled fish is collected at the top of the grating while the water is allowed to flow into the cistern. The fish on the grating are then put in cocoanut coir wrappers and placed under screw gear flat presses and pressed. The oil expressed flows into the cistern through a channel connected with the floor of the press stand. To separate the oil from water, the whole quantity is allowed to settle for some time, so that the oil may float to the surface. It is then let into a receiver by means of a tap at the top while the water is allowed to run out by the bottom tap. The oil so secured is further boiled for about half an hour to remove the water, if any, by evaporation. The residue of the pressed fish is taken out, dried and sold as guano. The total cost of pressing including the cost of fish is 1's. 19 or Rs. 20 for a cauldron of which coolie charges and cost of fuel come to Rs. 4. The production from the above is about 7 tins or 28 gallons of oil and $\frac{1}{4}$ ton of poonac or guano of uncleaned or low quality. The former is sold at 10 annas per gallon and the latter at Rs. 65 per ton. The cost of the fish is about Rs. 15 in a normal season when the fishermen get

good catch. The pressing of fish oil is carried on only for four months in a year and a press-owner of ordinary means is not able to press more than 2 tons of oil and guano worth Rs. 1,500.

This industry is carried on extensively in Badagara, Quilandy, Tellicherry and various places along the coast. There is a good demand for fish during the season for pressing oil and at other times for consumption as food, but the fishermen cannot avail themselves of the full benefit of their hard labour as they are deep in the grips of capitalists being indebted to them to a large extent. Though the fishermen obtain salt free from Government fish-curing yards they have necessarily to depend upon local merchants for the disposal of their catch. Large quantities of fish are exported to Ceylon and other places by local merchants who exploit the fishermen and make immense profits. If the latter are to prosper, they should be freed from these middlemen and organized on a co-operative basis. The moment the sowcar or the middleman vacates his place, the problem of financing the fishermen and finding a market for their product would arise and it has to be firmly faced by the co-operative organizations by creating agencies in large exporting centres, such as Ceylon and other places, for controlling the market.

Rattan Industry.

In the forests of Kottayam, Walluvanad, Ernad and Wynad taluks of the Malabar district, the growth of wild cane or rattan is abundant. There are three varieties of it, viz., Kannichural (thin variety), Kallamchural (thick variety), and Manchural (thinner variety with root). The last variety has a smoother surface. 'Kannichural' grows in small quantities. 'Kallamchural' are cut into pieces of four cubits long. A cart-load of rattan contains about 2,500 of the thinner variety and 1,500 of the thicker variety and it costs Rs. 5 for bringing the same to the depot from the forests. The first two varieties are exported to Bombay after they are cleaned. Cleaning consists in straightening the curves in the cane, scraping and rubbing with sand and washing them. For cleaning a thousand, a sum of Rs. 3 to Rs. 6 is paid and both adults and children do the work. The charge varies with the thickness of the canes to be cleaned. Experienced hands would clean about 500 a day, while others could do half the number. Chokkali, a village in Kottayam taluk, is the collecting and exporting centre of the canes in the district. There are three depots which have business connexions with Bombay. About 20 lakhs of cane are exported from Chokkali alone in a year and there are other places from which cane is also exported. As most of the forests belong to the janmis of Malabar, the contractors who take the forests on contract, employ coolies of the Panyar class to gather the products and pay them at Rs. 2 per

100 for the root variety and Re. 1 for the ordinary canes. They sell them to the exporters at Rs. 30 per cart-load. The thicker varieties are made into walking sticks and the thinner variety used in making baskets, chairs, etc., at Bombay. There is practically very little of rattan weaving locally from these canes. At Areacode where there is an industrial school of the Y.M.C.A. rattan weaving is taught to children and workers with the rattan grown locally. It is obtained cheap at Rs. 2-8-0 per 32 lb. from the contractors direct who gather them in the neighbourhood. Except here and in one or two other places the locally grown rattan is not used in the manufacture of rattan articles as it is not bright in colour and said to be inferior in quality to the Malacca cane. The cane when brought at first is dried in the sun and riven by knives into thin flat pieces and used for weaving. It is said that if canes are subjected to fumigation with sulphur and lime, they become brighter in colour but this has not been tested by experiment.

In the Central Jail at Cannanore there is a special section of convicts engaged in the production of rattan articles. The necessary raw material is obtained from Negapatam which imports its supplies from Penang and Singapore at about 6 annas per lb. In Trichur Industrial School also the Malacca cane is in use.

The Superintendent of the Areacode Industrial School made me understand that the articles made in his school have been well received and that the demand for them is expanding. The relative merits of the two canes may be examined with a view to the quality of the local product being improved in the interest of developing the industry with the material found on the spot.

MINOR INDUSTRIES.

(i) *Leather Articles.*

Among cottage industries, shoe-making is one that is found commonly everywhere. Mangalore, Udipi, Kasaragod and other taluk headquarter towns have been the centres where an appreciable number of chucklers have been supplying the needs of the people of both rural and urban areas. Beltangadi which is situated on the ghaut road was once a large centre for shoe making. Even now there are about 25 families of shoe-makers who make shoes for the villages in the neighbourhood. In Udipi, there are some 15 families of chucklers. In Mangalore there are about 50 families, who make sandals and sell. There are a few groups of workers working on a factory scale making other leather articles such as belts, money purses, leather bags, etc. The St. Joseph Industrial School of Jappu employs about 20 workmen who make boots and shoes of the best kind. In Kasaragod there are seven groups of workers who make

sandals for the villagers. Tanned leather is got from the tanneries at Manjeshwar at the rate of 14 annas to Re. 1 per pound. Leather is sometimes purchased locally and tanned by them in their traditional way using avara bark and myrabolams. In Kasaragod they get the leather from Cannanore at the rate of 12 annas to Re. 1 per pound. In Beltangadi they get it from Manjeshwar and Mangalore. The workmen are all whole-time workers. Women assist the men in their leisure hours and the boys learn the work while assisting the elders. A family consisting of a husband, wife and a boy makes about three pairs of sandals each weighing 1 to $1\frac{1}{4}$ lb. and costing Rs. 1-8-0 to Rs. 1-12-0. A chuckler earns about 10 to 12 annas a day. The shoes find local sales and those made at Beltangadi are sold in shandies near by and in the Mysore territory. As a class, the chucklers are backward classes except at Mangalore where they get training in the Mission institutions. The industry has greatly declined in Beltangadi owing to the fact that villagers buy in town and other centres where the articles are made cheaper with a better finish.

This industry is capable of organization under a co-operative movement.

(ii) *Jaggery Manufacture.*

Out of a population of 3,098,871 as per last census in the Malabar district, the Tiyyas alone number about 674,852 and their hereditary occupation is toddy-drawing and the care of the cocoanut. In the Palghat taluk they go by the name of Izhuvans. Malabar contains extensive cocoanut plantations and a fair proportion of palmyra plantations also which latter occur chiefly in the two southern taluks of the district. The sago palm also is found to exist in almost every place but largely in Ponnani taluk. Toddy from these different kinds of trees is drawn and used for drinking while a good quantity of sweet toddy which is extracted free of any tax is converted into jaggery and used in the place of sugar in tea and coffee drinks by the lower classes of people, who indulge in these drinks to a much greater extent than people of the same classes in any other district of the Presidency. Sago-tapping is generally done twice a day and occasionally thrice even. The tree will yield toddy for about six months in a year. The yield of sweet toddy or unfermented toddy per day from one tree can be converted into 2 to 3 lb. of jaggery, each pound fetching a price of As. 1-4. The juice is first boiled for about three to four hours when it is transformed into a jelly-like substance. Some cocoanut-oil is then added which after being stirred is poured into cocoanut shells containing two or three holes at the bottom and allowed to cool. The jelly when cooled takes the mould of the cocoanut shell and is sold to the poor

as jaggery. The industry is carried on in a small scale in almost every village and the production is consumed locally. The sago palm grows luxuriantly generally in places away from the sea while cocoanut palm grows likewise very near the sea coast. Sago-palm jaggery is made largely in Edappal, Nadubbattam and other places.

Cocoanut-palm jaggery is similarly manufactured and used largely in the coastal tracts as a substitute for sugar. For tapping cocoanut or sago palm for sweet toddy a sum of 4 annas per tree per month is charged by the owner. Cocoanut palms are found everywhere in the district and the manufacture of jaggery on some scale or other exists almost in every place. Since cocoanut-palm tapping is likely to affect the yield of fruits, the trees are allowed to be tapped only once in three or four years. Generally cocoanut palms are fit for tapping after the tenth year but the trees on the riverside become suitable earlier at the fifth or sixth year. At times trees which do not yield nuts at the proper age are allowed to be tapped and they are found to yield better thereafter. The cost of 1 lb. of jaggery is about As. 1-8 to 2 annas and the whole quantity manufactured is consumed locally.

Palghat and the surrounding country have extensive growth of palmyras and the Izhavas extract sweet toddy from them and manufacture jaggery. The production in this area is so large that the firms of Messrs. Parry & Co. and Sri Ram Sugar Works of Podanur are able to draw large supplies of jaggery for their sugar works. The average production of jaggery in a year exceeds 10,000 bags.

(iii) *Soapstone Utensils.*

In Karavi and Kutluru villages of Karkala taluk of the South Kanara district utensils from soapstone are made from a long time by a class of workers who belong to the class of blacksmiths. They make big and small vessels for storing grain, cooking and cake-making. There are eight families of these workmen consisting of twenty people who do this work in addition to agriculture.

Stones are quarried in patta lands on payment of 2 annas per day to the pattadar. They are shaped by means of chisels and files. A workman could make articles worth about 8 annas working seven hours a day but he does not often work regularly as the tract is malarial. On a rough calculation articles worth about Rs. 2,000 are made yearly. There is nothing artistic or special about them.

They find ready sale in villages and shandies. As they are not as brittle as earthen pots or as costly as metalwares but last for some time if carefully handled and are besides acid-proof, they are largely purchased. They are not exported outside the district but taken to Mangalore where they find ready sales.

(iv) Extraction of palmyra fibre.

Extraction of fibre from palmyra sheaths is carried on by some Adi-Dravidas, in a number of villages of Palghat taluk only where palmyra palm is found in abundance. Sheaths are generally obtained free but when they are purchased, 100 sheaths cost 4 annas. Extraction of fibre is done throughout the year except in June, July and August when agricultural labour offers them tempting wages. In two days 500 sheaths could be beaten into fibre and the quantity obtained weighs about 18 lb. and is sold for Rupee 1-5-6. A merchant at Palghat buys all the fibre got by these workers and supplies it to Messrs. Pierce Leslie & Co., Calicut. He buys at Rs. 9 per cwt. and then employs coolies for cleaning and sorting fibres according to their length. The average price per cwt. ranges from Rs. 13 to Rs. 16, the longer fibres fetching a better price. Cleaning is done by bundles of fibre being drawn through tooth-like iron spokes fixed to a stand, and thereafter the fibres are sorted into two or more varieties according to length. In cleaning 1 cwt. there is a wastage of $\frac{1}{4}$ cwt. The wastage which consists of broken small fibres are thrown out and the customers who bring fibres to the depot gather them for making small ropes. The owners of trees do not receive cash price for the sheaths sold, but accept in return ropes made from waste fibres. For cleaning 1 cwt. net, a coolie of Rs. 2 is given and this is done by two or three women in two days. After cleaning they are assorted and packed or bundled at 8 annas per cwt. Thus the actual cost of 1 cwt. of fibre is—

	Rs.	A.	P.
Cost of fibre at Rs. 9 per cwt. including $\frac{1}{4}$ cwt. for wastage	11	4	0
Cleaning charges	2	0	0
Bundling and assorting charges	0	8	0
	13	12	0

The contractor is able to purchase and sell about 40 to 50 cwt. in a month.

(v) Making of Knives and Locks.

Malabar District.

Almost in every important amsam in the district, two or three families of blacksmiths live and cater to the needs of the villagers. When they are disengaged from making or mending agricultural implements they make cutlery and locks as a subsidiary occupation and earn a living in slack times. They have acquired skill to temper steel to such a fine degree that their manufactures

look like Sheffield makes. Pruning knives, knives for cutting vegetables and pen-knives are very common among their makes and are largely used in the district. Iron or steel, and horn for handles are brought in the local bazaars. A knife does not require more than 3 annas worth of materials but is sold when finished for 12 annas. Without much exertion, a pen-knife can be made by a worker in a day which bring him a wage of 9 annas. The worker sells his wares in his own place but when he has a large number on hand, he goes to Calicut or Palghat for vending them or sells them on the nearest railway station platforms. The raw materials required are not costly and the workers seldom borrow any money for this purpose. The average income of a worker generally ranges from 12 to 14 annas a day. Knives made are pretty strong. For handles they use both buffalo and stag horns which are procurable locally. The industry has been carried on from time immemorial.

Some of the smiths are clever in making brass locks. They generally buy metal required for castings and then prepare locks and sell them locally. Lock-making is more often done against orders. The average wages earned by a locksmith does not exceed 8 to 10 annas a day. There is a good demand for them locally.

South Kanara District.

In Baindur of Coondapoor taluk, there is a family of three brothers of Asaris (carpenters' caste) who make knives, locks and muzzle-loaders. This is the hereditary occupation of the family. In one month they produce articles worth Rs. 100. For making a knife or a lock it takes $1\frac{1}{2}$ days and a month for a muzzle-loader. A pen-knife costs from 8 annas to Rs. 1-8-0 and country locks from 12 annas to Rs. 1-4-0. A muzzle-loader costs from Rs. 40 to Rs. 70. They work for ten hours a day and each man earns about a rupee. The required metals, iron and brass, are purchased in Mangalore and the wood is got locally. Iron is purchased at Rs. 3 to Rs. 4 per maund. The villagers have a special liking for these knives and locks as they are said to be strong and durable. The workmen cannot turn out larger output. They have no labour-saving contrivances. The articles, however, resemble machine-made ones. This is an old craft which was almost extinct but for the existence of this family.

(vi) Pottery.

In other districts pottery is found in almost every village for there is the village artisan who supplies pots to the village community. But this is not the case in South Kanara where for each taluk there are one or two places only from which the villagers have to get their pots. Pottery is manufactured in an appreciable

magnitude in two famous centres, viz., Nekraji in Kasaragod taluk and Uppinangadi in Puttur taluk. In the former, jugs, pots, cups, lamp cups, jars, plates, etc., are made. In the latter, the same articles are made with better polish.

The district is noted for a fine kind of yellow clay from which tiles are made. Its availability near the centres of manufacture is the chief reason for the growth of the industry in them. It is dug in patta lands and pattadars sell clay at the rate of 100 baskets weighing $2\frac{1}{2}$ to 3 maunds each, for Rs. 16 which is sufficient for making articles worth about Rs. 40. There is no difficulty at all in getting the clay and some of the potters themselves own lands where it is available.

The potters work in family groups. Their women assist in getting the clay, clearing them of hard things and making them into consistent mass. Each potter produces articles worth about 12 annas a day on an average. About Rs. 20,000 worth of earthen pots are made at Nekraji itself. In Uppinangadi the quantity is perhaps a fourth of that but the pots are noted for their polish and design. The workmen are very industrious and stock large quantities for sale.

The pots of Nekraji and Uppinangadi are seen in almost all the shandies of Kasaragod and the adjoining taluks. Traders purchase them at Uppinangadi and carry them for sale in the Mysore territory. These pots are sold in bazaars and in all taluk headquarters and towns.

There has been no decline in the industry as the articles have a constant demand. With some demonstration and training the potters could make ornamental pottery.

(vi) *Pithwork.*

Pithwork exists in a few villages of Coondapoor, Udipi and Mangalore taluks. Bhasyangas, garlands and flowers in pith are made by a sect of people called Kanchugararu or Gudigararu. In Basrur of Coondapoor taluk and in Udipi there are six and five families respectively. In a few other villages there are one or two families. Women also do the work.

The required pith is got from the Ghauts and sold by traders and contractors at the rate of 12 annas a maund. Tinsels, dyes, glass pieces and beads are purchased in the bazaars.

The articles made are artistic and individual skill is brought to bear on making them more attractive. Daily about Re. 1 worth of articles are made, the pith and other things costing about 6 annas. The earning of a man or woman is about 10 annas. This work is done only in the dry season for about two or three months.

Bhashyangams or ornamental trophies worn by married couples on a marriage day command sales during the marriage season. A Bhashyangam costs from Rs. 4 to Rs. 10 according to the cost of the material used and the design adopted.

As a cottage industry pithwork gives employment to a very small number of men and women during a part of the year. At other seasons these people engage themselves in agriculture and selling sundries in bazaars and shandies. The pithwork here cannot compare itself with that in Tanjore where it is much developed.

(viii) *Doll and Statuette Making.*

Allied to statuary is doll making. Rude kinds of dolls are made in wood in Kandluru of Coondapoor taluk by two families whose hereditary profession has been doll making. They belong to the caste of Kudikararu or Chitrakararu, i.e., rural engravers or painters.

The dolls resemble birds, beasts, and human beings. Domestic implements required in making puddings are also made. The wood that is used is Surage, Nevaru, Jack and Karibali. It is obtained on payment of 6 annas for a headload of pieces from pattadars. There is of course some skill in making these things which is learnt as part of the family life. One man makes two or three dolls worth about 8 annas a day and sells them locally in village shandies.

It is noteworthy that this craft which is ancient has survived till this day though in one village. It is said that every village had its doll-maker as wood was available in plenty everywhere. By the importation of cheap dolls in tin, celluloid, etc., from foreign countries doll-making has completely disappeared. Doll-making is an art which children can be taught to do and it is said that foreign dolls that are sold in bazaars are made by children in European schools. The taluk boards may consider the desirability of giving instruction in doll-making in elementary schools. They may get wood for little or no value as it is available in abundance in the district. By individual skill and imitation of foreign dolls, doll-making may improve to such an extent that it may become with the help of a collecting and exporting agency the industry of every house.

Statues and statuettes, monuments, wall reliefs, ornaments and articles of artistic pottery are made with Mangalore tile clay, seasoned teakwood and plaster of paris by Roman Catholic Christians in Mangalore and its suburbs. St. Joseph's Industrial School, Albertmartis & Co., and Messrs. Gregory & Groves in Mangalore are the four bodies who do work of this kind. They

employ about 120 adults and 50 boys who are all whole-time workers. Soft clay is got locally from tile workers at the rate of 6 pies for the quantity required for a tile. Plaster of paris is sold in the bazaar at the rate of 7 annas a pound. Seasoned teakwood is also purchased in the market at Rs. 2-4-0 a cubic foot. For painting, water colours and enamels are used which are procurable locally.

Before a thing assumes the final shape it passes through three or four hands. First of all it is roughly shaped by one, then it is worked upon by another for delineating correct features. Then if it is clay it passes to the kiln. It is painted by another and the finishing touch is given by the master workman. Sometimes the same man does all these processes. On an average articles worth Rs. 2 or Rs. 3 are made in a day by a single workman with one boy assistant. On a rough calculation articles worth about Rs. 1,200 are produced in a month by these institutions.

The bigger things, such as statues, ornamental works for buildings, are made to order. Other smaller articles are stocked and sold locally and also exported to Bombay, Malabar and Madras.

There is no decline in the industry. It is one in which the individual skill and craftsmanship is exhibited as in some of the cottage industries. There may be other people in South Kanara who have the eye and the hand to do similar things of art but it must be only want of capital and organization that stand in their way.

(ix) *Cap-making.*

Cap-making is a cottage industry in Talangeri, 2 miles from Kasaragod. Formerly Mappillas were making costly caps for the use of the richer class with complicated designs stitched with hand. After the advent of sewing machines, nearly 30 years back and owing to the facility afforded thereby in sewing with great rapidity they are now produced cheaper so as to be within the reach of every Mappilla. There are about 50 families in this village working with 200 sewing machines employing about 500 women and boys. The boys stitch the designs made by the elders and the women fill up the interspaces with black yarn. A boy stitches designs for three caps in a day each costing about 6 annas on an average. It takes two days for a woman to fill up the designs of a single cap with black yarn for which she gets one anna. The cloth, thread and yarn for three caps cost about 6 annas and 3 annas is paid for filling in designs. The net profit therefore of an employer per cap is 3 annas. Sometimes a coolie of 4 annas is paid per day for stitching three caps. Each family consisting of a husband, a wife and two boys and two girls manages to earn about a rupee a day. There are about 150 coolies engaged on this business.

The industry is carried on in family groups. The long cloth and thread of 200s are obtained from Cannanore at Rs. 5-8-0 for 160 reels. Each reel contains about 200 yards and is used up for two caps. A yard of cloth costing 8 annas is required for four caps. The finished caps are sold to traders at Kasaragod who sell locally and export them to Basara, Arabia, Madras, Bombay, Colombo and the Straits Settlements. The average output per sewing machine is about 160 caps per month. The total production is about $1\frac{1}{2}$ lakhs of caps costing about Rs. 50,000. The initial outlay per machine including the value of cloth and yarn is about Rs. 350. There is no co-operative society either for buying or selling.

The Nilgiris District.

The Nilgiri district consists of the great plateau, about 35 miles long and 20 miles broad and some 6,500 feet high on an average, situated at the junction of the Eastern and Western Ghats and inhabited by the indigenous castes of Badagas, Kotas, Todas and Kurumas besides the immigrant Hindus, Muhammadans, Parsis and Europeans who represent a fair proportion of the population. The district contains far fewer people than any other Collectorate in the Presidency and the peculiar conditions obtaining in it account for the difference in the occupation of the people when compared with those of the people on the plains. The population subsisting on agriculture is as low as 60 per cent which is perhaps less than that in any other district except the Presidency town, while the percentage of people subsisting on other occupations such as domestic service, building, commerce, coolie labour, etc., seems to be proportionately higher than elsewhere. That this should be so is obviously due to the physical features of the district and the fact that a large percentage of the population live in towns and that the occupations of the people are consequently more urban than rural. European residents and their domestic servants are unusually large and the district not being self-productive in the matter of its necessaries employs a large number of traders to organize their supplies and a still larger number to bring up and distribute them.

Manufacture of Eucalyptus Oil

In fact, practically no indigenous industries are existing except the making of coarse pottery and implements by the Kotas for the use of the indigenous agricultural classes. Almost every manufactured article is either brought up from the plains or made by immigrant artisans in the towns of Coonoor and Ootacamund and the common industries of the plains, viz., weaving, dyeing, oil-pressing, rope-making, metal work and basket-making, etc., are rarely to be met with here. The only industry of importance that is carried on

as a cottage industry is the manufacture of eucalyptus oil from the leaves of *Eucalyptus Globulus* tree. There are, however, certain other industries which have been established largely with the aid of European enterprise and capital such as breweries, tea factories, dairies, soda water factories and others but they do not come under the scope of my investigation. A brief description of the eucalyptus oil industry as carried on in the district may be of some interest.

Manufacture of eucalyptus oil from *Eucalyptus Globulus* leaves is carried on extensively in the Nilgiri district especially in the Ootacamund taluk. The leaves required for extraction of the oil are obtained from trees grown in Government forests and on private lands. Eucalyptus trees are grown largely on the hills as they are used for fuel and regularly cut for the purpose. There are about 100 distilleries in the district, the bulk of them being in and around Ootacamund. The manufacturers are mostly Badagas and Chettis and they buy leaves from the forest coupe contractors and others. The oil is used for medicinal purposes in hospitals and elsewhere and exported in large quantities to Northern India and other places. It is also used for removing incrustations in boilers and locomotives.

Process of Manufacture.

The still used for the manufacture of eucalyptus oil is ordinarily 4 feet high and $2\frac{1}{2}$ feet in diameter made with copper plates at the bottom and iron sheets at the sides. At a foot above from the bottom arrangements are made inside the still to hold a perforated iron plate over which the leaf is placed so that the latter might not come in direct contact with the heat. Before the heating commences, this space is filled with water and the required quantity of leaf is placed over the perforated plate or plating. About 600 to 800 lb. of leaf is put at a time and heated. Ordinarily leaves of mature trees 16 to 17 years old are used as they are preferred to leaves of trees of less maturity, but the latter are also sometimes used. The leaves are dried for three days after plucking and before they are put into the still for distillation. Shade dried leaves are preferred as the yield of oil is greater. The lid at the top is completely closed and the vapour is allowed to escape through a pipe which empties itself in an adjoining tub after passing through a column of cold water. When the vapour condenses it turns into oil containing a large percentage of water. The oil being lighter floats to the surface and the water is allowed to pass out by means of a tap at the bottom of the vessel. Generally boiling is done for 8 hours but during that period the water in the still is maintained at the same level by constant addition as it evaporates. Crude oil thus collected is again subjected to refinement, although this does not seem necessary with regard to Nilgiri oil, by mixing it with water in the proportion of 6 : 1 and

adding a small quantity of caustic soda to it. The mixture is again distilled in a similar but smaller still and the oil is passed through filter papers until it is rid of all impurities and assumes a slightly white colour. The average capacity of a still is 800 lb. of leaves and 36 gallons of water. The yield from 800 lb. of leaves is 120 oz. of impure oil which when further distilled gives 96 oz. of pure refined oil.

Two women can collect in a day leaves sufficient for a boiler and they are paid 7 annas each. Carting charges vary from 8 annas to 1 rupee per cartload according to the distance of the still from the place where the leaves are collected. A cartload of leaves weigh from 1,200 lb. to 1,600 lb. which quantity will be sufficient for two stills. For fuel, the refuse leaves from the boiler are used and it is seldom that any expense is incurred on this account. When a still is located in the forest area, the manufacturer has to pay an annual ground-rent of Rs. 10 to Government for carrying on distillation. The total cost of a still including all its appurtenances is about Rs. 120.

The economics for manufacturing three bottles of oil is given below :—

	RS.	A.	P.
600 lb. of leaves	0	12	0
Collecting charges	0	14	0
Carting charges	0	8	0
Wages for a man for one day	1	0	0
Three empty bottles	0	6	0
Interest on capital	0	0	6
Wear and tear	0	1	6
Total	3	10	0

The sale price of a bottle of oil ranges from Rs. 1-12-0 to Rs. 2. In Badaga villages leaves are obtained cheaper from private topes where only branches of the trees are allowed to be lopped off. The chief merchants who trade in eucalyptus oil at Ootacamund are—

1. Messrs. Siddayya Gowder.
2. South Indian Cash Trading Company.
3. Rustomji & Co.
4. Krishna & Co.

These firms purchase crude oil from the Badagas and refine it before marketing. They have regular written contracts with Badaga manufacturers for the supply of oil at certain fixed rates varying from Re. 1 to Re. 1-4-0 per bottle and make advances to them free of interest.

The Badagas are an indolent and impoverished class of people who do not care to practise thrift but borrow recklessly. They revel in festivities and spend a great deal more than necessary when deaths happen in the family. At present the bulk of the profits derived from the manufacture of the oil goes to the traders who have contracts with them. To such a people co-operative societies can perhaps do very little good, though there is no doubt that as a result of the organization of such societies cheaper credit for carrying on the manufacture of oil and larger profits could be secured to them, but this will be possible only if they are wise and thrifty in their dealings.

Among the other indigenous classes of people who are carrying on rural industries are the Kotas or pot-makers and Kurumas who weave baskets and mats for the use of the agriculturists. These baskets and mats which are not meant for sale to others are made of reeds and creepers and are of a very rough make. Bamboos abound in Gudalur taluk and there is a large demand for bamboo baskets from planters for keeping nursery plants but all the supply has to come from the plains. If the indigenous tribes can learn basket-making for which there is an increasing demand in plantations and orchards, they could easily supplement their income, but the people are so ignorant and care so little for their material progress that any improvement is hardly possible.
