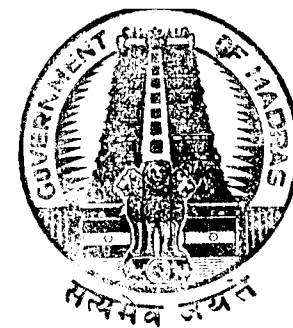


DEPARTMENT OF STATISTICS
MADRAS

**REPORT ON COTTAGE INDUSTRIES
IN SELECT FIRKAS IN
MADRAS STATE
1956**

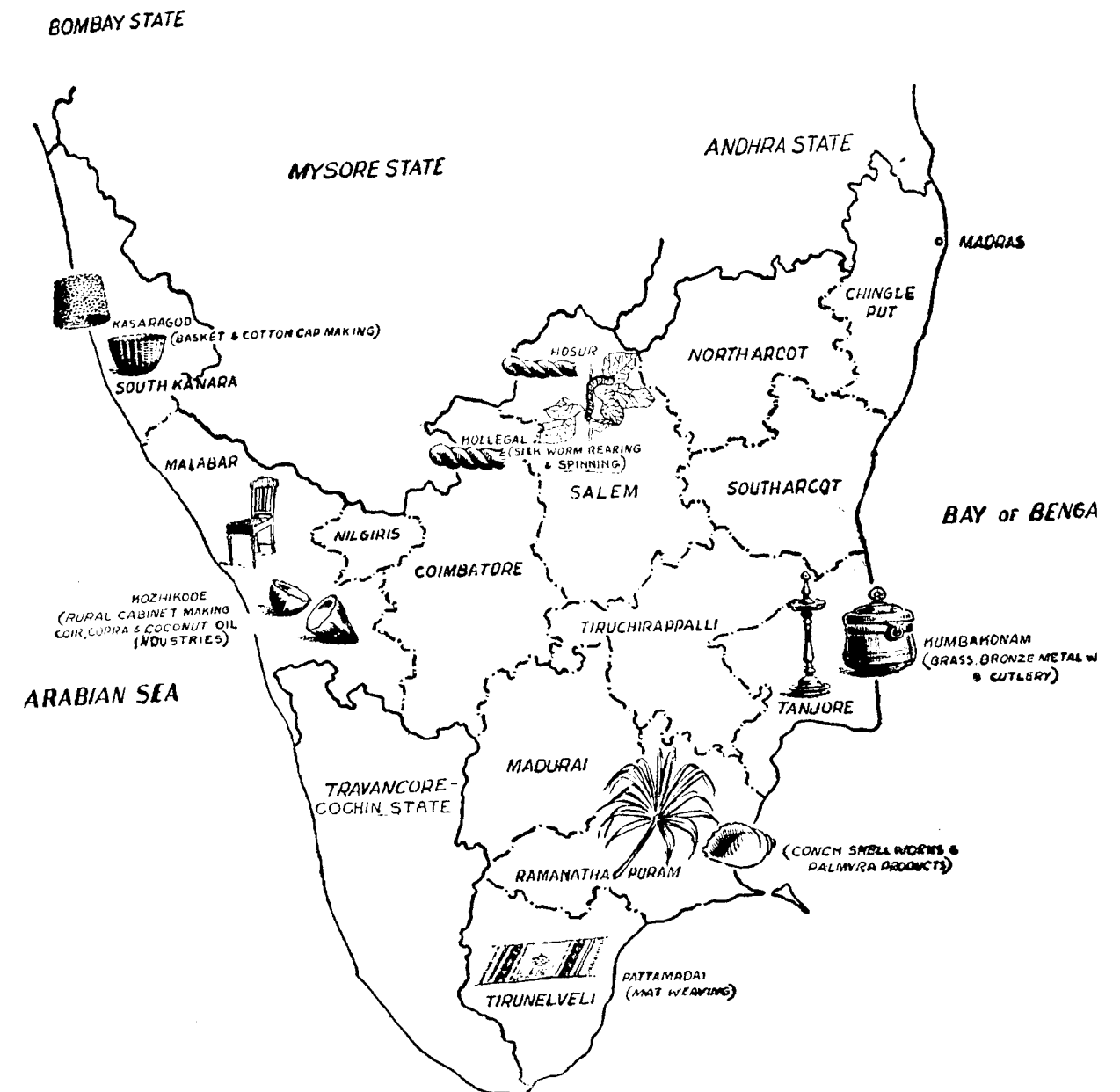


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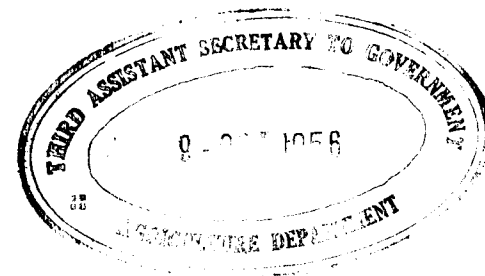
REPORT ON COTTAGE INDUSTRIES
IN SELECT FIRKAS IN
MADRAS STATE

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COTTAGE INDUSTRIES IN SELECT FIRKAS IN MADRAS STATE



Firka or centre.	Name of the industry.
1 Kumbakonam	Brasswares manufacture.
2 Pattamadai	Mat weaving.
3 Ramanathapuram	Palmyra products.
4 Hosur and Kollegal	Silkworm rearing and spinning.
5 Kozhikode	Coir, copra and coconut oil and Rural cabinet making.
6 Kasaragod	Basket making and cotton cap making.



PREFACE

Object of the survey.—The Madras State Cottage Industries Board recommended that a survey of the existing structure of the cottage industries in the State is very essential for the formulation of effective plans for their development. The Government of Madras accepted the recommendation and approved in G.O. No. 740, Rural Welfare, dated 1st July 1952, a scheme for the survey. The survey was designed with the object of making an intensive study of certain select cottage industries and obtain factual data on all aspects of the industries with a view to suggesting measures for their development.

2. *Main features of the scheme.*—The Government decided that the survey should be conducted on the basis of regional concentration in nine selected firkas sampled out in five typical regions divided on the basis of regional, economic and cultural considerations. A few modifications were subsequently made after a visit to the selected centres. The statement below shows the five regions, the districts and the firkas and the principal industries selected finally for survey in each firka :—

Distribution of firkas and cottage industries selected.

Serial number and region.	District.	Firka or centre.	Principal industry.
(1)	(2)	(3)	(4)
1 Circars	Krishna	Kondapalli	Doll and toy manufacture.
Do.	Guntur	Chirala	Handkerchiefs and other special handloom products.
2 Rayalaseema	Bellary	Adoni	Carpet.
		Kudithini village	Cumbli.
3 South Western districts.	Salem and Coimbatore.	Hosur and Kollegal	Silkworm rearing and spinning.
4 Southern districts	Tanjore	Kumbakonam	Brass, bronze metalware and cutlery.
Do.	Ramanathapuram	Ramanathapuram area.	Conch shell works and palmyra products.
Do.	Tirunelveli	Pattamadai (Mela-chavel firka)	Mat and reed products.
5 West Coast	Malabar	Kozhikode	Rural cabinet making and coir and coconut industry.
Do.	South Kanara	Kasaragod	Baskets and cotton cap-making.

Due to the partition of the State, the report has been written in three parts—Part I relates to the survey falling within the Madras State as it is now constituted ; Part II to the Andhra State and Part III to the territory transferred to Mysore State. Part I alone is presented here ; Parts II and III have been transferred to the respective States. A map showing the different centres where the survey was carried out in the Madras State as now constituted is given on the frontispiece.

3. *Previous surveys.*—The first comprehensive survey of cottage industries in this State was undertaken by Sri D. Narayana Rao under the auspices of Government between April 1927 and December 1928. He collected detailed information in regard to the existing cottage and rural industries, the methods in force, the tools and appliances used, the number of persons employed in them, the availability of raw materials and markets for finished products. The scope of his survey included all classes of industries carried on in the houses of workers as distinct from those carried on in factories. Even among the latter, several industries which did not employ power but which partook the nature of cottage industries were often included. It covered both rural and urban industries. He carried out the survey district by district and the results were published in a general report and also in district reports. There has been no comprehensive survey of cottage industries in this State since then. With the object of planning a development programme for industrial co-operatives, the Registrar of Co-operative Societies prepared in 1941 a brochure on the cottage industries of the State and the part played by co-operation in their organization. Though revised and brought up to date in 1945, it has not so far been published. There are a few surveys of individual cottage industries in the State. The report of the Fact Finding Committee (handlooms and mills) appointed by the Government of India in 1941 contains detailed information on the condition of the handloom industry in the whole country. In connexion with the intensification of rural reconstruction work under the Firka Development Scheme, a rapid survey was conducted in 1946 of the conditions of rural industries in the select firkas of the State. The reports of the Courts of Enquiry into labour conditions (1) in beedi, cigar, snuff, tobacco-curing and tanning industries (1947) and (2) in the handloom industry (1948) by Dr. B. V. Narayanaswamy Nayudu are concerned mainly with the problems of labour and wages and cover not merely cottage workers but those in factories as well. The Director of Information and Publicity brought out in 1952 a brochure on cottage industries in Madras State which contains much useful information on the policy and programme of the Government, organization of Government staff, facilities for training and research, financial and other assistance available, etc.

The present survey was planned and conducted on a basis entirely different from all the previous surveys. Its distinctive feature was a concentrated investigation of selected industries in centres noted for them. While the enquiry may be regarded as lacking in comprehensiveness as it does not cover all the centres in the State engaged in a particular industry, it has the merit of being more intensive, detailed and practical.

4. *Definition of cottage industry.*—The term 'cottage industries' has been defined variously at various times.

The Indian Industrial Commission of 1916-18 defined cottage industries as 'industries carried on in the homes of the workers. In these, the scale of operation is small and there is but little organization so that they are, as a rule, capable of supplying only local needs.'

The National Planning Committee (1939) tentatively defined cottage industries as 'industries in which a worker works with his own tools in his home and with the aid of his family or hired labour not exceeding five persons.' According to the United Provinces Industrial Financing Committee (1937), cottage industry is 'an industry carried on in or at his own home either on his own account or under the directions of his karkhanadar', while the United Provinces Industrial Reorganization Committee (1936) defined it as 'an industry in which work is done, generally speaking, in the houses of the artisans and occasionally in small factories run by small industrialists of the entrepreneur type, power-driven machinery being rarely used.' The Bombay Economic and Industrial Survey Committee of 1938-40 of which Sir Purushothamadas Thakurdas was the Chairman defined cottage industries as 'industries where no power is used and the manufacture is carried on, generally speaking, in the home of the artisan himself and occasionally in kharkhanas where not more than nine workers are employed.' The Madras State Aid to Industries Act defines cottage industry as 'any industry carried on by a worker in his own home.'

According to a report to Government in 1948 by the Director of Industries and Commerce, Madras, 'cottage industry may well be defined in strict conformity with its name as industry carried on by a worker or group of workers not exceeding 10 in number, in the house of any of them. The use of machinery, power and precision tools should not remove the industry from the category of cottage industries.'

For the purpose of this survey a cottage industry has been defined as 'An industry carried on by a worker or group of workers *not exceeding nine* in their own houses or in the house of a neighbour or in some workshop whether using power or not.' It excludes all workshops and factories coming under the provisions of the Factories Act.

5. *Staff.*—Sri Y. Sankarasubramanian, B.A. (Hons.), was appointed Special Officer for the survey. He was assisted by the necessary staff at headquarters and the following ten Economic Investigators: Sri Y. Ayyapparaju, M.A., for Chirala firka, Sri M. L. Atreya Reddi, M.A., for Adoni firka and Kudithini centre, Sri C. Damodaram, M.A., DIP. IN POL. & PUB. ADMN., for Kondapalli firka and Ramanathapuram area, Sri M. Dharmavinayakam, B.A. (Hons.), for Kasaragod firka, Sri D. Govindarajan, M.A., for Hosur and Kollegal firkas, Sri C. Kuppuswamy, B.A. (Hons.), for Ramanathapuram area, Sri K. Krishnadoss Menon, B.A., for Kozhikode firka, Sri K. Muthurama Reddi, B.A. (Hons.), for Kumbakonam firka, Sri V. Natarajan, B.Sc. (Hons.), for Pattamadai (Melachavel) firka and Kumari T. Meenakshi, M.A., M.LITT., at headquarters. Sri K. N. Lakshmikanthan, B.A. (Hons.), and Sri M. Thirunavukkarasu, B.A., were successively the Office Superintendents for the survey. The Special Officer worked from 21st July 1952 to 28th February 1954. The Investigators, most of whom had previous experience in conducting such surveys, were given during the first month, preliminary instructions and training.

6. *Plan of the survey.*—The survey was carried out in the following four stages:—

First stage—Enumeration or collection of basic data on the total strength of cottage industrial units in each firka.—The survey was commenced in July 1952. In view of the non-availability of basic data regarding population engaged in cottage industries, a preliminary

questionnaire was issued to the economic investigators for taking a count of the number of families engaged in cottage industries. The questionnaire sought detailed information about the number of families engaged in the principal and other cottage industries in the selected centres, the name of the chief cottage industrial workers in each family, the number of other cottage industrial worker in each family, and the names of the industries in which each was employed.

Second stage—Resource survey or intensive survey of the economic resources of the area and factors favouring the growth of principal cottage industries.—On completion of the preliminary work, the second stage of the survey was taken up and an intensive study of the general economic conditions of the firkas was made. The study was intended to explore the resources of the area in men and materials and make a special assessment of the factors favouring the growth of the principal cottage industries in the firkas. In addition, it sought information on certain specific problems facing development of cottage industries such as improvement of tools, new uses of raw material, changes in designs and tastes of consumers, marketing, competition from large-scale industry, role of women and children, vocational training, etc.

Third stage—Individual unit surveys or detailed surveys of a select number of cottage industrial units.—The third stage consisted of the survey of the individual cottage industrial units. In view of the large number of cottage industrial units in most of the firkas and the limited time available for the completion of the field work, it was decided to survey a sample of families engaged in the principal cottage industries. The sample was selected for each industry on the principle of random sampling from the list of families engaged in the principal cottage industries for each firka compiled by the Economic Investigators at their preliminary enquiry. In the selection of the sample, care was taken to give fair representation, wherever necessary, to the following four types of cottage industrial units:—

- (1) Those operators who do not directly employ workers but are the financiers and organizers of the industry,
- (2) Operators employing labour other than members of the families,
- (3) Family units, and
- (4) Industrial co-operatives.

Fourth stage—Tabulation and drafting.—Tabulation of data, their analysis and interpretation, and the drafting of the reports on all industries were completed by the end of February 1954.

7. Tours and inspection.—The Special Officer visited all the centres at least twice during the course of the enquiry and guided and checked the work of the Economic Investigators.

8. The report.—The report has been written generally on a uniform plan in respect of each industry to present a succinct account of the organization of the industry, the structure of families engaged in the industry and their economic conditions, selection of the sample, description of the articles made, details regarding raw materials, fuel, tools, machinery and equipment, manufacturing processes, labour force, wages, cost of production, income and expenditure, the general economic structure of the industry and an efficiency assessment of the different industrial organizational units. Recommendations have also been made for developing the industries.

The Director of Information and Publicity kindly made available his staff photographers who took the photographs which are embodied in the report to show pictorially the various aspects of the industries.

FORT ST. GEORGE, MADRAS,
19th March 1954.

D. S. RAJABUSHANAM,
Director of Statistics.

REPORT ON COTTAGE INDUSTRIES IN SELECT FIRKAS IN MADRAS

CHAPTER I

BRASS WARE, BRASS SPOON, COPPER IDOL, LEAD WARE AND CUTLERY INDUSTRIES IN KUMBAKONAM FIRKA (TANJORE DISTRICT).

Introductory.—Kumbakonam firka was selected for the survey of brass, bronze, metal ware and cutlery industry. Kumbakonam and a group of villages in its neighbourhood have been noted for centuries past for their brass utensils and spoons, copper idols and lead wares. The speciality of Kumbakonam brass wares lies in their solid workmanship, durability and artistic quality. They enjoy a well merited reputation not only within India but also in countries like Burma, Malaya, Indonesia and Ceylon. The idols manufactured at Swamimalai and Kumbakonam are held in high esteem both for their artistic qualities and their close conformity to sastric principles. The lead wares of Kumbakonam are no less famous among a certain section of the people who have a partiality for them.

The preliminary survey showed that the industries are located in Kumbakonam town and the adjoining six villages in the firka viz., Swamimalai, Tiruvalanjuli, Valayapet, Darasuram, Palavathan kattalai and Kornattu Karuppur. A map of the firka showing Kumbakonam town with the cluster of villages is given in the opposite page. The causes for this localization of brass ware and allied industries are not far to seek. Kumbakonam is a large municipal town with a population of 91, 643 according to the census of 1951. It is an important railway station on the main line of the Southern Railway and it is also well served by a network of roads. Situated on the bank of the Cauvery, one of the seven holy rivers of India, and studded with a number of big temples it has been a great pilgrim centre. The Mahamakkam festival occurring once in twelve years when a particular tank is supposed to be filled with Ganges water, attracts very large crowds. There are about six high schools, a Government College and hospitals. It is also the divisional and taluk headquarters. The location of a number of Government Offices combined with the civic amenities of a municipality have also helped the growth of the town and consequently of industries and trade. The village of Swamimalai, four miles from Kumbakonam is an equally important pilgrim centre, as it contains one of the six famous temples dedicated to Lord Subramanya. Here is a community of people called Sthapathies noted for their skill in the manufacture of idols. Tiruvalanjuli lies one mile to the south of Swamimalai and five miles from Kumbakonam. Valayapet and Darasuram lie at the western end of Kumbakonam town while Palavathankattalai is at the eastern end of Kumbakonam and they almost form part of Kumbakonam. Kornattu Karuppur lies three miles to the east on the main road from Kumbakonam to Madras. These advantages, natural, religious and civic have contributed to the growth of the brass ware and other industries.

A detailed statement showing the village-wise distribution of the number of families engaged in different cottage industries in these seven centres and their proportion to the total number of families is given in Appendix 1. Out of an estimated total of 20,794 families, 4,105 or 19.7 per cent were engaged in cottage industries. The percentages varied from 10.4 in Valayapet to 50.5 in Palavathan kattalai. Out of the 4,105 families engaged in cottage industries in the seven centres, 529 or 12.75 per cent were engaged in the brass ware and allied industries.

BRASS WARE INDUSTRY.

2. *Organization of the industry.*—Out of the five industries surveyed in the firka, the brass ware industry is by far the most important from the point of view of the magnitude of its operations and the extent of employment provided. Out of the 529 families engaged in brass ware and allied industries, brass ware industry provided employment to 448 families or 84.7 per cent.

The industry is at present organized with a few merchants at the top and a large number of workers at the bottom with a sizable number of master craftsmen acting as middlemen and manufacturers. The need for a merchant manufacturer arose mainly because the raw materials were dear and very few of the labourers with little capital could afford to handle them on their own account. In view of the growing difficulties in organizing the labourers and extracting work from them, there has been a growing tendency on the part of the merchants not to take up direct manufacture but to rely on middlemen for getting their work done. Out of the 65 merchants in Kumbakonam town only 17 or 26.2 per cent were engaged in direct production at the time of the enquiry (1952). The rest were relying on middlemen manufacturers.

These may be broadly classified into two categories, (1) the employer unit and (2) the family unit. The employer unit engages for wage outside labour and works with them and the family unit works with the help of the members of the family. Both have some landed property or at least a house, and own the essential tools required for manufacture. These form in a way the security on which the merchants supply them with the necessary raw materials and part of the wages. They take these materials to their houses, purchase the necessary auxiliary materials and work on them with the help of the members of the family or employing outside labour. As all the articles are weighed, any loss in weight of the finished articles is adjusted against the balance of wage due. According to the preliminary survey, there were 116 employer units and 75 family units. There was also a co-operative society for ex-servicemen engaged in the industry.

3. *Selection of sample.*—The following table shows the number of units selected for detailed survey :—

3.1. *Number of units selected.*

Description.	Total number of units.	Number of units selected.	Percentage of units selected to total.
1 Family units	75	25	33.3
2 Employer units	116	38	32.8
3 Merchant-cum-manufacturers	17	2	11.8
4 Co-operative Society	1	1	100.0
Total	209	66	31.6

On the whole, 31.6 per cent of the units were selected for detailed study.

4. *Composition of the families.*—The following table gives the composition of the families of the different units :—

4.1. *Composition of families.*

Description.	Per family unit numbers.	Percentage to total.	Per employer unit numbers.	Percentage to total.	Per M.O.M. unit numbers.	Percentage to total.	Average for all units numbers	Percentage to total.
1 Workers ..	1.8	32.2	1.6 } 2.9* }	32.7	3.0 } 5.0* }	24.0	1.7	31.7
2 Dependents ..	3.9	67.8	3.3	67.3	9.5	76.0	3.7	68.3
3 Total ..	5.7	100.0	4.9†	100.0	12.5†	100.0	5.4	100.0

Outside labour. † Members of the family only. M.C.M. = Merchant-cum-manufacturer.

The average size of a family unit was 5.7, that of an employer unit 4.9 and that of a merchant-cum-manufacturer unit 12.5 and that of all units 5.4. Women and children are not employed in the industry. The average number of workers per family in the three types of units was 1.8, 1.6 and 3 respectively while the corresponding number of dependents was 3.9, 3.3 and 9.5. On the whole there were 1.7 workers and 3.7 dependents per family.

5. *Industrial housing.*—The workshops were generally situated in a separate shed erected at the backyards of the houses while in some cases they were erected in an open space in front of the houses. The easy accessibility of workshops to the residential portion ensured homeliness of atmosphere. Family units who did not own their own workshops used those of their neighbours generally free of rent.

The following statement shows the details about the workshops for the different units :—

5.1. *Work sheds.*

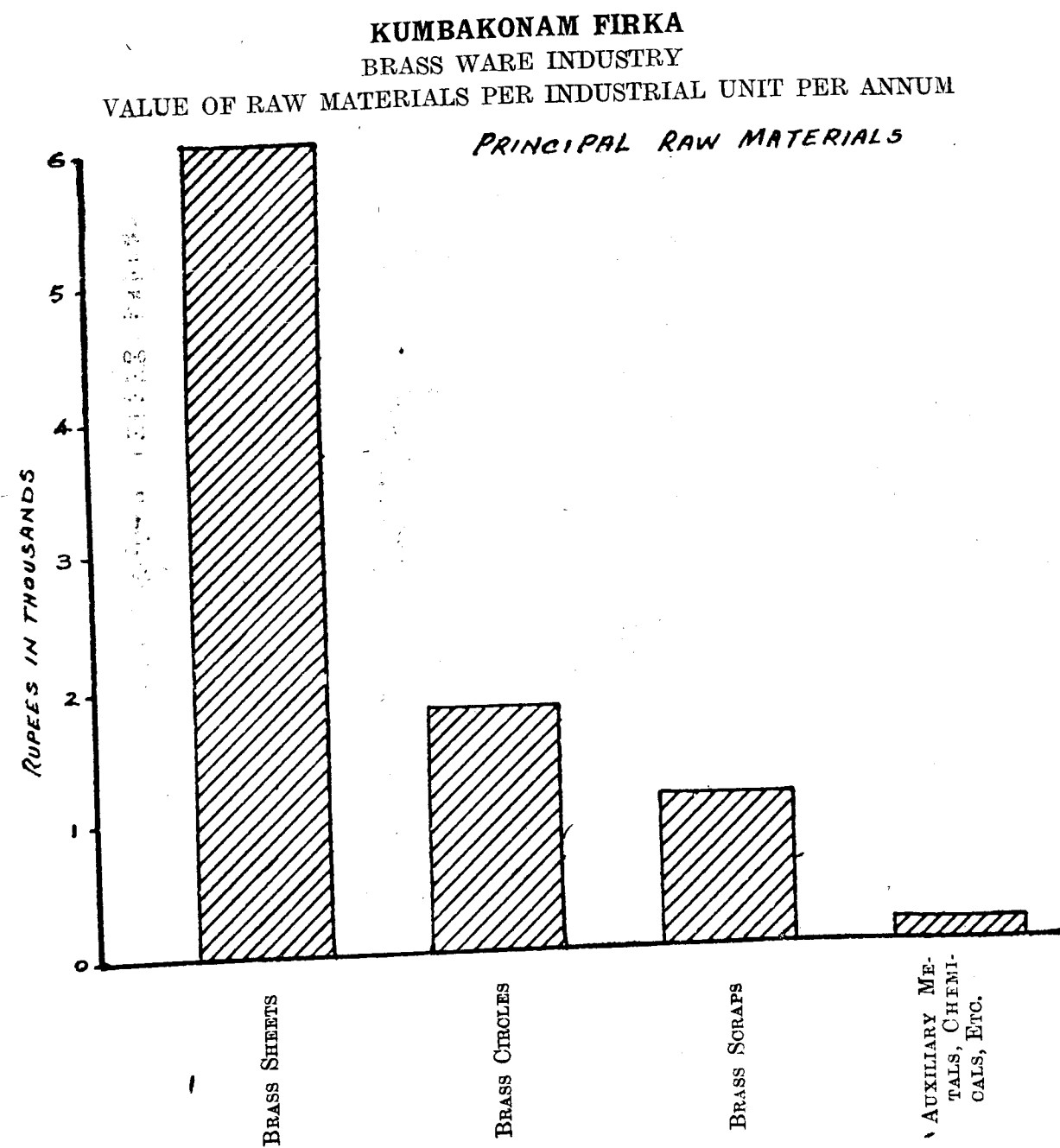
Description.	Type of shed.			Area per unit (sq. ft.).	Area per worker (sq. ft.).	Average number of sheds per unit.
	Thatched.	Tiled.	Zinc.			
	PER CENT.	PER CENT.	PER CENT.			
1 Family unit	87.0	13.0	..	312.9	170.0	0.9
2 Employer unit	76.2	21.4	2.4	500.8	111.3	1.1
3 Merchant-cum-manufacturers	..	100.0	..	645.0	80.6	1.5
Average for all units	76.5	22.0	1.5	432.9	120.8	1.1

Of the three types of sheds, thatched ones formed 76.5 per cent, tiled 22.0 per cent and zinc roofed 1.5 per cent. Though the area available per unit varied in proportion to the size of the units, the floor space per worker varied in inverse proportion to the size of the unit. From the point of view of floor space per worker the family units were better off while those working under merchant-cum-manufacturers had the least amount of space.

The majority of the units owned their own workshops, only 18.5 per cent having recourse to rented sheds. A statement showing the average amount of rent and repairs incurred by each type of unit is given in Appendix 2. The average rent actually paid per unit for all units was Rs. 7 while the estimated rent was Rs. 36. The average maintenance charge amounted to Rs. 17 per unit.

6. *Type of articles manufactured.*—The centre manufactures a large variety of household utensils which are in common use by all classes of people. The important articles, to use the local names are *kudam*, *iddilipanai panai*, *kuvilai*, *kopparai*, *urupadi*, *harikkanchetti*, *vanachatti*, *annakudai*, coffee filter, *kuthuvilakku* (lamp), drum, *barathu*, *marakkal*, etc. A number of minor articles are also manufactured but quantitatively they are not of much significance. Although a majority of the articles are manufactured with an eye to their utility, some artistic varieties are also produced.

7. *Raw materials.*—The raw materials may be grouped into two broad categories, (1) principal and (2) auxiliary. The principal raw materials are brass sheets, brass circles and brass scraps while the auxiliary raw materials are metals like aluminium, zinc, salt petre chemicals like borax, ammonium chloride, sulphuric acid and others such as lac and wax. There are time honoured and recognized proportions in which the metals are to be combined for the manufacture of the different vessels. A statement showing the proportion of the different metal constituents and auxiliary raw materials required for the manufacture of different types of vessels weighing 100 seers is given in Appendix 3. The number of vessels that can be manufactured has little significance with the trade as the vessels are sold only



by weight and labour is also paid on piece rates according to the weight of the vessels manufactured. The faithfulness with which these time-honoured prescriptions are followed is of considerable significance as it has standardized production so far as the centre is concerned and has given a stamp of quality. It is easy to standardize the output on such recognized traditions observed by the trade.

The following statement shows the quantity and value of raw materials consumed by an average unit. Details are given in Appendix 4.

7.1. Quantity and value of raw materials consumed per unit per annum.

Type of unit.	Principal raw materials.		Percentage to total value.	Auxiliary raw materials.		Total value.	Total percentage.
	Quantity.	Value.		Value.	Percentage to total value.		
	SEERS.*	RS.		RS.	RS.	RS.	
Family unit	4,267.12	3,748	98.91	42	1.09	3,789	100.0
Employer unit	14,650.6	12,299	98.55	180	1.45	12,479	100.0
Merchant-cum-manufacturer unit.	23,615.50	19,245	98.30	336	1.70	19,581	100.0
Average for all units ..	10,933.10	9,038	98.56	131	1.44	9,169	100.0

* 5 seers = 1 viss = 3½ lb.

An average family unit consumed 4,267.1 seers of main raw materials compared with 14,650.6 seers by an employer unit and 23,615.5 seers by a merchant-cum-manufacturer unit. The proportion of consumption by each type of unit was 1 : 3.4 : 5.5. The consumption per worker in the case of the three types of units was 2,319.1 seers, 3,255.5 seers and 2,951.9 seers respectively. From the point of view of utilization of raw material, a worker in an employer unit was better placed than others. This is more clearly revealed by an examination of per capita consumption per working day. It worked out to 11.4 seers in the case of the family unit, 13.6 seers in the case of employer unit and 10.0 seers in the case of the merchant-cum-manufacturer unit. Thus the consumption per worker per day's work was the highest in the case of employer units and lowest in the case of merchant-cum-manufacturer units. The low per capita consumption of merchant-cum-manufacturer units is partly due to the family members attending to supervisory work. To a certain extent this is compensated by a higher level of employment secured by the units.

8. Supply of raw materials.—The family units and the employer units do not purchase the principal raw materials on their own account as they are too poor to undertake the risks of manufacture, but merely work on the materials supplied by the merchants. The problem of supply of raw materials arises only in the case of merchants. There were some restrictions in the supply of the raw materials during the war period but since decontrol in 1947, no difficulty has been experienced in getting the required quantity. The merchants buy brass sheets and brass circles from wholesale merchants and commission agents at Madras and the brass scraps from retail merchants in Kumbakonam town and other places, who purchase them either for cash or in exchange for new vessels. As the merchants have sufficient bargaining strength, there is no scope for exploitation.

9. Loss by wastage.—While melting brass scraps, a certain amount of loss in weight occurs but no compensation is given to the family units and employer units by the merchants who supply the scraps. The wastage is met from the wage received for manufacture. The average loss in wastage incurred per annum by a family unit was Rs. 23, by an employer unit Rs. 87-6-0 and by a merchant-cum-manufacturer unit Rs. 75.

10. *Fuel*.—Charcoal and electricity are the fuels used in the industry. Charcoal is used for the furnace where the metals are melted while electricity is used by an employer and by a merchant-cum-manufacturer for running the polishing and drilling machines. The statement below shows the average quantity and value of fuel consumed per unit.

10.1. *Consumption of fuel per unit per annum.*

	<i>Charcoal.</i>		<i>Electricity.</i>		<i>Total value.</i>
	<i>Quantity.</i>	<i>Value.</i>	<i>Quantity.</i>	<i>Value.</i>	
	MDS.	RS.	UNITS.	RS.	RS.
Family unit	56.6	105	..	..	105
Employer unit	219.9	306	N.A.	20	326
Merchant-cum-manufacturer unit	147.0	220	N.A.	27	247
Average for all units ..	154.8	226	..	12	238

N.A.—Not available. (One maund = 25 lb.)

The expenditure on fuel per 100 seers of output amounted to Rs. 2-7-7 per family unit, Rs. 2-3-8 per employer unit and Re. 1-0-9 per merchant-cum-manufacturer unit. Thus the merchant-cum-manufacturer unit appears to be the most economical in the use of fuel.

11. *Tools, machinery and equipment*.—The main tools are *karavai* (bolt-like iron instrument), '*Panaiyal*' (iron piece), crowbar, granite stone, plier, bellows, hammer, '*kadamaram*' (hand driven drilling and polishing machine), crucible, file and miscellaneous items like scissors, cutters, compass, scale, balances and weights, mould boxes, wooden planks, etc. The table below shows the value of the tools owned by the three types of units. Details of the different tools owned by each type of unit are given in Appendix 5.

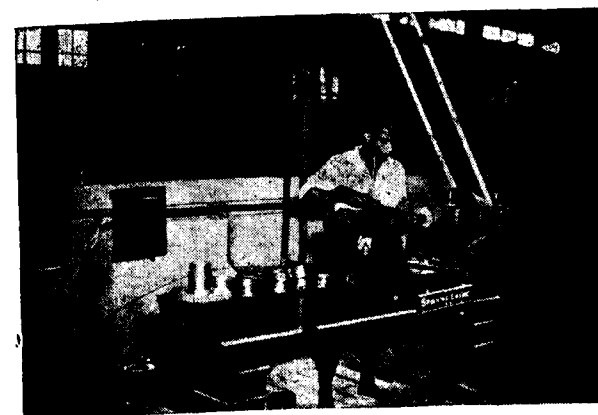
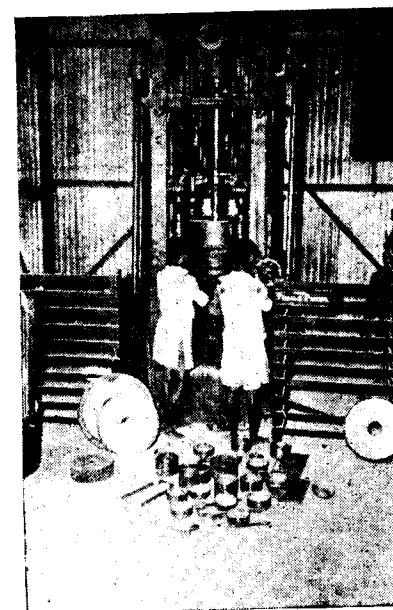
11.1. *Tools, machinery and equipment per unit.*

<i>Type of unit.</i>	<i>Initial cost.</i>	<i>Replacement cost.</i>	<i>Present value.</i>	<i>Annual maintenance charges.</i>	<i>Annual depreciation charges.</i>
	RS.	RS.	RS.	RS.	RS.
1 Family unit	227	308	157	34	15
2 Employer unit	395	519	331	53	15
3 Merchant-cum-manufacturer unit	845	1,278	696	212	37
Average for all units ..	344	461	276	51	16

Karavai is the most important tool accounting for 28.9 per cent of the total initial cost of all the tools followed by the granite stones (11.8 per cent), hand drilling machine (8.2 per cent), hammers (7.9 per cent), *Panaiyal* (6.2 per cent) and crucible (5.3 per cent.) Others account for less than 5 per cent each. The initial investment on tools by the three types of units was in the ratio of 1 : 1.7 : 3.7.

The initial investment per worker in a family unit amounted to Rs. 123 as against Rs. 87 in an employer unit and Rs. 106 in a merchant-cum-manufacturer unit. The investment on tools per 1,000 seers of output in the case of each type of unit was Rs. 47, Rs. 25 and Rs. 30 respectively. It would appear that the employer unit was making more efficient use of its tools. The maintenance charges amounted to Rs. 34 for a family unit, Rs. 53 for an employer unit and Rs. 212 for a merchant-cum-manufacturer unit and Rs. 51 for all units. These maintenance charges are incurred in connection with the mending of the iron tools and replacement of worn out parts and the purchase of coconut oil, kerosene oil, rope, etc., for the hand drilling machines and for repair of the bellows. Depreciation charges have been worked out on the basis of the estimated life of each type of tool.

BRASS WARE INDUSTRIES—cont.



TOOLS, MACHINERY AND EQUIPMENTS.

There have been no changes in the nature of tools used. Nor have any attempts been made to see whether improvements can be effected. The Co-operative Metal Works at Kumbakonam has a large number of costly tools but is unable to make effective use of them as it has insufficient orders. The merchants on the other hand are unwilling to make effective use of the services of the society or invest capital on the purchase of improved tools especially as they are able to get their profits under the present system of manufacture. An investigation by a competent technical expert may perhaps reveal possibilities of introducing new machinery for carrying on some of the processes. It would appear that machinery can be used for pressing the sheets into required shapes as the sister industry of stainless steel is manufacturing all types of vessels by the use of pressing machines.

One of the handicaps for the introduction of new machinery is that the tools and equipment are not owned by the big merchants but by a class of middle men, entrepreneurs, through whom most of the work is got done. The smallness of the scale of operations of these middle men and their entire dependence on the merchants make it impossible for them to experiment on the introduction of improved types of machinery. This divorce in ownership of tools between the actual worker and the manufacturer for whom the goods are made emphasises all the more the need for State assistance both in the sphere of research and in equipping the industrial units with up-to-date machines.

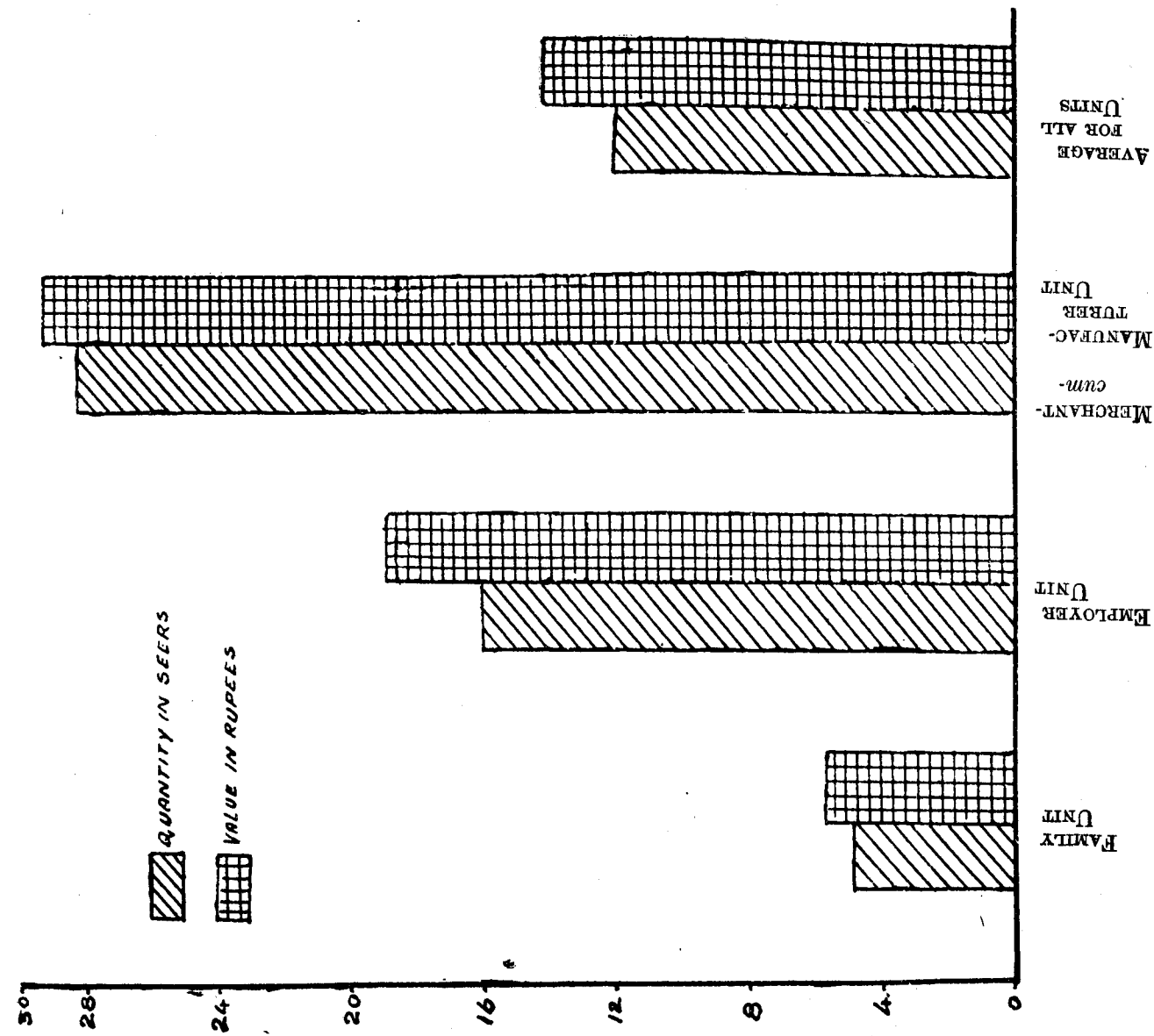
12. *Manufacturing processes*.—The processes vary according to the types of articles and the number of constituents that go to its making. There is specialization by types of articles but not by processes.

In order to understand the different processes, it would be useful to watch the making of an '*iddilipanai*' and a '*kuthuvilakku*'. They represent two types of work, the former mainly one of beating the metals into required shape and the latter casting and moulding.

The main processes in the manufacture of an '*iddilipanai*' are cutting the sheets to the required size and making grooves in them; next the sheets are bent to the required shape and joined to a brass circle whose ends are also grooved. Inside plates are made out of brass circles. The joints are made strong by rivetting. The outer surface of the brass sheet is hammered into proper shape. Rings for the sides and balls for the lids are made by melting brass scraps and pouring them into earthen moulds. These are then fitted to the vessels by means of copper nails and rivetted. The last process is drilling and polishing by hand driven wheeled machines. A few artistic lines are drawn on the outer surfaces and lids of the vessels to make them attractive. Polishing is done just before the vessels are marketed. The most significant feature in the manufacture of these type of vessels is the amount of hammering involved in giving the required shape to the vessels. A worker can make an '*iddilipani*' weighing 12 seers in a day of 8 hours. A statement showing the cost of manufacturing an '*iddilipanai*' with the approximate time taken for each process is given in Appendix 6.

The manufacture of a lamp (*kuthuvilakku*) involves casting and moulding. The principal raw materials, brass scraps, zinc, white lead and aluminium are mixed in certain definite proportions. They are melted in a crucible and poured into three separate moulds already prepared, one for the bottom plate, second for the top plate and third for the stem. When cooled, the mould is opened and the articles are taken out. The next process is filing and drilling. Small hitches and rough spots are rubbed off by a file. Screwing threads are then drilled inside the bottom and top plates and at both ends of the stem with the help of a wheeled drilling machine. The three parts are then connected and fitted together. Polishing is done in the same drilling machine by replacing the needle by a brush. The cost of manufacturing a lamp is given in Appendix 7.

KUMBAKONAM FIRKA
BRASS WARE INDUSTRY.
QUANTITY AND VALUE OF PRODUCTION OF BRASS WARE PER UNIT PER ANNUM



BRASS WARE INDUSTRIES—cont.
DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
Iddilipanai.



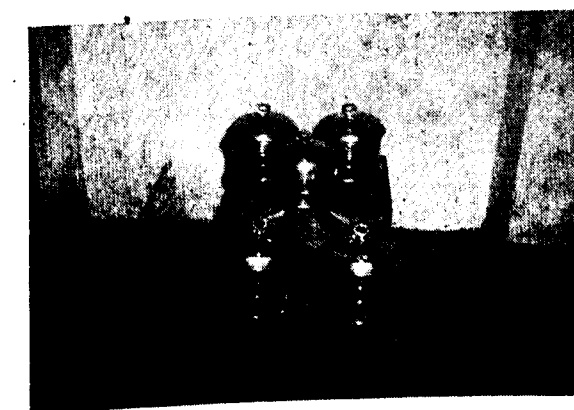
Iddilipanai IN THE FINISHING STAGE.

BRASS WARE INDUSTRIES—*cont.*

DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
Iddilipanai—*cont.*



POLISHING.



FINISHED *Iddilipanais*.

BRASS WARE INDUSTRIES—*cont.*
DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
Kuthuvilakku.



BRASS WARE INDUSTRIES—cont.
DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
Kuthuvilakku—cont.



Kuthuvilakku.

17. *Wages*.—The peculiarity with this industry is that both the family units and employer units are wage earners, the difference between the two being only one of degree. Both get the principal raw materials from the merchants. While the former work at them with the labour of the members of the family, the latter employ outside labour also. In the case of the merchant-cum-manufacturers, the raw materials are supplied by themselves but both the members of the family and outsiders work.

Another special feature of the industry is that the wage rate for the manufacture of the different articles is a composite item from which both the family units and employer units will have to meet a number of incidental expenses such as those on the purchase of auxiliary raw materials, fuel, transport charges to and fro, rent or maintenance of workshops, cost of tools and equipment, their maintenance and wages to outside labour, if any. The net income is derived only after deducting all these items from the gross wage of the family unit or the employer unit. Rates of wages also differ from one article to another and they are governed also by the weight of the articles produced. A statement showing the rates of wages payable for the important types of articles is given in Appendix 10.

The statement below shows the actual wage received by a unit, the amount of wages paid to outside workers and the balance available to the units :—

17.1. *Wages per unit per annum.*

Description.	Amount	Amount	Balance
	received.	paid to outside labour.	available for the unit.
	RS.	RS.	RS.
1 Family unit	978	..	978
2 Employer unit	4,023	1,199	2,824
3 Merchant-cum-manufacturer unit	*7,576	2,950	4,620
Average per unit ..	2,961	792	2,169

* Wages payable.

There is an important difference between the wages received by a unit and by the workers employed in it. In the case of the former, out of the gross wages received, it has to incur the following incidental expenses including wages for its employees while in the case of workers, it represents their net receipts :—

17.2. *Incidental Expenses per unit per annum.*

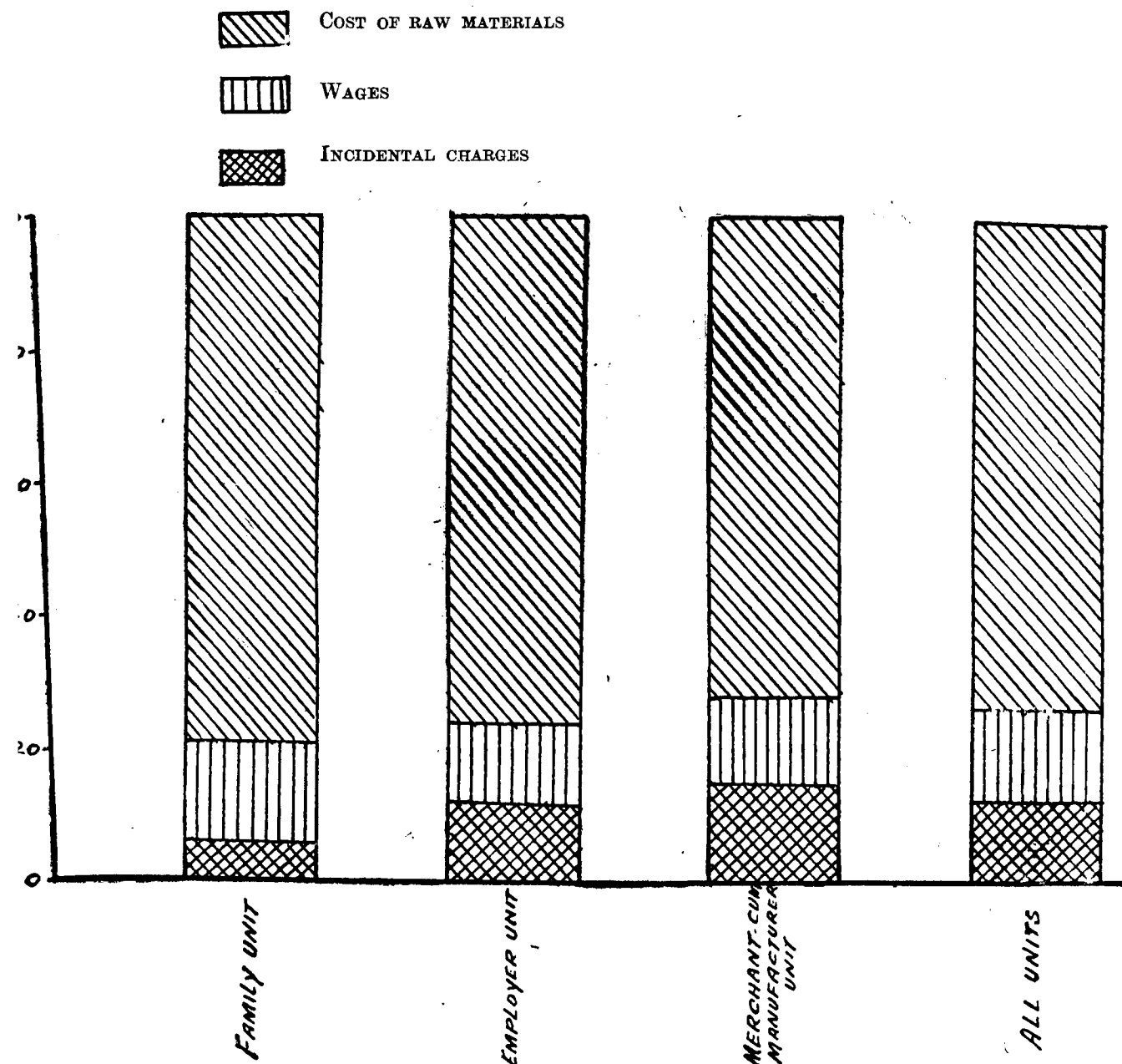
Item.	Family unit.	Employer unit.	Merchant-cum-manufacturer unit.
	RS.	RS.	RS.
1 Rent and Repairs	34	72	163
2 Maintenance of machinery	34	53	212
3 Depreciation	15	15	37
4 Auxiliary raw materials purchased	42	180	336
5 Fuel	105	326	247
6 Transport	23	61	..
7 Wastage	23	87	75
8 Tax	..	1	63
9 Wages paid	..	1,199	2,950
Total ..	276	1,994	4,083

The annual net wage received amounted to Rs. 702 for the family unit, Rs. 2,029 for the employer unit and Rs. 3,493 for the merchant-cum-manufacturer unit. The annual net wage per family in each type of unit worker amounted to Rs. 390, Rs. 451 and

KUMBAKONAM FIRKA

BRASS WARE INDUSTRY

COMPONENTS OF COST OF PRODUCTION OF THE THREE TYPES OF UNITS



Rs. 437 respectively while that per worker per working day amounted to Rs. 1-14-7, Rs. 1-14-3 and Re. 1-7-8 respectively. On the other hand the average annual wage received by an outside worker in an employer unit was Rs. 413 and that in a merchant-cum-manufacturer unit Rs. 590. The corresponding rates per working day were Rs. 1-11-10 and Rs. 2 respectively. Thus it will be seen that though a worker in a family unit earned a slightly higher wage per working day than a worker in an employer unit, his total annual earnings are less than those of an outside worker. This may perhaps tend to diminish the number of independent family units and swell the number of those seeking employment under others.

18. *Transport.*—Transport charge is incurred for taking the raw materials to the workshop and returning the finished goods to the merchants. The mode of transport is by bullock-carts or headloads. An average family unit incurred a sum of Rs. 23 and an employer unit Rs. 61 per annum. The merchant-cum-manufacturer units did not incur any charges on transport as their workshops were attached to the business premises.

19. *Cost of production and profit.*—The following table shows the components in the cost of manufacture and profit for the different types of units :—

19-1. Components of cost of production of brass wares and profit realized per industrial unit per annum.

Components.	Family unit.	Percentage to total.	Employer unit.	Percentage to total.	Merchant-cum-manufacturer unit.	Percentage to total.	Average for all units.	
	(2)	(3)	(4)	(5)	(6)	(7)	Amount.	Percentage to total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	RS.		RS.		RS.		RS.	
1 Cost of raw materials.	3,789	79.5	12,479	75.6	19,581	72.1	9,169	75.6
2 Net wages ..	702	14.7	2,029	12.3	3,493	12.9	1,564	12.9
3 Incidental charges.	276	5.8	1,994	12.1	4,083	15.0	1,397	11.5
Total cost ..	4,767	100.0	16,502	100.0	27,157	100.0	12,130	100.0
Selling price ..	5,632		18,879		29,218		14,102	
Profit	865	18.2	2,377	14.4	2,061	7.1	1,972	14.0

Out of the total cost, raw materials formed more than 75 per cent which accounts for the dependence of the employer and family units on the merchants. In the case of merchant-cum-manufacturer unit, the incidental charges formed 15 per cent as against 6 per cent and 12 per cent respectively in the case of family and employer units. This is mainly due to the high cost of rent and repairs, and maintenance of machinery and tax. The average cost of production per seer was Re. 0-15-3 in the case of family units, Re. 0-15-6 in the case of merchant-cum-manufacturers and Re. 1-0-5 in the case of employer units and Re. 1-0-1 for all units.

20. *Profit and loss.*—As against an average cost of Rs. 1-0-1 per seer, the average selling price was Re. 1-2-9 resulting in an average profit of Re. 0-2-8 per seer. The profit for the entire estimated production for the firka may be put at Rs. 4.76 lakhs.

The profit formed 16.4 per cent of the cost of production. It is important to remember that the family units and the employer units have no share in the profits which go entirely to the merchants. The selling price shown in Table 19 is the price realised by the merchant-cum-manufacturer.

The following table shows the relative cost of manufacture in each type of unit :—

20. 1. *Relative cost of manufacture.*

Components.	Family unit.	Employer unit.	Merchant-cum-manufacturer unit.
Cost of raw material taken as 100 ..	100	100	100
Wages	18.3	16.9	12.2
Incidental charges	7.5	15.9	20.6
Total cost ..	125.8	132.8	132.8

It will be seen from the above that the family unit is the most economical unit of production.

21. *Capital.*—This consists of fixed items like buildings, tools, machinery and equipment and working capital like raw materials, fuel, wages, etc. The family unit and employer units who are supplied with the necessary raw materials and also wage advances require little working capital. Some employer units have given a certain amount of money as security to the merchants. The following statement shows the amount of fixed and working capital of the three types of units :—

21.1 *Fixed and working capital per unit.*

Description.	Family unit.	Percent-age to total.	Employer unit.	Percent-age to total.	Merchant-cum-manufacturer unit.	Per cent-age to total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	RS.		RS.		RS.	
1 Cost of building	110	32.6	248	34.2	2,550	19.7
2 Machinery and equipment. ..	227	67.4	395	54.5	845	6.5
3 Working capital	..	..	82	11.3	9,536	73.8
Total ..	337	100	725	100	12,931	100

The capital for the three types of units was in the proportion of 1 : 2 · 2 : 38.4.

Net profit.—To arrive at the net profit, interest on capital has to be deducted from the gross profit. As rent and depreciation have already been allowed in regard to fixed capital, interest has to be calculated only in regard to working capital. Family units have no working capital. Calculating interest at 6 per cent per annum on the working capital, this amounts to Rs. 5 in the case of employer unit and Rs. 572 in the case of merchant-cum-manufacturer unit. The net profit in the case of each of these two types of units was Rs. 2,372 and Rs. 1,488 respectively.

22. *Income from the industry.*—The following table furnishes the details of income per annum :—

22.1. *Income from industry per unit per annum.*

Description.	Family unit.	Employer unit.	Merchant-cum-manufacturer unit.
	RS. A. P.	RS. A. P.	RS. A. P.
1 Net wages received	701 11 9	2,029 7 0	3,492 10 7
2 Net profit			1,488 6 0
3 Rent on industrial portion (estimated)	22 12 3	39 6 9	138 0 0
4 Depreciation	15 0 0	15 4 4	37 5 5
5 Interest on own working capital		4 14 10	572 2 1
Total ..	739 8 0	2,089 0 11	5,728 8 1

As the family and employer units work only on a wage basis, the entire profit goes to the merchants who supply the raw materials and no credit for this item is taken in the case of the first two types of units. Profit forms a significant item of income in the case of merchant-cum-manufacturer units. Out of an income of Rs. 5,728, a sum of Rs. 1,488 or 29 per cent was derived from profit while net wages amounted to Rs. 3,493 or 61 per cent as against Rs. 2,029 or 97 per cent for an employer unit and Rs. 702 or 95 per cent for a family unit.

23. *Financing of the industry.*—The brassware industry is one of the most important cottage industries in the State. It requires a large amount of capital for production and marketing. This is mainly the responsibility of the merchant class while the family and employer units are mere wage earners. In order to study the problems of finance and marketing, a separate survey of the production of 13 merchants in Kumbakonam town was made. It was observed that the average annual consumption of raw materials per merchant was 75,822 seer valued at Rs. 52,835, which is nearly 18 times the quantity consumed by an average family unit and 5 times that of an employer unit. The average amount of wages paid by each merchant-cum-manufacturer amounted to Rs. 13,000 per annum. The total working capital for an average unit would thus be nearly Rs. 66,000. An additional 50 per cent would be required to provide marketing credit and to keep stock on hand. Thus a merchant would ordinarily require Rs. 1 lakh per annum for production and marketing of brasswares.

So far, none of the merchant-cum-manufacturer has received any financial assistance under the State-Aid to Industries Act. They have to depend entirely on their own resources to secure the necessary credit. Few banks are prepared to lend to such private Industrial Undertakings.

The merchant-cum-manufacturer thus forms the pivot of the whole organization. Neither the family unit nor the employer unit is in a position to undertake the responsibility for production and marketing. Even if the latter are supplied with raw materials, and helped to produce goods, they cannot market them in the absence of the merchant-manufacturers who have well established business connections. For developing the industry, it is therefore necessary that the merchant-manufacturer should be supplied with necessary finance. This will naturally provide regular employment to the workers.

24. *Marketing and export.*—Brasswares of Kumbakonam are marketed throughout India and in foreign countries such as Ceylon, Burma, Malaya, Indonesia, etc. The markets may be broadly classified into local, State, Indian Union and foreign.

In order to get a clear picture of the marketing of the goods, a special study was made in regard to the transactions of 13 merchants out of 65 in Kumbakonam town during the year under review (November 1951 to October 1952). Out of the total sales 75.8 per cent was for cash and 24.2 per cent for credit. It was observed that 40.2 per cent of the total production was sold locally, 19.9 per cent in the district, 25.0 per cent in the other districts in the composite State, 4.1 per cent outside the State but within the Indian Union and 10.8 per cent in foreign countries.

Local sales formed a significant proportion. This is mainly because Kumbakonam being an important pilgrim centre, most people who visit it make it a point to purchase a few articles like 'Kudams' and 'Kuthuvilakus' for which it is famous. The local sales were therefore not entirely to the local residents but to outsiders.

The other centres in the district to which the goods were exported were Mayavaram, Thiruvaiyar, Tanjavur, Sirkali, Nagapattinam, Nagore, etc. The sales were mostly to merchants who were given credit for periods ranging from three to six months.

The brasswares are also in great demand in the other districts of the State, the more important of them being Madurai, Tiruchirappalli, South Arcot (Chidambaram), Coimbatore (Mettupalayam) and (Thiruppur), Salem, Tirunelveli, Chittoor (Kalahasti), Malabar (Palghat), Madras, Krishna (Vijayavada), Bellary (Hospet), Guntur (Chirala) and East Godavari (Rajahmundry). Part of the sales are made to retail merchants on credit basis. A month after the consignment the manufacturers send their agents to collect the dues.

The main centres of demand in the Indian Union outside the composite State are Cochin, Trivandrum, Nagercoil, Vandiperiar, Mysore, Bangalore, Shimoga, Delhi, Calcutta and Bombay. As most of these centres are also producing their own brasswares, only specialities of Kumbakonam like *kudam*, *kuthuvilakku* and artistic utilities were exported. These sales are generally for cash.

The main overseas markets are Jaffna, Colombo, Busallawa, Kandy, Singapore, Penang, Kola Lumpur and Borneo. Only a few merchants specialize in foreign trade. Out of the 13 merchants surveyed, only two were exporters to foreign markets. Out of the 65 merchants in Kumbakonam, only 10 merchants or 15.4 per cent were exporters. There was an increasing demand from these foreign markets and the merchants were giving greater attention to their development, as the profits in the export trade were more attractive. But each merchant has to send his own relation or agent to explore the markets and establish business contacts. The State can help in the development of foreign exports by opening sales depots, as it is proposed in the case of handloom goods by the All-India Handloom Board. The brasswares can be sent to such centres on consignment basis. The State can also disseminate information on the condition of the foreign markets. It may be necessary to form an association of the merchants interested in export trade, which would act as liaison between the State and the merchants. It may be entrusted with the function of preserving the reputation of the goods exported by prescribing standards for them and inspecting them before export.

25. *Role of co-operation.*—There has been no attempt at co-operative organization either among the merchants or among the workers. There is however a co-operative metal works started in 1946, for the benefit of ex-servicemen under the post-war reconstruction scheme. There is a Sub-Registrar of Co-operative Societies in charge of the workshop with a foreman and eight workers. It was intended to train ex-servicemen and give them regular work. But very few of the persons, who were trained have stuck to the workshop, as it is not able to provide employment throughout the year for want of sales of the products. In spite of adequate capital and up-to-date machinery and equipment, it has not made good progress mainly because the quality of the goods manufactured by the newly trained ex-servicemen has not come up to the local standard and the society has not been able to expand the market for its goods.

The total capital of the society in February 1953, was Rs. 1,10,386 made up of Rs. 20,000 invested on buildings, Rs. 51,386 on machinery and equipments and Rs. 39,000 on working capital. Of this, a sum of Rs. 71,386 was owned capital made up of subscribed capital and State-aid from Post-War Reconstruction Fund, and Rs. 39,000 borrowed at 5 per cent per annum. A list of machinery owned by the society together with their value is given in Appendix 11.

During the year 1951-52 (November 1951 to October 1952) the society incurred an expenditure of Rs. 3,306 on production of goods weighing 2,706 seers valued at Rs. 3,262 and thereby incurred a loss of Rs. 44. Including the other incidental expenses such as, interest on capital, establishment charges, etc., of Rs. 13,494, the total deficit was Rs. 13,538. Against this, it got an income of Rs. 4,900 from lands, buildings and deposits, so that the net loss amounted to Rs. 8,638. A part of the loss, it was reported, was made good by job work. The society's finances were however sound as it has got a liability of only Rs. 39,000 against an asset of Rs. 1,96,386.

The average size of a family unit was 5.7, that of an employer unit 4.9, that of a merchant-cum-manufacturer unit 12.5 and that of all units 5.4. Workshops were generally situated in separate sheds erected near the houses.

Articles manufactured are a large variety of household utensils commonly used by all classes of people. The principal raw material is brass in sheets, circles and scraps and the auxiliary raw materials are other metals (aluminium, zinc, etc.) and chemicals (borax, sulphuric acid, etc.). The total value of all raw materials used annually was Rs. 3,789 in the case of an average family unit, Rs. 12,479 for an employer unit and Rs. 19,581 for a merchant-cum-manufacturer unit, and Rs. 9,169 on the average for the whole sample. In the case of the family and employer units the raw materials were not purchased but supplied by the merchants. The average expenditure on fuel and electric power was Rs. 105 for a family unit, Rs. 326 for an employer unit, Rs. 247 for a merchant-cum-manufacturer unit and Rs. 238 for the whole sample. The average initial investment on tools by the three types of units, was Rs. 227, Rs. 395 and Rs. 845 and for the whole sample Rs. 344. Annual maintenance and depreciation charges were respectively Rs. 34 and Rs. 15 in a family unit, Rs. 53 and Rs. 15 in an employer unit and Rs. 212 and Rs. 37 in a merchant unit.

The average value of annual production was Rs. 5,632, Rs. 18,879 and Rs. 29,218 respectively in the three types of units and Rs. 14,102 for the sample as a whole. The annual output for the entire firka is estimated at 27 lakhs seers valued at Rs. 31 lakhs.

The labour force of an average family unit consisted of 1.8 family workers, that of an employer unit 1.6 family workers and 2.9 outsiders and that of a merchant unit 3 family workers and 5 outsiders. The number of days on which these units were employed was respectively 204.1, 237.8 and 295.1 and for the sample as a whole 226.6. The average output per worker per working day in the three types of units and for the whole sample was 13.2 seers, 14.9 seers, 11.9 seers and 14.8 seers respectively.

The total annual cost of production was Rs. 4,767 for an average family unit, Rs. 16,502 for an employer unit, Rs. 27,157 for a merchant unit and Rs. 12,130 on the average for the entire sample. Deducting this from the value of sales, the gross profit in the four cases was respectively Rs. 865, Rs. 2,377, Rs. 2,061 and Rs. 1,972. Less interest on working capital, the net profit amounted to Rs. 2,372-4-1 for an employer unit and Rs. 1,488-6-0 for a merchant unit, the family unit having no working capital.

The income from the industry, inclusive of imputed items in the cost of production was Rs. 739-8-0 for a family unit, Rs. 2,089-0-11 for an employer unit, Rs. 5,728-8-1 for a merchant unit and Rs. 1,678-10-0 for the whole sample. The proportion of this to the total annual income of the units was respectively 72.8 per cent, 87.1 per cent, 85.8 per cent and 84.1 per cent.

Annual expenditure exceeded income in the case of the average family, and merchant units, the deficits being Rs. 42 and Rs. 584. The employer unit had an annual surplus of Rs. 388 and the average surplus for the sample as a whole was Rs. 190.

The value of assets owned by an average family, employer and merchant unit was Rs. 2,527, Rs. 3,456 and Rs. 25,095 respectively and for the entire sample Rs. 3,855. The average debt in the four cases was Rs. 287, Rs. 223, Rs. 3,000 and Rs. 327 respectively.

An industry of such dimensions requires efficient captains to run it and considerable amount of finance. Naturally it is dominated by big merchants who combine in themselves a number of functions, such as production, financing and marketing. The total working capital required by the merchants may be estimated at Rs. 6.15 lakhs. But banking facilities required for organising such a big industry on efficient lines are absent with the result that initiative and enterprise are lacking and work is carried on in the traditional manner. The future development of the industry requires adequate banking facilities.

2. The problem of marketing is the most important one the industry has to face. This has assumed considerable importance especially in recent years in view of the growing competition from other articles like aluminium, stainless steel, etc., and the decrease in demand due to the deterioration in the economic position of the middle classes during the war and post war years and the prolonged unfavourable seasonal conditions in the State. The merchants do not however appear to be very much perturbed by these factors as they consider that with the growth in the economic prosperity in the country side and industrial centres and with the prospect of better seasonal conditions, the loss of demand from the middle and upper classes could be made good by the increased demand for these utility goods from the agriculturists and industrial workers. Some of the merchants who specialize in the export trade to foreign countries are handicapped by the several restrictions imposed by those countries on the visit of persons to them and export of profits. Moreover they have to depend entirely on their own individual efforts to expand the export market. State assistance in this regard would be welcomed by them.

As already pointed out, there are possibilities of introducing improved tools and machinery but as the merchants who are the captains of the industry do not own tools and the family and employer units are too poor to equip themselves with new tools, the prospect of introducing new tools is not bright. The question of the effect of introducing new tools on the employment position will also have to be considered. Experiments will first have to be conducted with the help of the improved tools now available with the co-operative metal works as to the relative efficiency, reduction in cost of the brass wares and displacement of labour before any scheme for introducing new machinery can be thought of.

There is growing discontent among the labourers who are at present unorganized. The organization of the industry is defective in as much as there are a few merchants at the top, large number of small entrepreneurs acting as middlemen and buffers between the merchants and labourers and a large class of skilled labourers who have neither tools nor any other capital except their hands and skill to sell. This situation has at present created a ferment among the third group. The discontent is directed against the first two. They resent that they are the first to be victimised. Whenever demand slackens either their wages are cut or they have to go without employment. Attempts at creating a union of workers have not succeeded so far but the seeds of discontent are there and unless they are removed, they will sprout and the fortunes of the industry will suffer in the long run.

RECOMMENDATIONS.

1. As marketing is the most important problem facing the industry, Government should assist the manufacturers to develop both internal and external markets. The problem will have to be viewed on a national scale as brass ware industry is found not only in Kumbakonam but in many other centres in the State and in India. As the industry is not sufficiently organized, it is unable to meet the competition from factory goods made of aluminium and stainless steel. There are possibilities of developing an export market particularly in such places as Ceylon, Burma, Malaya and other Far Eastern countries and South and East Africa where Indians have settled in large numbers. The trade Agents of the Government of India in these places should help the merchants establish new contacts. Market information and advice should be provided to those merchants who are interested in the development of a foreign market.

2. The survey has shown that an average merchant-cum-manufacturer requires nearly Rs. 1 lakh of working capital and that he has to depend entirely on his own resources as few banks are prepared to lend for such private industrial undertakings. This has stood in the way of many of the merchant-manufacturers expanding production, introducing improved

tools or exploring new markets. The creation of an industrial credit bank or institution on the lines of the Madras Industrial Investment Corporation, to help cottage industrial units would help the development of the industry.

3. There seems to be some scope for introduction of improved tools and machinery for doing certain processes like pressing of brass sheets but their introduction is handicapped for want of funds. The tools and machinery owned by the Co-operative Metal Works and lying idle for the most part may be handed over to an organization of the merchants for their common use or may be lent to them on payment of rent.

4. There is little chance of improving the prospects of the co-operative metal works as the workers are less skilled than the local workers and its goods do not come up to the standard of other local producers. The system of payment of wages on daily rate is not also conducive to efficiency. Since it has not been able to expand its market, it is doubtful whether it can be run successfully. As few ex-servicemen are now being given training, it would be better if it is wound up and the improved tools owned by it are lent to the merchants or transferred to an organization of the merchants for their common use.

5. In the interest of the industry as a whole discontent among the labourers should not be allowed to grow and the workers must be given more regular employment and their wage rates should not be reduced as and when merchants consider it necessary. There should be an organization either voluntary or Governmental to regulate the conditions of work for such cottage industrial workers.

6. To look after the development of the export trade, there should be an Export Promotion Council for this industry consisting of representatives of the manufacturers and merchants engaged in the industry in the important centres in the State. This Council should act as the liaison between the Government and the trade and it should be entrusted with the function of prescribing standards of quality for the wares, maintenance of the standard and collection and dissemination of market intelligence.

BRASS SPOONS INDUSTRY.

1. The manufacture of brass spoons is now carried on by 22 Muslim families at Kornattu Karuppur, a village 3 miles north-east of Kumbakonam. The industry is not found in any of the other villages in the firka. It is confined to the Muslim community while the brassware industry in the other villages is the monopoly of the Hindus. These workers cannot take up the manufacture of brass vessels during slack season as they have no experience of the process. The causes for the localisation of the industry in this village are not known but it had been in existence there for generations. Proximity of the village to Kumbakonam had perhaps aided the growth of the industry but it could not spread to other villages in view of the limited demand for the product. The industry has also suffered much in recent years due to the competition from spoons made of other metals like aluminium, stainless steel, etc.

At the time of the preliminary count in September 1952, there were 13 employer units engaged in the industry but, at the time of detailed survey in February 1953, there were only eight units. The rest had closed down. The families employed in the establishments which had closed down had taken to other occupations like sale of vegetables, dry fish, casual labour, etc. Out of the 8 surviving units, four were selected for detailed survey.

2. *Organization of the industry.*—The organization of the industry is not as complex as that of brasswares. In view of the comparatively small amount of capital required per unit, the merchant's role is limited. There were on the whole 16 families engaged in the industry at the time of the detailed survey. Of these only eight were in a position to carry on the business on their own account. The other eight families had to work for wage under these eight units. All the eight industrial units employed outsiders, the extent of outside labour depending on the number of workers in the family and varying with the amount of orders received and the pressure of work.

3. *Composition of the families.*—The average size of a family was 6 consisting of 2.75 men, 1.25 women, 1.25 boys and 0.75 girl. The average number of workers per family was 2 and the rest were dependents.

Three of the four units were inherited and one was newly established in 1938.

4. *Housing.*—All the families lived in thatched huts with the workshops set up in the backyards. The average cost of a workshop was Rs. 52. The average area of a shed was 169 square feet which provided an average space of 42.25 sq.ft. per worker. The annual estimated rent was Rs. 27 and the annual maintenance charges Rs. 18-12-0.

5. *Articles manufactured.*—The main types of articles manufactured were ordinary spoons, milk-spoons (palkarandi), ghee-spoons, sieve-spoons (jarani), thosai thiruppi, annavetti, appakarandi, etc. All these varieties of spoons are commonly used by most households.

operations. Raw materials were purchased only in small quantities (one to two maunds) at a time and new production taken up only after disposing of the stock in hand. As provision has already been made for rent, maintenance and depreciation, interest has to be calculated only on the working capital. At 6 per cent per annum, this would amount to Rs. 3-12-6. The net profit from the industry would then be Rs. 680-3-6.

17. *Income from the industry.*—The average income from the industry which includes such imputed items entering into the cost of production as rent payable, depreciation, wages payable, and interest payable would be Rs. 1,360 per family or Rs. 680 per family worker as against Rs. 233 earned by an outside male labourer.

18. *Marketing and export.*—The small producers with their limited capital and small scale of operations were unable to manufacture in anticipation of demand or stock the goods. They disposed of them usually to the merchants of Kumbakonam. Occasionally sales were made to vendors who visited the place. When there were no sales, they themselves carried them on their heads and hawked them in the neighbouring villages. The sales to Kumbakonam merchants amounted to 60 per cent of the total, those to vendors 30 per cent and those direct to consumers 10 per cent.

19. *Role of co-operation.*—No attempt has so far been made to organize the industry on a co-operative basis. In view of the fact that this industry appears to be slowly dying out, and in view of the poverty of the members, it would be rather difficult to bring the units into the co-operative fold.

20. *Income and expenditure.*—The annual income of an average unit amounted to Rs. 1,473 or Rs. 246 per capita. Of the total, income from industry formed 92 per cent. The other sources such as estimated rent from house and interest on loans given were insignificant.

The annual expenditure of an average unit amounted to Rs. 1,439-4-0 resulting in a small surplus of Rs. 34. Of the total expenditure, that on food formed 70.9 per cent, house rent and repairs 8.8 per cent, clothing 8.1 per cent, miscellaneous item 7.1 per cent and fuel and lighting 4.5 per cent.

21. *Assets.*—The average asset of a family was Rs. 1,034 of which house and workshop formed 47.1 per cent, industrial equipment 13.4 per cent and working capital 6.4 per cent. The assets equalled 70 per cent of the average income.

22. *Liabilities.*—The average liability of a unit was Rs. 106-4-0. As much as 82.4 per cent was incurred for domestic purposes and only 17.6 per cent for business purposes. The loans were secured at 9 per cent per annum on the mortgage of house.

SUMMARY.

The manufacture of brass spoons, confined to a single village and to a particular community is not a prosperous industry. Nor are its prospects bright in view of the limited and now diminishing demand for its products. The industry is estimated to provide employment for 40 workers and the total annual production is estimated at 3,076 maunds valued at Rs. 98,452. The average number of working days per unit was 257.5 and the average income from the industry per unit was Rs. 1,360 and per capita Rs. 226-11-3. The manufacturers suffer from paucity of funds and inadequate marketing facilities. In the brassware industry which is organized on a larger scale, the two functions of production and marketing have come to be separated, production being carried on mainly by small units and financing and marketing by the big merchants. But in this industry, the manufacturer himself has to attend to the marketing. Much time is lost in hawking the goods. The industry has also to face much more severe competition than the brassware industry from articles made of such materials as aluminium, iron and stainless steel. There is little prospect for the development of this industry.

IDOL MANUFACTURING INDUSTRY.

Introduction.—The idol manufacturing industry in Kumbakonam tirka is located in Kumbakonam town and Swamimalai and Tiruvalanjuli villages. Of these, Swamimalai is the most important centre where the families are concentrated. The causes for the localization of the industry in these three centres can be explained. According to local tradition, one of the Chola Kings had brought a number of families belonging to the Viswakarma community known as “Stapathis” from Ginjee in connexion with the construction of the famous Subramaniya temple at Swamimalai and they had settled down at the place. The development of Kumbakonam and Swamimalai as important pilgrim centres have helped the growth of the industry in these centres. The idols manufactured in these places are famous throughout India and are exported to all the important centres in South India, to a number of places in North India, like Delhi, Ajmer, Agra, Bombay, etc., and even to foreign countries.

2. *Organization of the industry.*—At the time of the preliminary count in September 1952 there were 14 families engaged in the industry of whom ten were at Swamimalai, three at Kumbakonam and one at Thiruvalanjuli. But at the time of the detailed survey in January 1953, there were only ten families, four families belonging to Swamimalai having left for Ajmer at the instance of a merchant from that place. The ten units were distributed as follows :—

2.1. *Distribution of the industrial units.*

Name of the centre.				Family units.	Employer units.	Total units.
				NO.	NO.	NO.
1	Swamimalai	..	..	3	3	6
2	Kumbakonam	..	..	1	2	3
3	Tiruvalanjuli	..	..	..	1	1
Total				4	6	10

This industry calls for artistic ability of a high order. The idols should conform in their features and proportions to the principles laid down in the ‘Sastras’. A long period of apprenticeship of five to six years is necessary before a man can become a full-fledged ‘Stapathi’. Only members belonging to these families are taken as apprentices. The secrets of the craft are closely guarded and handed down among the family members from generation to generation. All the ten families were hereditary workers. They get orders direct from private persons in the various parts of the country and also from the merchants at Kumbakonam, the extent of the orders depending on the name and reputation of each ‘Stapathi.’ Before a work is undertaken, an advance towards the cost of the raw materials and part of the wages is usually paid. The raw materials are purchased by the ‘Stapathis’ themselves who execute the work either with the labour of the members of the family or by employing outsiders. The outside labour is generally confined to the members of the ten families who are unemployed at the time and one or two workers from neighbouring villages like Innambur and Nachiarkoil. The distinction between an employer unit and a family unit is therefore a thin one as members from one unit will go and work in another unit if they have no orders of their own or if their neighbours have more pressing orders to complete. Among the ten families, only five have well established reputation for prompt execution of work. Of these, three belong to Kumbakonam, one to Swamimalai and one to Tiruvalanjuli. In the case of the other five families, they do not get sufficient orders and even when they get any, they are not able to execute them in time. This is partly due to their poverty which makes them divert the advance received for making idols to meeting their domestic expenses. The result is that they wait for the advance of another order to complete the previous one. This naturally adds to their unpopularity in spite of the fact that they are expert craftsmen. When there are not sufficient orders from outside, all units have to

fall back upon the Kumbakonam merchants for giving them some orders to eke out their livelihood. In all such cases the rate quoted is less than the usual rate and the merchants are not above exploiting their weakness.

3. *Selection of sample.*—All the ten families were selected for detailed investigation.

4. *Composition of the families.*—The ten families consisted of 64 persons of whom 21 were men, 18 women, 15 boys and 10 girls. The average size of a family was 6.4. All the men were workers and the rest dependents. The average number of workers per family was 2.1 and that of dependents 4.3.

5. *Housing of the workshop.*—Except in the case of two families, all the others carried on their work in their own houses. Due to want of space in their houses, two units had separate work places. One of them was located at Kumbakonam and the other at Swamimalai. Of the ten work places, six were thatched and four tiled. The average area of a workshop was 338.9 square feet valued at Rs. 172. Three families lived in rented houses and the others in their own houses. The three families paid a sum of Rs. 192 per annum. Thus the average rent paid amounted to Rs. 19.3. Assuming 25 per cent to be the rent for industrial portion, the average rent paid by all units was Rs. 48 and per unit Rs. 4.8. The estimated rent of the other seven sheds amounted to Rs. 534 or Rs. 53-6-5 per family on the average. The cost of repairs to the sheds amounted to Rs. 285 or Rs. 28-8-0 per family per annum.

6. *Types of idols manufactured.*—The ‘Stapathis’ are capable of manufacturing idols of all the deities in the Hindu Pantheon but usually orders are received for the manufacture of idols of the more popular Gods such as Vinayagar, Nataraja, Sri Ramar, Ayyanar, Valli, Deivayanai, Sivakamiamman, Dandayuthapani, Mariamman, Raja Rajeswari, Lakshmi, Saraswathi, etc. In addition, they manufacture occasionally ‘Thiruvatohi’ or ‘Prabhai’. Most of the idols are made in copper but a few also in silver. Some ‘Stapathis’ know how to manufacture stone idols as well.

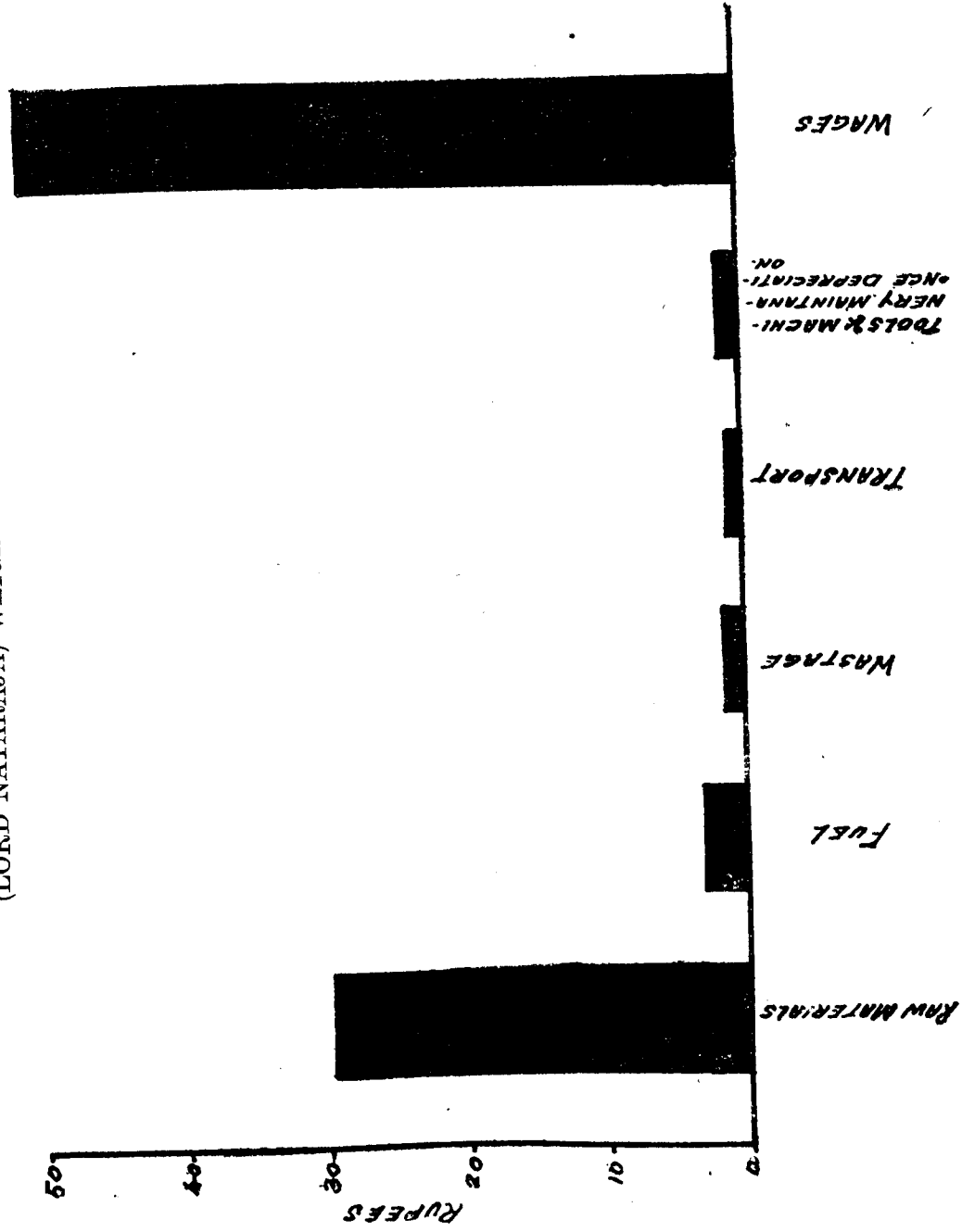
7. *Raw materials.*—The main raw materials consist of (1) metals like copper, bell metal, brass scraps, black lead, white lead, silver and (2) other ingredients like lac, wax, ‘Kungilium’ and emery sheet. The following statement shows the quantity and value of raw materials used by the ten units :—

7.1. *Quantity and value of raw materials.*

Description.	Unit.	Quantity for all units.	Quantity per unit.	Value for all units.	Value per unit.	Percentage.
				RS. A. P.	RS. A. P.	
1 Copper	Seers	11,633	1,163.3	8,454 8 0	845 7 3	63.2
2 Bell metal	..	35	3.5	39 6 0	3 15 0	0.9
3 Brass scraps	..	1,541	154.1	849 12 0	84 15 3	6.4
4 Black lead	..	530	53	333 8 0	33 5 9	2.5
5 White lead	..	319	31.9	1,276 0 0	127 9 8	9.5
6 Lac	..	44	4.4	33 0 0	3 4 10	0.2
7 Kungilium, wax and oil	Nos.	920	92.0	1,880 0 0	188 0 0	13.0
8 Emery sheet	..	12	1	3 12 0	0 6 0	0.2
9 Silver	Seers	13	1.3	507 0 0	50 11 3	4.1
Total		..	..	13,376 14 0	1,337 11 0	100.0

The total value of the raw materials consumed by the ten units amounted to Rupees 13,376-14-0 or Rs. 1,337-11-0 per unit per annum. Of the total cost, copper accounted for 63.2 per cent, “Kungilium”, wax and oil 13.0 per cent, white lead 9.5 per cent and others 14.2 per cent. Only one of the units utilized 13 seers of silver for making four idols.

KUMBAKONAM FIRKA
COPPER IDOL INDUSTRY
COMPONENTS OF COST OF MANUFACTURING A SINGLE COPPER IDOL
(LORD NATARAJA) WEIGHING 25 SEERS



COPPER IDOL INDUSTRY.

DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
IDOL OF LORD NATARAJA.



COPPER IDOL INDUSTRY—*cont.*
DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
IDOL OF LORD NATARAJA—*cont.*



TOOLS EQUIPMENT.



IDOL OF LORD NATARAJA IN FINISHING STAGE.

COPPER IDOL INDUSTRY—*cont.*
DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
IDOL OF LORD NATARAJA—*cont.*



FINISHED IDOL OF LORD NATARAJA AND BRASS VESSELS.

Of the ten units, three consumed less than Rs. 1,000 worth of raw materials, four between Rs. 1,001 and Rs. 1,500 and three between Rs. 2,001 and Rs. 2,500. There was no difficulty in getting the raw materials. They were purchased for cash at Kumbakonam.

8. *Fuel*.—Fuel is required for melting the metals. The ten families consumed 778 maunds of charcoal costing Rs. 1,167, the average consumption per unit being 77·8 maunds costing Rs. 116-11-3 per annum.

9. *Tools, machinery and equipment*.—The main tools are 'karavai', 'panaiyal' plier, hammer, cutter, crucible, file, bellows and miscellaneous tools like chisels, scissors, balance, etc. Appendix 17 gives the number and value of tools and implements owned by the ten units. The total number of tools was 1,030, their initial cost Rs. 1,851, replacement cost Rs. 2,202 and present market value Rs. 919. The average initial cost, replacement cost and market value per unit were Rs. 185, Rs. 220 and Rs. 92, respectively. Out of the total initial cost, crucibles accounted for 29·4 per cent, bellows 13·3 per cent, pliers 12·7 per cent and cutters 12·4 per cent. The cost of crucibles and bellows formed 42·7 per cent of the total initial investment. They have to be replaced more often than any of the others and hence their maintenance charges are also heavy. The total cost of maintenance amounted to Rs. 432 or Rs. 43-3-3 per unit. The total annual depreciation charges were Rs. 27 or Rs. 2-11-3 per unit.

10. *Manufacturing processes*.—There are six main processes connected with the manufacture of idols. They are (1) preparing a wax model, (2) preparing the mould, (3) melting and casting, (4) chiselling, (5) carving and (6) polishing.

First, wax is mixed with 'Kungilium' and groundnut oil or castor oil in certain proportions and a model of the idol is prepared to the size required. A fine wet mud coating, one inch thick is given to the wax idol and over this, a second rough mud coating is given to a thickness of $1\frac{1}{2}$ inches. A hole at the top for pouring the molten metal and another at the bottom for the melted wax to come out are provided in the mud coating. The model is next dried in the sun and it is then tied round and round with a thin iron wire so that it may not break away when the molten fluid is poured, into it. It is then heated and the wax inside melts out. Though a part of the wax is spoilt, the rest can be utilized again and it is carefully collected and stored. The hole at the bottom is closed with mud. Copper, brass scraps, white lead and black lead are mixed in the ratio of 20 : 2 : 1 : 1. They are melted in a crucible and poured into the mould through the hole at the top. After the metal is cooled, the earthen mould is broken and the idol removed. It is then of very rough shape and has to be cleaned and chiselled.

Now begins the most important part of the artist's work, namely, carving. Several minute and important features of the idol such as eyes, nose, eyebrows, cheeks, chin, fingers, finger nails, legs and feet have to be carved. Ornamentation of the idol is also carved. This work requires skill of a high order and on its proper execution rests the reputation of the artist. Finishing touch is given by filing with a small file. Further smoothening, if required, is given by rubbing it with emery sheet.

Appendix 18 gives the cost of manufacture of a single copper idol, viz., Nataraja weighing 25 seers. The profit works out to Rs. 12-10-0 for a single copper idol costing Rs. 100.

11. *Production*.—The total output of the 10 units amounted to idols weighing 13,334 seers valued at Rs. 35,713-4-0. The average output per unit was 1,334·4 seers valued at Rs. 3,571-5-2 and per worker 579·7 seers valued at Rs. 1,552-12-0. On the basis of 252 days actually worked, the average output per working day per worker was 2·3 seers valued at Rs. 6-2-6.

The maximum output under full employment condition (i.e., for 295 working days), would be 15,609 seers valued at Rs. 42,144.3. Appendix 19 gives the types of idols manufactured during the course of the year under survey (November 1951 to October 1952). Idols of Nataraja, Mariamman and Vinayagar are the more favourite ones followed by Valli and Deivayanai, Sri Ramar, Kalamman, Ayyanar and Dandayuthapani.

12. *Fluctuations in output.*—Appendix 20 gives the monthwar fluctuation in output of idols. Production shows an upward trend from October onwards and attain a peak level during the period January to March which is the festival season. Production during this period was 65.6 per cent as against 34.4 per cent during the rest of the year.

13. *Labour force and employment potential.*—The total labour force of the 10 units was 23 men of whom 21 belonged to the families and two were outsiders. The average number per family in the two categories was 2.1 and 0.2 respectively. The average number of days worked per annum was 252. On the basis of a maximum of 295 working days in a year, there was employment for 85.4 per cent of the total working days.

14. *Wages.*—In view of the artistic nature of the work and the religious sentiment associated with the making of idols, the trade practice is to pay the artists according to the weight of the idol and the intricacy of designs in carving without much bargaining on the rates.

Rates differ for different weights inversely, the smaller the weight the greater the rate. Rates also differ according to the reputation of the artist. The rate for idols weighing 50 seers and less is Rs. 4 to Rs. 4-8-0 per seer which includes cost of raw materials also. Out of Rs. 200 or Rs. 225 payable for an idol of 50 seers, the cost of raw materials would amount to about Rs. 50 or Re. 1 per seer leaving a balance of Rs. 150 to Rs. 175 as remuneration for labour. It may take an expert artist some 30 days to complete the work so that he will get an income of Rs. 5 to Rs. 5-13-0 per day. People of lesser skill will take more time and the daily remuneration will accordingly be less. In the case of idols weighing 51 to 100 seers, the usual practice is to pay the cost of raw materials separately and pay wage at Rs. 2-8-0 per seer. For idols weighing 101 to 200 seers the wage rate is Rs. 1-8-0 per seer exclusive of the cost of raw materials. Only very rarely idols weighing more than 200 seers are made. The lesser rate of wage for idols weighing more does not however affect the daily rate of remuneration as the quantity of work per day in terms of weight of metals worked will be more.

Although payment for manufacture of idols is on a piece rate basis, if any artist is employed by another, he is paid only daily wage which ranges from Rs. 2 to Rs. 3 per day depending on the skill in carving. The two outsiders who were employed by these families for 252 days were paid only at the rate of Rs. 1-8-0 per day. Their total wage amounted to Rs. 766. The wage payable for the family members may be computed at Re. 1 per seer of metals worked by them. Deducting the quantity worked by outside labour (756 seers) the total wage payable to the family members for 12,578 seers of metal may be estimated at Rs. 12,578.

The average wage paid to an outside worker per unit was Rs. 75-9-8 and the wage payable to the family members per unit Rs. 1,257-12-9.

15. *Transport.*—Transport charges are incurred for the conveyance of raw materials from Kumbakonam to places of work and finished goods from the work places to the shops of the merchants. In the case of orders received from far-off places, they are either sent by train or taken direct by those who have placed orders. In either case, the cost of transport is not met by the units. The ten units incurred a sum of Rs. 338 towards transport charges which worked out to Rs. 33-12-9 per unit.

the employer units. The average area of a work shed was 185.25 square feet. The statement below shows the average rent and repair charges incurred by each type of unit per annum :—

5.1. Rent and repair charges.

Description.	Rent paid.	Estimated rent.	Maintenance charges.
	RS.	RS. A. P.	RS. A. P.
1 Family unit	6		
2 Employer unit	15	21 0 0	8 4 0
3 Merchant-cum-manufacturer unit *	100		
Average for all units ..	34	10 8 0	4 2 0

* Estimated rent for the industrial portion.

There is significant variation in the amount of rent paid by each type of unit varying from Rs. 6 in the case of a family unit to Rs. 100 in the case of a merchant-cum-manufacturer unit. The high rent in the latter case was due to the fact that the workshops were situated in the centre of the town.

6. *Nature of the industrial units.*—Out of the eight units, two were inherited and six were self established. The first two belonged to the merchant-cum-manufacturer units. The earliest of the self established units was started in 1915 while the others were started after 1943, the latest being in 1949.

7. *Types of articles manufactured.*—Nearly 11 varieties of vessels are made at the centre and they are called by the following local names :—(1) *Kuvalai*, (2) *Chombu*, (3) *Godavari Chombu*, (4) *Jadi*, (5) *Iddilippanai*, (6) *Tiruppur chatti*, (7) *Karaiyadi Adduku*, (8) *Arai Adukku*, (9) *Rajahmundry chatti*, (10) *Vennai thali* and (11) *Kathuvai chatti*. All these are household utensils differing only in their sizes and shapes.

8. *Raw materials.*—The main raw material is white lead which is obtained from wholesale dealers at Madras and also from old lead vessels. Both are used without any distinction as there is no difference in quality between them. There will be more wastage in the case of old scraps than in the case of new lead. Usually, a month's requirements of lead is stocked by the merchants. The statement below shows the quantity and value of raw materials consumed by each type of units :—

8.1. Quantity and value of lead used per unit.

Description.	Quantity consumed.	Value.	Quantity per worker.
	SEERS.	RS.	SEERS.
1 Family unit	2,125 (a)	6,907	1,416.7
2 Employer unit	9,395 (b)	30,542.0	1,977.9
3 Merchant-cum-manufacturer unit ..	13,612 (c)	46,675	2,474.9
Average for all units ..	8,631.7	28,666	2,092.6

(a) Supplied by the merchant. (b) Of the total, 1,025 seers valued at Rs. 3,331.25 belonged to the unit. (c) In addition 8,900 seers valued at Rs. 29,362.5 were given to outside units on piece rate basis.

There was appreciable variation in the quantity of lead consumed by each type of unit, the proportion being 1 : 4.4 : 6.4. The difference between the units is not however so significant if the quantity used by each worker is compared. The variation should partly be attributed to the number of days actually worked by each type of unit. As the family units had secured employment for 210 days, the employer units for 240 days and the merchant-cum-manufacturer units for 295 days, the actual consumption per working day per worker in the case of the three types would be a better indicator of the efficiency of the

LEAD WARE INDUSTRY.

Introductory.—Kumbakonam town is specially noted for its lead wares. They are used mainly for preparing pepper water and also for keeping milk, butter milk and pulped rice flour. They are preferred to brass vessels as they are free from corrosive action of acids like tamarind. Another advantage of lead vessels is that when they are broken or spoilt, they will fetch the price of the lead content whereas old brass vessels can be sold only for scrap value of the metal, i.e., one-third of the price of the new metal. In this respect, lead wares are like silver vessels. Instead of purchasing pure lead vessels, people are usually satisfied with giving their brass vessels a coating of lead which serves the same purpose.

2. *Organization of the industry.*—The organization of the industry is similar to that of the brass ware industry. There are family units, employer units and merchant-cum-manufacturer units in addition to those who are purely wage earners. The merchants form the pivot of the organization. Generally they supply raw materials to the family and employer units and also pay them part of the wages in advance. The employer units engage outsiders on piece rate basis while the family units carry on with the help of the family members. A few employer units work partly for merchants and partly on their own account. Besides executing their work through the agency of family and employer units, the merchants have their own workshops.

3. *Selection of sample.*—The preliminary survey of the firka revealed that the industry was concentrated in Kumbakonam town where there were 12 lead ware industrial units and 27 wage earning families. There was one unit at Mathi, a village one mile from Kumbakonam, but the unit was not working at the time of the survey. The 12 units consisted of three family units, five employer units and four merchant-cum-manufacturer units. Of these, eight units, viz., two family units, four employer units and two merchant-cum-manufacturer units were selected for detailed survey.

4. *Composition of the families.*—The statement below shows the composition of the families according to the three types :—

4.1. *Composition of the families.*

Type of units.	Workers in lead wares.	Workers in other occupations.	Dependents.	Total.
1 Family unit	1.5	..	4.0	5.5
2 Employer unit	1.25	0.5	4.75	6.5
3 Merchant-cum-manufacturer unit	1.5	..	4.0	5.5
Average for all units	1.37	0.25	4.38	6.0

The average size of a family was 6 of whom 1.6 were workers and 4.4 dependents. There was not much difference in the size of families among the three types of units.

5. *Housing.*—Out of the eight units, five were located in thatched sheds and three in tiled houses. The latter belonged to the two merchant-cum-manufacturer units and one of

workers. The consumption per worker per working day in each of the above cases was 6.7 seers, 8.2 seers and 8.4 seers respectively. The family unit seems to be the least efficient of the three and the merchant-cum-manufacturer the most efficient.

9. *Fuel.*—The average expenditure on charcoal, by a family unit was Rs. 19-1-6 as against Rs. 88-2-0 by an employer unit, Rs. 126 by a merchant-cum-manufacturer unit and Rs. 80-9-4 by all units. The average price of charcoal was Rs. 1-8-0 per maund. Expenditure on fuel per seer of output was 1.8 pies.

10. *Wastage.*—The statement below shows the quantity and value of white lead lost in melting :—

10.1. *Wastage of raw materials per unit.*

Description.	Quantity.	Value.		
	SEERS.	RS.	A.	P.
1 Family unit	50	163	12	0
2 Employer unit	230	690	10	0
3 Merchant-cum-manufacturer unit	389	1,101	12	0
Average for all units	224.75	661	11	0

The wastage worked out to 2.6 per cent of the total raw material on the average.

11. *Tools, machinery and equipment.*—The main tools and equipment are 'karavai', 'panayals', granite stones or wooden logs and iron vases. The statement below shows the average number of tools owned by a unit :—

11.1. *Average number and value of tools and equipment per unit.*

Types of units.	Number of tools.	Initial cost.			Replace-ment cost.			Present market value.			Maintenance charges.			Depreciation.		
		RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
1 Family unit	54	189	12	0	231	12	0	201	8	0	*15	0	0	14	15	11
2 Employer unit	124	600	8	0	768	0	0	528	0	0	105	0	0	39	2	2
3 Merchant-cum-manufacturer unit.																
Average for all units	58	245	0	0	308	0	0	233	0	0	41	12	0	17	4	6

* For repair of hired tools.

The family units did not own any tools of their own but used those in the workshops of their friends. No rent was charged for the use of the tools but they had to repair and maintain the tools used by them for which they incurred an average expenditure of Rs. 15 per annum. The average initial cost of the tools owned by an employer unit was Rs. 189-12-0 as against Rs. 600-8-0 by a merchant-cum-manufacturer unit. The investment on tools per worker in the case of these two types of units was Rs. 9-15-9 and Rs. 54-9-5 respectively. The merchant-cum-manufacturer units were better equipped than the employer units in regard to tools and equipment. The average cost of maintenance of tools by an employer unit was less than one-fourth that of a merchant-cum-manufacturer unit. Expenditure on maintenance per seer of output in the case of the three types of units was 1.4 pies, 0.5 pie and 1.5 pies respectively.

12. *Manufacturing processes.*—Manufacture of lead wares does not involve any elaborate process. There are only two main processes, viz., melting and hammering the lead sheets into different shapes. Solid lead is obtained in the form of square pieces. Old worn out

or broken lead vessels are also cut into small pieces, put in an iron vase and melted in the furnace. As the boiling point of lead is low, no crucible is required. The liquid lead is poured on the ground already prepared for the purpose. As soon as it gets cooled, the lead sheets are placed on a stone or wooden log with a depression in the middle and beaten with an iron hammer. Then they are placed over the 'karavai' and beaten into shape. Polishing is given by beating it again with a different hammer known as 'polishing hammer'. The same worker carries on all the operations involved and there is no specialization of labour. The general practice is for the merchant to supply the lead and pay the worker at 4 annas per seer from which the latter should meet the cost of fuel, wastage and transport, the residuary income forming his wage. Details of the cost of manufacturing a lead vessel weighing 10 seers and the time taken for its completion are given in Appendix 23. Out of Rs. 2-8-0 paid as wages, the labourer incurs an expenditure of Re. 1-2-0 on fuel and wastage and gets a net sum of Re. 1-6-0 per day while the merchant makes a gross profit of Re. 0-8-0 per seer out of which he has to meet rent and repairs, depreciation of tools, tax, marketing charges, etc.

13. The statement below shows the average production per unit t—

13.1. *Average annual production.*

Description.	Per unit.		Per worker.		Per worker per working day.
	Quantity.	Value.	Quantity.	Value.	
	SEERS.	RS.	SEERS.	RS.	
1 Family unit	2,075	8,563	1,383	5,708	6.59
2 Employer unit	9,165	38,529	1,930	8,111	8.04
3 Merchant-cum-manufacturer unit ..	13,223	53,507	2,404	9,728	8.15
Average for all units ..	8,407	34,782	2,038	8,432	7.97

A worker in a merchant-cum-manufacturer unit produces in a year more than one in the other two types of units. This is partly to be explained by the different levels of employment in each unit. Calculated per working day, a worker in a family unit seems to be the least efficient.

14. *Estimated production for the firka.*—On the basis of average production per unit, the total production of lead wares in the entire firka may be estimated at 105,000 seers, valued at Rs. 4,32,000 as shown below :—

14.1. *Estimated production for the firka for the year ending October 1952.*

Description.	Quantity.	Value.	Number of days worked.
	SEERS.	RS.	
1 Family unit	6,225	25,680	210
2 Employer unit	45,825	1,92,645	240
3 Merchant-cum-manufacturer unit ..	52,892	2,14,028	295
Total ..	104,942	4,32,362	—

LEAD WARE INDUSTRY.

DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
LEAD WARES.



MELTING OF LEAD.



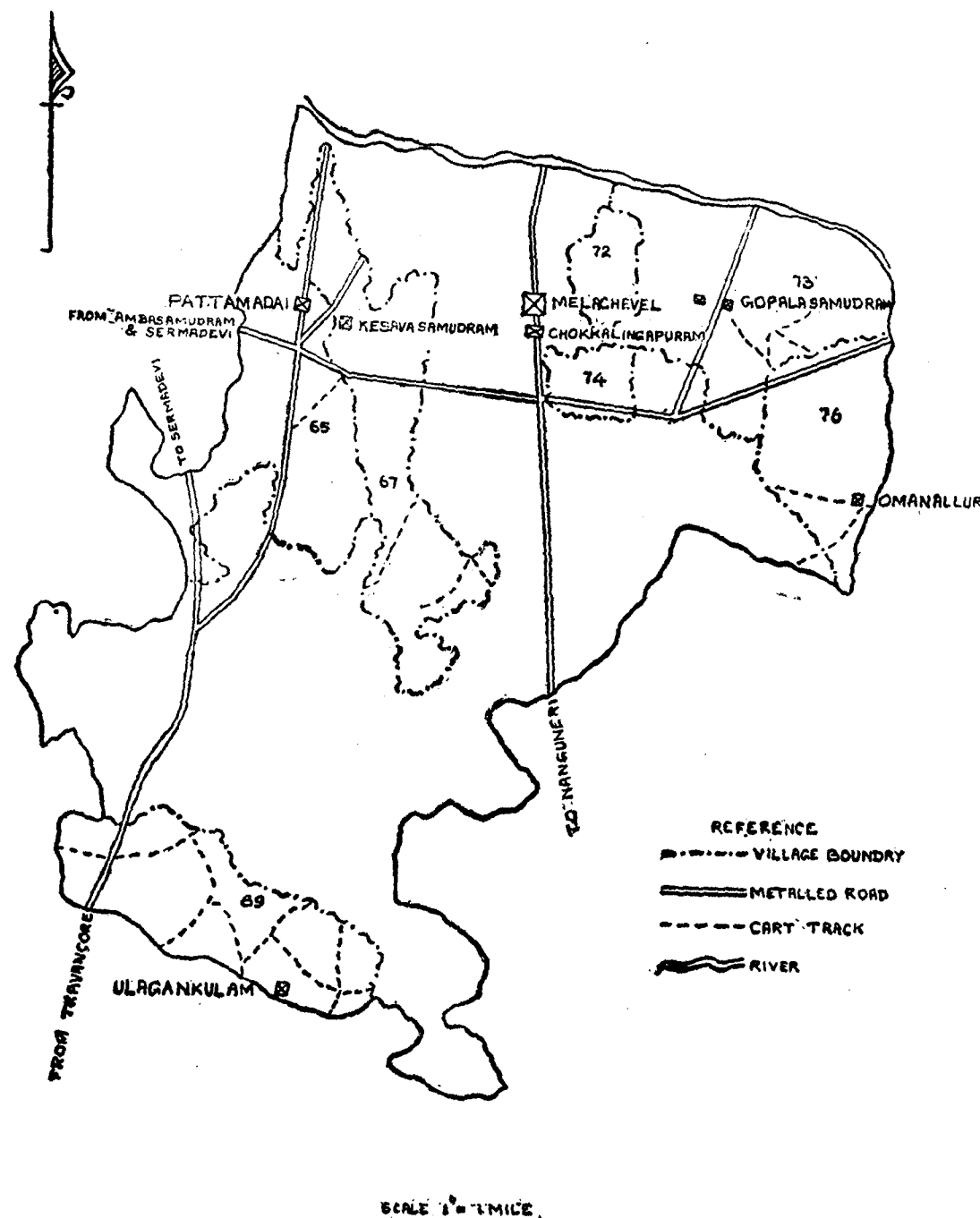
PREPARATION OF MOULDS.

RECOMMENDATIONS.

Assistance can be given to the industry by organization of a central agency for purchase of raw materials at wholesale rates instead of through the merchants. The industry should also be equipped with better tools and the units encouraged to manufacture better types of products.

There should be an organization to market the finished goods so that the worker can concentrate on production and improve the quality and quantity of output. The central agency can take up both the supply of raw materials and tools and marketing.

MELACHAVEL FIRKA IN TIRUNELVELI DISTRICT SHOWING THE VILLAGES



CHAPTER II.

KORAI MAT WEAVING INDUSTRY IN PATTAMADAI, MELACHAVEL FIRKA.

Introduction.—Pattamadai in Melachavel firka of Tirunelveli district was selected for a survey of the Korai Mat Weaving and Reed Products industries. The centre was chosen because of the long standing and world-wide reputation of Pattamadai mats. Korai mats of ordinary varieties are no doubt woven not only in Pattamadai and other centres in Tirunelveli district but also in many other districts such as Ramanathapuram, Tanjavur, Tiruchirappalli, Chingleput, North Arcot, Salem, Malabar, Nellore, Guntur and Cuddapah. But the famous superfine mats are a speciality of Pattamadai. They are unique in many respects. In no other centre in the State and perhaps nowhere else in the world are such fine mats made. Each is a masterpiece in craftsmanship, so delicate and fine that it can be folded up like a handkerchief.

There are three types of korai mats, coarse, medium and superfine. The quality of a mat is determined by the kind of warp threads used and by the number of warp threads contained in a span measuring 9 inches. The greater the number of strands, the higher the count and the finer the mat. In the coarse variety, the warp is made of aloe yarn and the weft of korai sedge, with the pith. The mats are usually of counts 18 to 24 and are 60 to 72 inches long and 24 to 48 inches wide. The number of picks in an inch is 40 to 44. Coarse mats are made chiefly in the districts of North Arcot, Tanjavur, Tiruchirappalli, Guntur, Nellore, Cuddapah, Salem and Chingleput. In the medium variety, cotton yarns of 20s to 40s are used as warp and finely split korai as weft. They are beautifully designed in red, violet, green and black and are of counts 32 to 52, usually made to a length of 60 to 72 inches and a breadth of 30 to 36 inches. The number of picks in an inch is 64 to 100. They are produced in Malabar, North Arcot and Tirunelveli districts. The superfine variety is manufactured exclusively at Pattamadai. It is made by the interlacement of cotton warp yarn of counts 80 to 100 and korai sedge weft with the pith removed and split into very fine strips after an elaborate process of soaking in running water. These mats are of counts 100 to 140 with 60 to 72 inches length and 24 to 30 inches breadth. The number of picks in an inch is 100 to 164. These mats serve as bed spreads and ornamental wall hangers, though recently attempts are being made to use them for making hand bags, table mats and cushion covers.

2. *Selection of sample.*—The preliminary survey revealed that the mat and reed products industries are carried on in six villages in the firka (vide the firka map). The following statement shows the distribution of the families in these industries in the six villages :—

2.1. Distribution of families engaged in cottage industries.

Name of the village.	Total number of families in the villages.	Families engaged in					Total.	Other cottage indus- tries.	All cottage indus- tries.
		Fine mat weaving.	Prayer and coarse mats.	Sun- hemp.	Date palm baskets.				
1 Pattamadai ..	1,026	41	119	..	8	168	266	434	
2 Chockalingapuram.	196	..	5	..	..	5	23	28	
3 Gopalasamudram ..	791	..	..	47	..	47	40	87	
4 Omanallur ..	75	..	3	..	..	3	41	44	
5 Kesvasamudram ..	516	..	136	..	..	136	48	184	
6 Ulagankulam ..	249	..	15	..	..	15	99	114	
Total ..	2,853	41	278	47	8	374	517	891	

Out of 891 families engaged in cottage industries, 374 families or 41.9 per cent were engaged in mat and reed products. Appendix 30 gives details of distribution of the families engaged in the other cottage industries. The percentage of families engaged in cottage industries to the total families in the villages was 31.2. Out of 374 families engaged in mat and reed products industries, 41 were engaged in the manufacture of superfine mats, 278 in coarse mats, 47 in sunhemp mats and 8 in basket making. Omitting the 8 families employed in basket making, (a) the universe for the sample of the present survey was 366 families. A sample of 90 families was chosen for detailed survey on the principle of random sampling, 20 for the fine mat industry, 58 for coarse mat industry and 12 for sunhemp mat industry. The sample strength for each industry works out to 48.8 per cent, 20.9 per cent, 25.5 per cent respectively and 24.6 per cent for the entire sample.

1. FINE MAT INDUSTRY.

3. *Organization of the industry.*—This industry has remained a close preserve of the Labbai sect among the muslims of Pattamadai. According to the Tirunelveli District Gazetteer (b) of 1917, there were then only four or five such families producing these superior varieties. In 1926 (c) the number had increased to 12 and in 1952 when the present survey was conducted there were 41 families.

The industry is a hereditary occupation. There is an intense sense of unity among the mat weavers as they belong to one sect. There is an association of the mat weavers which looks after some of their interests like the supply of korai grass, etc. Men are generally engaged in the preparatory processes while women attend to weaving. Those families which have an insufficient number of women workers in relation to the number of looms owned by them engage outside labour for weaving the mats on piece rate basis. Such work is done in the homes of the workers themselves, on the looms erected by the employers. Each family markets its own output but there are a few merchant-cum-manufacturers who market the output of other units.

4. *Classification of units surveyed.*—The number of units selected for detailed survey was 20 of whom 4 were family units, 10 family units employing outside labour (employer units) and 6 merchant-cum-manufacturers.

5. *Composition of families.*—The average size of a family was 5 comprising 1.4 men, 1.7 women, 1 boy and 0.9 girl. Of these, 2.7 were earners and the rest dependents.

6. *Housing.*—The twenty families in the sample had 47 looms which were installed in 29 work sheds. Of these, 15 sheds or 51.7 per cent were thatched, 4 sheds or 13.8 per cent were tiled and 10 sheds or 34.5 per cent were terraced. The average space per loom in the thatched sheds was 81 square feet, as against 95 square feet in tiled sheds and 112 square feet in the terraced sheds. Looms were cramped for space in thatched sheds occupied by the poorer families. The average annual-estimated rent was Rs. 6 and the maintenance and repair charges Rs. 4-11-0 per unit.

7. *Raw materials and fuel.*—The cost of raw materials per unit amounted to Rs. 168 and per loom Rs. 71-8-0. Of the total cost, korai grass formed 53.6 per cent, cotton yarn

(a) Basket making industry is the subject of a separate study in Kasargod firka, South Kanara district.
(b) Gazetteer of the Tirunelveli district, Volume I, page 219.
(c) Korai Mat Weaving Industry of the Madras Presidency, Bulletin No. 20 of the Department of Industries and Commerce (1926).

24.8 per cent and dyes 10.9 per cent, the other items being comparatively of little importance. The following statement gives details of cost of raw materials :—

7.1. Raw materials per industrial unit per annum.

Description.	Quantity.	Value.			Percentage to total.
		RS.	A.	P.	
1 Korai	5.9 bundles	90	12	0	53.6
2 Yarn 20's	9.1 skeins	12	10	0	7.6
3 Yarn 80 count	10.7 Do.	28	0	0	16.7
4 Yarn 100's	0.25 skein	0	14	0	0.5
5 Aloe fibre	0.4 thulam	2	3	0	1.3
6 Red thread	14.2 hanks	3	0	0	1.8
7 Silk yarn	0.2 seer	5	7	0	3.2
8 Zari	1.04 tola	3	14	0	2.3
9 Dyes	39.04 „	18	3	0	10.9
10 Turmeric	50.50 palams	3	5	0	1.9
11 Pinna seed oil	0.01 M.M.	0	6	0	0.2
Total		168	0	0	100.0

Bundle : 68 to 100 lb. 20 skeins : 1 bundle. 1 thulam : 14 lb.
M.M. = Madras Measure.

AVAILABILITY OF RAW MATERIALS.

8. *Korai grass.*—Government have assigned for the use of the Mat Weavers' Association, Pattamadai. Korai grass, grown in a stretch of 5 miles in the river bed and banks of the Tambraparani which flows 1½ miles from the village. But actually korai grass is available only in about one mile stretch. Korai grows wild and no attempt has so far been made to plant it in other stretches of the river or to cultivate it as a regular crop. The association arranges for the protection of the grass from stray cattle, for harvesting, grading and transporting the bundles from the river bed to Pattamadai. Reapers engaged for harvesting are paid in kind, amounting to a half share of the dried grass. During a good year, the yield will be about 400 bundles of which 200 will be the share of the association. Due to abnormal seasonal factors this share dwindled to 80.7 bundles in 1951-52. The share of the 20 units selected for survey was 30.8 bundles valued at Rs. 168 which works out to 1.5 bundles per unit costing Rs. 8-6-0. The deficiency in supply amounting to 4.4 bundles was met, wherever necessary, by purchasing from the reapers or from the merchants at as met, wherever necessary, by purchasing from the reapers or from the merchants at Veeravanallur who import grass from Karur. Karur grass however can be used only for weaving medium and coarse mats and is too brittle for fine mats. An average unit purchased 4.4 bundles costing Rs. 81-12-0.

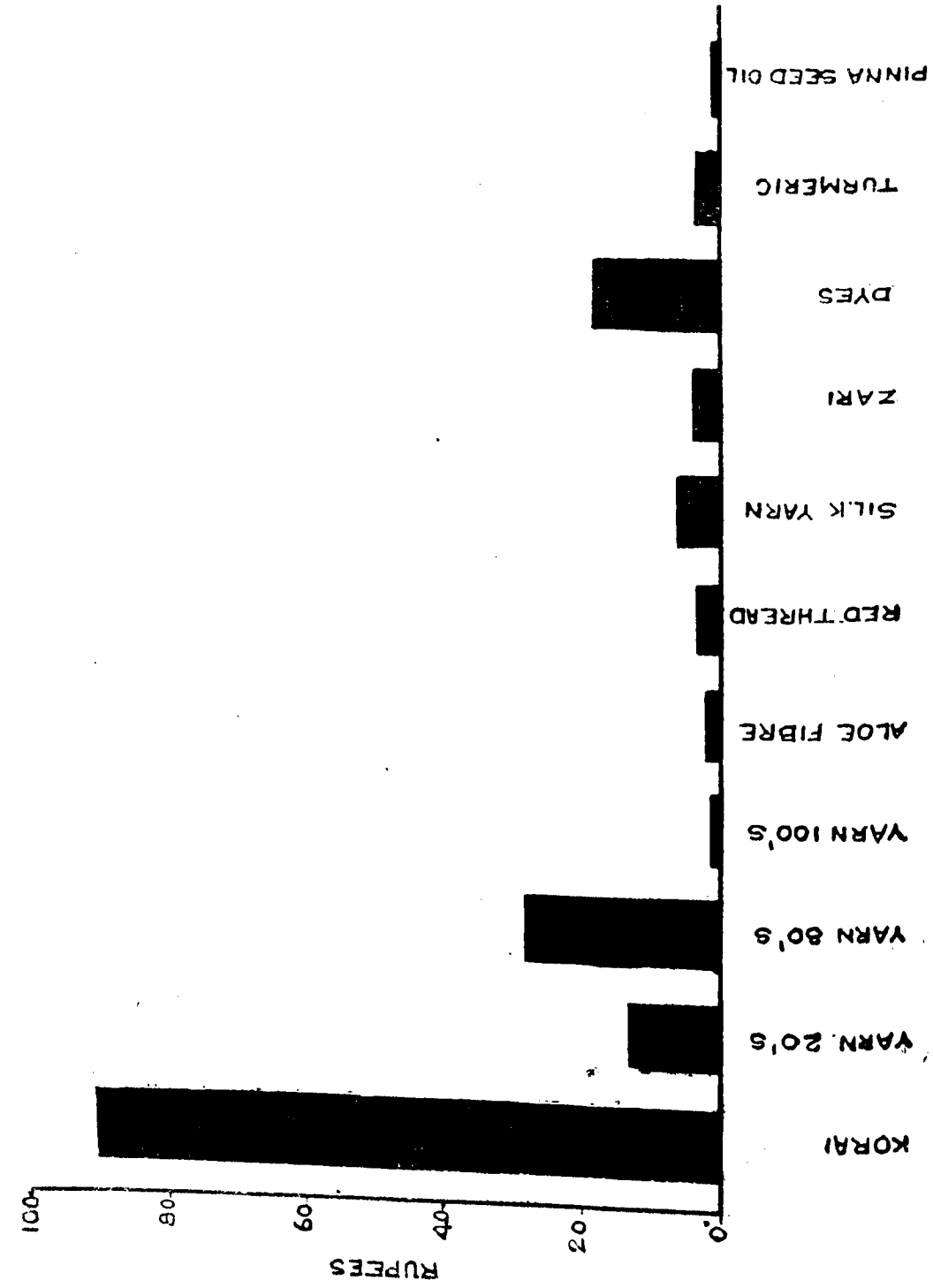
Korai grass, both local and imported, are classified into four categories according to length ranging from 4 to 7 spans. An average unit consumed 3.2 bundles of 7 span variety, 1.3 bundles of 6 spans, 0.5 bundle of 5 spans and 0.9 bundle of 4 spans or a total of 5.9 bundles. The following statement shows the cost of local and imported grass :—

8.1. Price of local and imported Korai grass (1952).

Description.	Length of grass.	Weight per bundle.	Pattamadai korai. Cost per bundle (1st quality).		Karur korai. Cost per bundle.
			RS.		RS.
1 Seven spans	3½ FEET.	100 LB.	20		(1st quality) 40
2 Six spans	3½	93	17		(2nd quality) 35
3 Five spans	3	78	12		28
4 Four spans	1½	68	6		4

The imported korai costs 1½ to 2 times more than that of the local variety except in the case of the last quality. There is marked difference in consumption as between different types

PATTAMADAI
KORAI MAT WEAVING INDUSTRY
VALUE OF RAW MATERIALS USED BY A UNIT PER ANNUM



KORAI MAT WEAVING INDUSTRY.
PREPARATION OF KORAI GRASS.



KORAI GRASS.

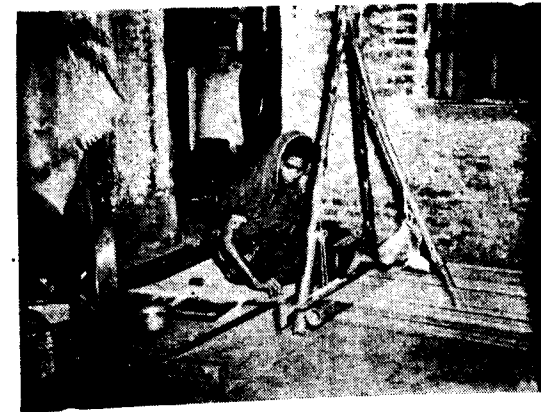


SPLITTING THE KORAI GRASS.

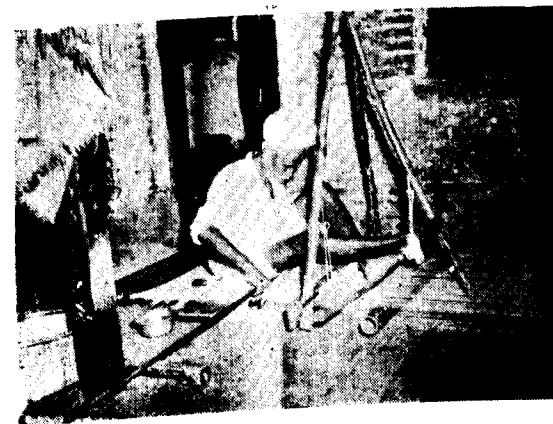


DYEING THE KORAI GRASS.

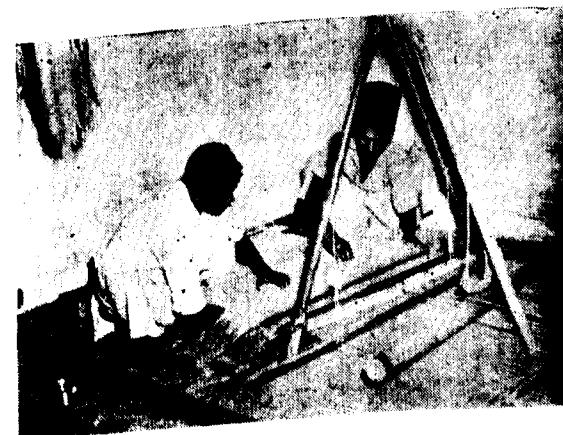
KORAI MAT WEAVING INDUSTRY—*cont.*
PROCESSES OF MANUFACTURE.



KORAI MAT WEAVING.



KORAI MAT WEAVING.



TIGHTENING THE WEFT.

KORAI MAT WEAVING INDUSTRY—*cont.*

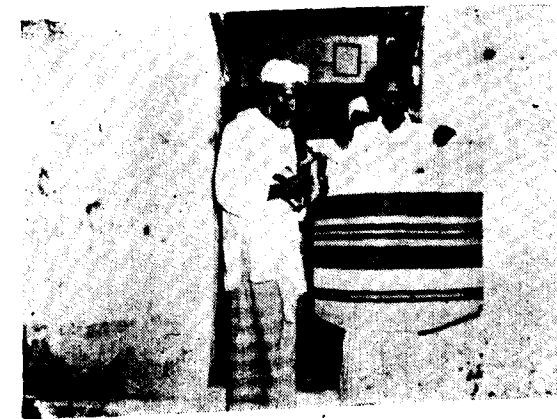


BINDING.

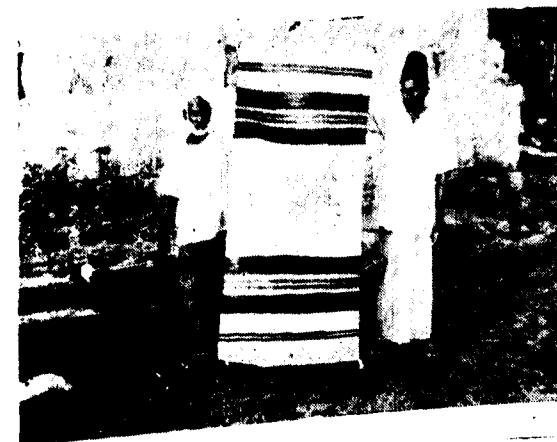


POLISHING.

KORAI MAT WEAVING INDUSTRY—*cont.*



FINISHED MATS.



KORAI MAT.

of units indicating their relative scale of operations. While an average family unit consumed 3.5 bundles, an employer unit consumed 5.2 bundles and a merchant-cum-manufacturer unit 8.8 bundles. Consumption per loom among the three types of units was 2, 2.2 and 3.3 bundles respectively. Judged by the quantity of korai consumed, the merchant manufacturer unit seems to be the most efficient. This cannot however be a test of efficiency as the quantity of korai consumed depends on the type of mats woven and the quality of korai used.

The statement below shows the average consumption of korai by each type of unit. Further details will be found in Appendix 31.

8.2. Consumption of Korai grass per unit and per loom per annum.

Type of unit.	Per unit quantity.	Value.	Per loom quantity.	Value.
	BUNDLES.	RS. A. P.	BUNDLES.	RS. A. P.
1 Family unit	3.5	49 8 0	2.0	28 4 7
2 Family unit employing outsiders	3.5	84 2 5	2.2	35 1 0
3 Merchant-manufacturer	8.8	127 2 8	3.3	47 11 0
Average for all units ..	5.9	90 2 0	2.5	38 5 7

OTHER RAW MATERIALS.

9. Yarn.—The average quantity of yarn consumed by a unit was 20.1 skeins or nearly a bundle. There was no yarn merchant at Pattamadai and the weavers bought their requirements at retail rates from merchants at Veeravanallur and Ambasamudram. After decontrol, there has been no difficulty in its supply. The retail rates are much too high when compared with the wholesale rates as can be seen from the following table :—

9.1. Wholesale and retail prices of yarn compared (1952).

Description.	Wholesale price of 5 lb. bundle.	Retail price per skein.	Retail price of 5 lb. bundle.	Difference between wholesale and retail price per 5 lb. bundle.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
80 counts	33 0 0	2 0 0 to 2 8 0	40 0 0 to 50 0 0	7 0 0 to 17 0 0
100 counts	40 0 0	2 10 8 to 3 8 0	60 0 0 to 87 8 0	20 0 0 to 47 8 0

Some economy in cost can be effected if yarn is purchased in bundles by the association and distributed to the members.

10. Dyes.—These are purchased locally at prices ranging from 4 to 10 annas per tola. The colours, red, yellow and green are most in demand. Here also some economy is possible if they are purchased in bulk and distributed.

11. Aloe.—Yarn made of aloe fibre is used as warp in the manufacture of coarse mats. It is got from a plant, the tender shoots of which are cut and scraped to yield a white fibre which is hand spun into yarn. Aloe yarn is also available in the market at Rs. 10 per thulam of 100 palams. The price of fibre per thulam was Rs. 5.

12. *Threads*.—Red thread used for binding the edges of fine mats is purchased locally in hanks. Silk thread and silver lace are used occasionally when special orders require weaving of names, etc., on the mat. They were purchased as and when necessary at Melappalayam and Tirunelveli.

13. *Fuel*.—Fuel is required for dyeing. The average consumption per unit was about one-fourth ton costing Rs. 8-11-0.

14. *Tools and equipment*.—The tools and equipment consist of simple, locally made looms and accessories such as charka, knives, polishing stones, planks, etc. Attempts made to evolve a better type of loom have not so far been successful. An average family unit owned 1·8 looms, an employer unit 2·4 looms and a merchant-cum-manufacturer unit 2·7 looms and for the sample as a whole 2·4 looms. The cost of a new loom without reed is only about Rs. 15. There are two kinds of reeds, wooden and bamboo. The former is specially made by trained carpenters at Veeravanallur and costs about Rs. 15 to 25 and will last for 10 to 15 years. Bamboo reed is fitted into a wooden frame costing Rs. 7-8-0. Though the reed itself costs only between Rs. 1-12-0 and Rs. 2-8-0 it requires renewal every year. The following statement gives the number and value of tools and equipment owned by an average unit :—

14.1. *Number and value of tools and equipment per unit.*

Description.	Number owned.	Initial cost.	Replacement cost.	Present market value.	Annual maintenance charges.	Depreciation charges.
		RS.	RS.	RS.	RS. A. P.	RS.
Looms	2·4	26	37	23	5 11 0	2
Reeds	6·2	36	47	36	1 11 0	
Accessories	14·4	13	18	12	2 15 0	
Total	..	75	102	71	10 5 0	2

The average initial cost of all tools was Rs. 75, replacement value Rs. 102, present market value Rs. 71, maintenance charges Rs. 10-5-0 and depreciation charges Rs. 2. The replacement cost is higher than the initial cost because of the rise in prices of looms and accessories since they were purchased initially.

15. *Manufacturing processes*.—There are seven important processes in the manufacture of fine korai mat. They are (1) preparation of korai grass, (2) dyeing, (3) preparation of warp, (4) weaving, (5) tightening the weft, (6) binding the edges and (7) polishing. These are discussed below :—

Preparation of Korai grass.—The korai grass purchased from the dealers or supplied by the association is only half dry and it has to be fully dried for about a month till it acquires a uniform golden colour. The dried grass is soaked in running water for a week, care being taken to wash and clean it every day. The soft soaked grass is split open with the help of a double-edged knife; the lengthwise sides, the pith, and the transparent skin between the outer layer and the pith are successively removed. The remaining outer skin is split into wefts with widths of 1/10", 1/15" and 1/20" according as the mat to be manufactured is 100, 120 or 140 counts respectively.

With the help of the double edged knife, the korai is pierced in three or four places. Then the strands are drawn by placing either the fingers in the pierced portions or by placing the knife through alternate holes and drawing it quickly to the tapering end. The work, simple as it may appear, requires extraordinary skill and patience. Usually 4 to 6 strands of weft are obtained from a single korai. They are then dried in the shade. The preparation of korai grass is done mostly by men.

Dyeing.—The process of dyeing is common to all varieties of mats. Dye is dissolved in boiling water and the grass is soaked in it for about an hour. For the preparation of red dye, turmeric powder is also added. Dyeing is done once or twice a month.

Preparation of warp.—The kind and quality of the yarn used for warp varies with the quality of the mat. While aloe fibre yarn is used for the coarse mats, cotton yarns of 20 and 40 counts are used for medium varieties and 80 and 100 counts for fine varieties.

Four yarns are twisted together with the help of a charka to give sufficient strength and durability to the warp thread. Unlike the case in handloom weaving, the preparation of warp is done near the loom itself. The process of warping leaves knots to the fringes in the warp at only one end. The loom consists of two bamboos held in place by four iron pegs. These two bamboos are adjusted according to the length of the mat to be woven. The warp strand is first taken round one of the bamboos, drawn through the dents of a reed and then looped round a cord which is coiled round the second bamboo from where weaving begins. After passing through the coil, the warp thread is taken back through the second dent of the reed and passed round the first bamboo. This elaborate process goes on till sufficient strands to make up the required width of the mat are ready. The healds for the warp are then prepared. A continuous thread is made into loops encircling odd threads in the warp. The healds are then attached to a bamboo and suspended from a tripod stand. The even number threads are raised above the odd ones and a stout bamboo is passed through the shed and retained in this position until the mat is woven.

Weaving is begun from that side of the bamboo where the warp threads are looped round the cord. The weaver sits on a plank facing the tripod carrying the reed resting his leg on rope hangers supported from the tripod. The warp threads pass beneath the plank. As each weft is a separate strand, it is not possible to use a shuttle. The weft is therefore passed through the shed with a special stick having a hole at one end for hooking the grass. Each korai strand is dipped in water before weaving. In the manufacture of fine mats the korai weft is first placed in position and given a slight twist by both hands. The twisted grass is joined to the previously woven length by pressing the wooden reed. Weaving is entirely done by women, though occasionally men may assist them. The process of weaving can be seen in the photos opposite.

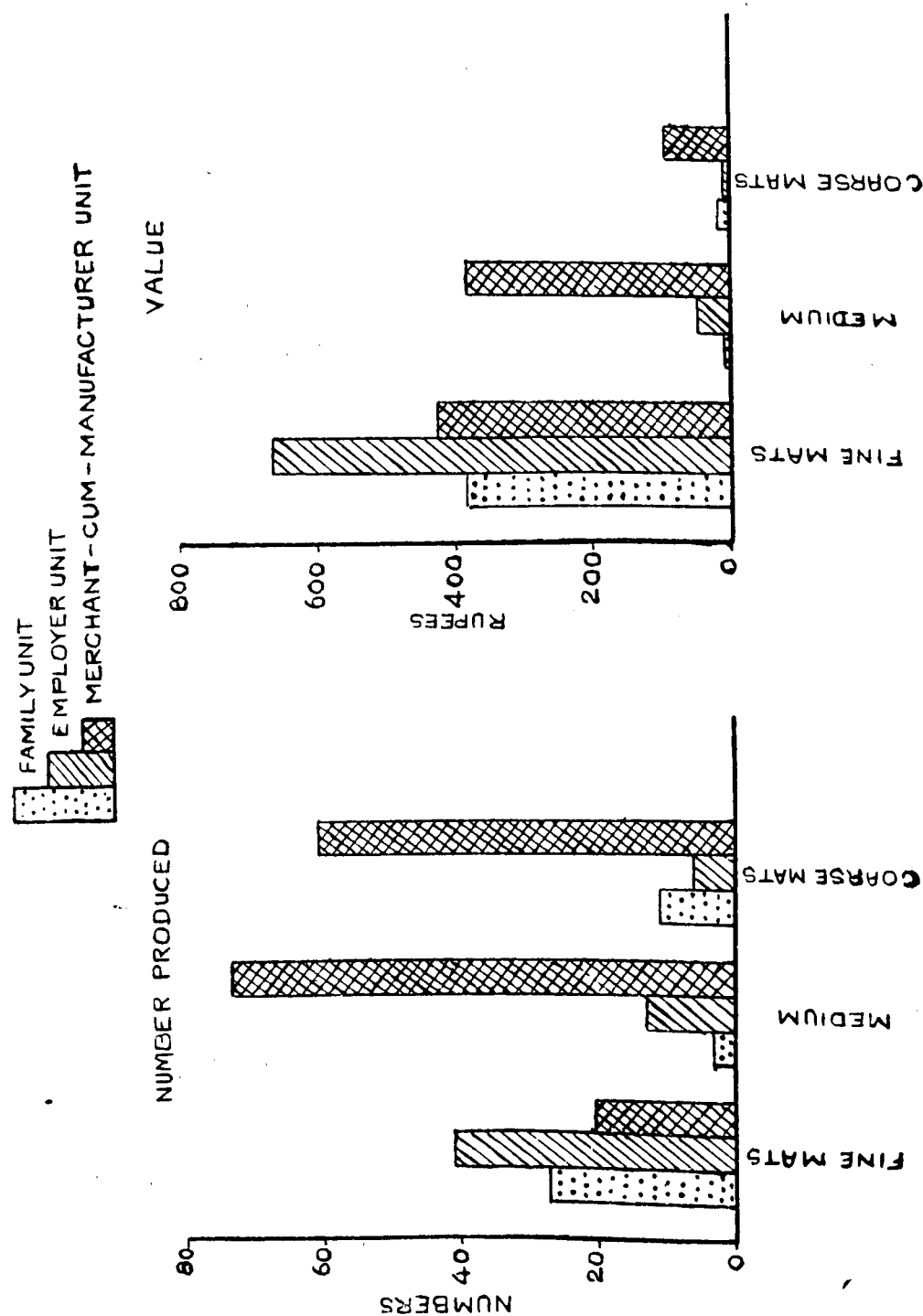
Tightening the wefts.—This is necessary because korai is woven wet and shrinks when dry. This work is done only by men. Two persons sitting on either side of the mat and each having one hand below and another above the mat slowly tighten up the previous day's weaving until there is no visible gap. This being a slow and painstaking process, care should be taken to see that warp threads do not snap when tightened.

Binding the edges.—The separate weft strands of the mats are cut uniformly and tied together by a continuous thread. Aloe thread is used for coarse varieties and red cotton threads for medium and fine mats.

Polishing.—The finished mat is placed on a wooden plank and the surface rubbed with a fine polishing stone. The manufacture of fine mats is a time consuming process and any one who watches the progress of weaving will be astounded at the snail's pace at which it proceeds.

The time taken for the manufacture of a fine mat varies from 29 to 49 [days. Appendix 32 gives the details of the time taken for each process for the manufacture of each types of fine mats.

PATTAMADAI
KORAI MAT WEAVING INDUSTRY
PRODUCTION OF KORAI MATS



16. *Production.*—The fine mat weavers produce not only fine mats but also certain quantities of medium and coarse mats to supplement their income. The statement below shows the quantity and value of different kinds of mats produced per unit for the sample as a whole ;—

16.1. *Quantity and value of production per unit per annum.*

Type of mat.	Number produced.	Percentage to total.	Value.	Percentage to total.
			RS.	
Fine mats	32.3	38.0	541	75.6
Medium mats	29.3	34.4	141	19.8
Coarse mats	23.5	27.6	33	4.6
Total of all mats ..	85.1	100.0	715	100.0

Although fine mats formed only 38.0 per cent of the total production, in terms of value they represented 75.6 per cent of the total. The weavers generally produce 100-count mats in anticipation of demand while those of 130s and 140s are made only to order. The following statement gives the average quantity and value of mats produced by each type of unit :—

16.2. *Production and value of mats for each type of unit per annum.*

Type of unit.	Fine mats.		Medium mats.		Coarse mats.		All mats.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
		RS.		RS.		RS.		RS.
Family unit	27.5	384	2.5	10	11.0	11	41.0	405
Employer unit	41.2	670	13.0	44	6.0	7	60.2	721
Merchant-cum-manufacturer.	20.9	430	74.1	392	60.8	90	155.8	912
For the entire sample ..	32.3	541	29.3	141	23.5	33	85.1	715

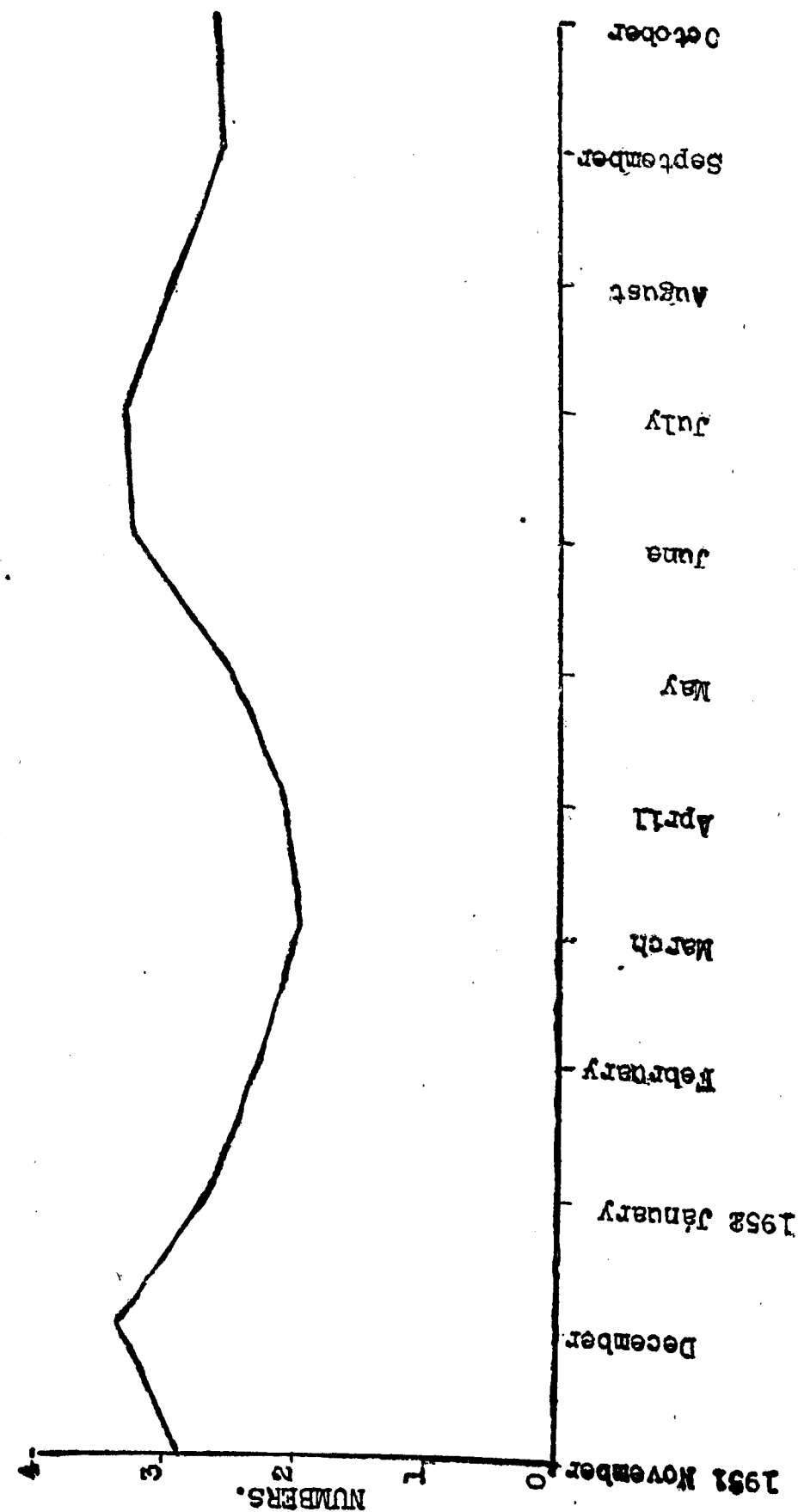
Taking the production of all types of mats, on an average, the output of a merchant-cum-manufacturer unit was nearly four times that of a family unit and $2\frac{1}{2}$ times that of an employer unit but the value of production was only 2 times and 1.3 times that of the other two types respectively. This is accounted for by the fact that the merchant-cum-manufacturer concentrated on the production of the cheaper varieties, i.e., medium and coarse. As regards fine mats, the output of a merchant-cum-manufacturer was only 20.9 mats against 41.2 by an employer unit and 27.5 by a family unit. An indication of the efficiency of the different types of units can be had from the statement below :—

16.3. *Production of mats per loom per annum.*

Type of unit.	Number of looms.	Fine mats.		Medium mats.		Coarse mats.		Total.	
		Out-put.	Value.	Out-put.	Value.	Out-put.	Value.	Out-put.	Value.
		NO.	RS.	NO.	RS.	NO.	RS.	NO.	RS.
Family unit	1.8	15.7	219	1.4	6	6.3	6	23.4	231
Employer unit	2.4	17.2	279	5.4	18	2.5	3	25.1	306
Merchant-cum-manufacturer.	2.7	7.8	161	27.8	147	22.8	34	58.4	342
For the entire sample ..	2.4	13.8	230	12.4	60	10.0	14	36.2	304

The average production per loom does not show as much variation among the groups as output per unit. The output of number of mats per loom in the case of a merchant-cum-manufacturer was only a little over twice that in the case of family and employer units and among the latter two, almost equal. Judged by the value of output, the family unit

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FINE MATS.



is the least efficient while the difference between the employer and merchant-cum-manufacturer is not much. The concentration of production on fine mats by the family units has not helped them materially while a more even distribution of production over different types has been more advantageous in the case of the other two units.

17. *Estimated production for the entire firka.*—On the basis of an average production of 32.3 fine mats valued at Rs. 541 per unit, the total annual production of fine mats for the entire firka with 41 families engaged in this industry would be 1,320 mats valued at Rs. 22,200 nearly.

18. *Fluctuations in production.*—There is not any appreciable fluctuation in production from month to month but the small variation noticed (table below) is accounted for by two factors. As the preliminary process of soaking depends on the availability of running water in the canal, production of fine mats is concentrated in nine months of the year excluding March, April and May. The mat weavers, however, keep some stock of processed korai grass to carry them through the summer months. Production is also tuned to variations in demand. There is an active demand for fine mats during two periods in a year, the first, during the Courtallam season lasting from the end of June to September which attracts a large number of visitors to that health resort and the second, during the Christmas and New Year season, when these mats are given as presents by some people. The statement below shows the fluctuations in output of fine mats during the period under survey :—

18.1. *Fluctuation in output per unit (number of mats).*

Description.	November 1951.	December 1951.	January 1952.	February 1952.	March 1952.	April 1952.	May 1952.	June 1952.	July 1952.	August 1952.	September 1952.	October 1952.	Total.
Fine mats	2.9	3.4	2.7	2.3	2.0	2.1	2.5	3.2	3.3	2.9	2.5	2.5	32.3

19. *Labour force and employment potential.*—The family members usually attend to all the processes, women doing the weaving and the men the other processes. But in view of the fact that some families own more looms than there are women to work them, women from outside are employed for weaving. The four family units surveyed had nine women workers as against seven looms and hence there was no need to engage outside labour. But in the case of the ten employer units, there were 14 women workers against 24 looms and hence they employed 11 women and 2 men. The six merchant-cum-manufacturers had 16 looms against 9 women workers in the family and they engaged 11 women. On an average, a unit employing outside labour recruited 1.5 persons. The labourers employed did not work in the houses of the employers but only in their own houses on the looms erected by the employers and with the raw materials supplied by the latter. Including outside labour, the average number of workers per unit for the sample as a whole was 3.9, consisting of 1.2 men and 2.7 women. The average number of days actually worked per unit was 314.5. Assuming 295 days in a year to be the full employment level, the families had secured work for 19.5 days more. Outside labour did not enjoy the same level of employment, the men having been employed for 234 days and the women 246 days on the average.

For the firka as a whole the fine mat industry may be estimated to provide employment for 49 men and 111 women or 160 persons. The statement below shows the average number of workers and the average number of days of employment for each type of unit :—

19.1. *Labour force.*

	Family labour.	Outside labour.	Total.	Number of days employed in the year.
Family unit	3.0	..	3.0	290
Employer unit	2.6	1.3	3.9	341
Merchant-cum-manufacturer	2.7	1.8	4.5	310
Average for all units	2.7	1.2	3.9	314.5

The merchant-manufacturer unit engaged the largest number of persons and the family unit the least.

20. *Wages.*—There are certain prescribed rates of wages for different processes based on mutual understanding of all the members of the Labbai community. A statement showing the rates of wages for each process is given below :—

20.1. *Wage rate for manufacturing one fine mat.*

Name of process.	Type of mat.				
	100s.	110s.	120s.	130s.	140s.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Splitting korai grass	3 0 0	3 8 0	4 0 0	4 8 0	5 8 0
2 Twisting warp yarn	0 5 9	0 6 0	0 6 8	0 7 0	0 8 0
3 Weaving	3 0 0	3 8 0	4 0 0	4 8 0	5 8 0
4 Tightening the weft	3 0 0	3 8 0	4 0 0	4 8 0	5 8 0
5 Binding the edges	0 8 0	0 10 0	0 12 0	1 0 0	1 0 0
6 Polishing	0 6 0	0 6 0	0 6 0	0 8 0	0 8 0

The wages for splitting korai grass ranged from Rs. 3 for a 100-count mat to Rs. 5-8-0 for a 140-count mat. But as the time required is greater in the latter case (vide Appendix 32), the average wage for a worker for a day works out to 8 annas. Twisting the yarn for warp is done by women and the rate for preparing the warp for a mat ranges from As. 5-9 to 8 annas. On the average a woman would earn 4 annas to As. 4-6 per day. The rate for weaving is the same as for splitting korai, i.e., from Rs. 3 to Rs. 5-8-0 and the average wage per day works out to 4 annas. The rates for tightening the weft is also the same as for weaving. In view of the fact that the time spent on this work is only one-fourth of that spent on weaving, this appears to be the most highly paid process. But opportunities for such employment are rare. Usually people help one another rather than pay actual wages. The rate of wages for binding the edges varies from 8 annas to Re. 1 and a man gets on the average 8 annas. This process is also better paid than most others as it requires special skill. Polishing, though not calling for any special skill, requires much physical labour and is generally done by the male members of the families. If outsiders are employed, the wage rate varies from 6 annas to 8 annas. The average annual wages paid by a unit to outside labour was Rs. 79-5-0. The average annual wage secured by an outside woman worker engaged in weaving was Rs. 61-8-0 and the average wage per working day was 4 annas. The average annual wage secured by a male outside worker was Rs. 117 and the daily rate per working day 8 annas.

Calculated on the basis of the rate of wages prescribed for different processes, the average wage payable to the family labourers in a unit would be Rs. 403.

21. *Transport.*—The charges incurred by the Mat Weavers' Association for the transport of korai grass from the river bank to the village is distributed equally among the members. In 1951-52 each member paid Rs. 6 on this account. In addition, expenditure was incurred for transport of korai grass and other raw materials purchased at Veeravallur and elsewhere and the total transport charges per unit amounted to Rs. 18-8-0.

22. *Cost of production.*—Appendix 33 gives the cost of production of a fine mat of different counts. The cost varies from Rs. 12-13-8 for a 100-count mat to Rs. 21-9-6 for a 140-count variety.

The statement below shows the various items of cost of production incurred by an average unit :—

22.1. *Components of cost of production per industrial unit per annum.*

Description.	Amount.	Percentage to total.
	RS. A. P.	
1 Raw materials and fuel—		
(a) Raw material	168 0 0	23.9
(b) Fuel	8 11 0	1.1
2 Rent—		
(a) Estimated rent	6 0 0	1.5
(b) Repairs and maintenance	4 11 0	
3 Machinery and equipment—		
(a) Maintenance charges	10 5 0	1.8
(b) Depreciation	2 0 0	
4 Wages—		
(a) Wages paid	79 5 0	68.5
(b) Wages payable	403 0 0	
5 Transport	18 8 0	2.6
6 Subscription to the Mat Weavers' Association	4 0 0	0.6
Total cost	704 8 0	100.0
Total sale value	715 0 0	
Profit	10 8 0	

23. *Profit and loss.*—As against a total cost of production of Rs. 704-8-0 an average unit received Rs. 715 from the sale of output, the gross profit being Rs. 10-8-0. On the basis of this average, the profit for the estimated production of the entire firka would be Rs. 430.

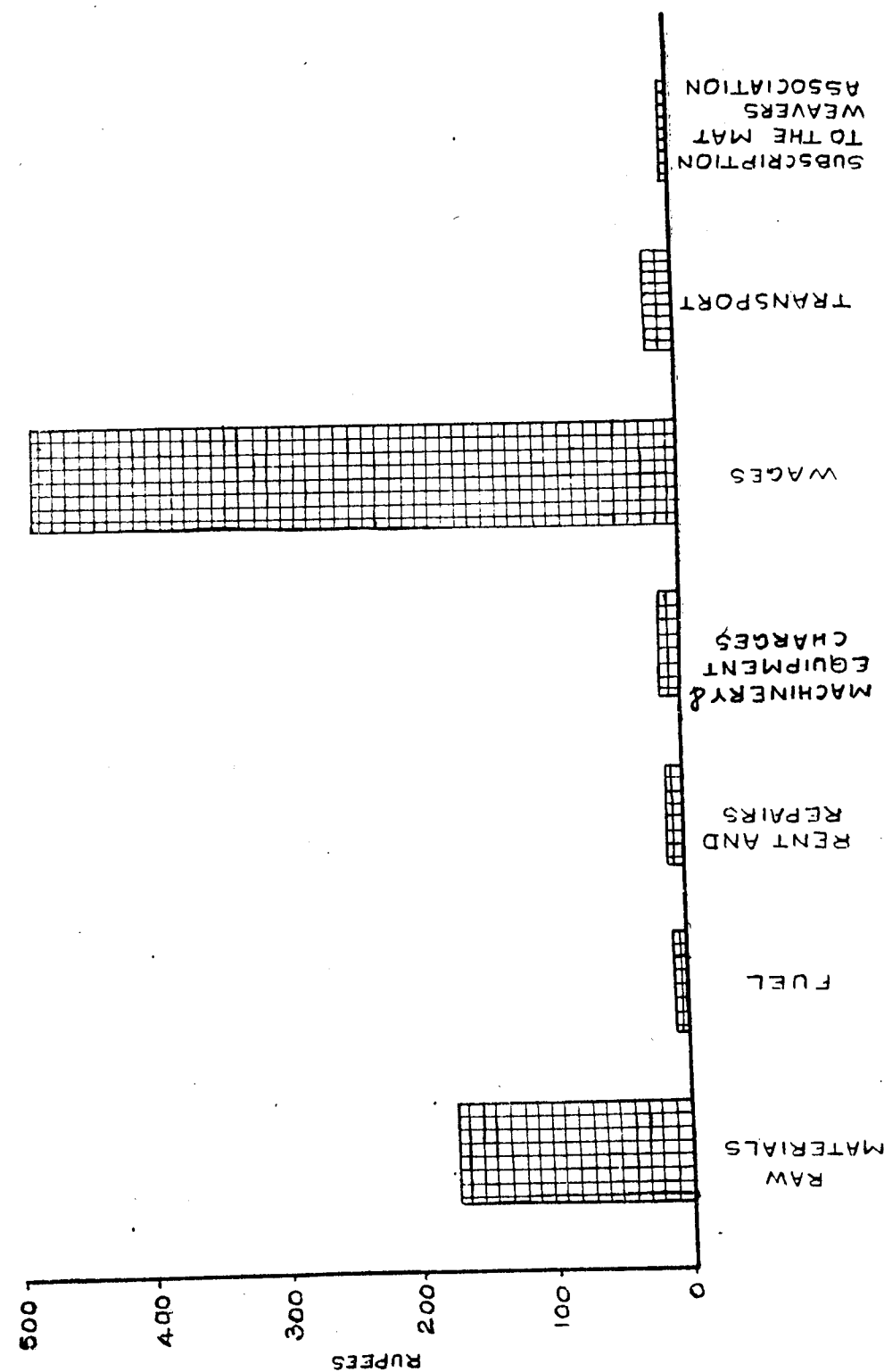
Relative cost of manufacture.

The following statement shows the relative cost of manufacture in each type of unit :—

Components.	Family unit.	Employer unit.	Merchant-cum-manufacturer unit 100.
(1)	(2)	(3)	(4)
Cost of raw materials taken as	100	100	100
Wages	290	324	227
Other expenditure	40	36	30
Total cost of production	366	360	257

It will be seen from the above, that the merchant unit is the most efficient unit of production. The difference however can be explained by the fact that the merchant units concentrated on the production of the cheap coarse mats and the family and employer units on fine mats.

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24. *Capital.*—The total capital investment per unit amounted to Rs. 655 of which Rs. 603 was fixed capital and Rs. 53 working capital. Provision has already been made in the cost of production by way of rent and depreciation charges for fixed capital. Interest on working capital which was borrowed at 13 per cent amounted to Rs. 7 per unit.

25. *Net profit.*—Deducting the average interest of Rs. 7 the net profit amounted to Rs. 3-8-0 per unit. The estimated net profit for the entire firka would then be Rs. 144.

26. *Income from the industry.*—The income from the industry, made up of net profit and imputed items in the cost of production such as estimated rent, depreciation and wages payable, amounted to Rs. 414-8-0 per unit and Rs. 82-14-0 per capita. The income from the industry for all the units in the firka would amount to nearly Rs. 17,000.

27. *Marketing.*—There is no organized system of marketing. Production of the higher counts of fine mats is taken up only against orders and for the rest, direct sale to customers or merchants is the most usual practice. The orders received by the Mat Weavers' Association are auctioned to the lowest bidder among the members and the profit (i.e., the difference between the contract price and the auctioned price) is divided equally between all bidders. The merchant-cum-manufacturers also purchase some of the output of the other units at minimum prices fixed for each variety of mat by the community. There is also some distress sale to merchants at Veeravanallur.

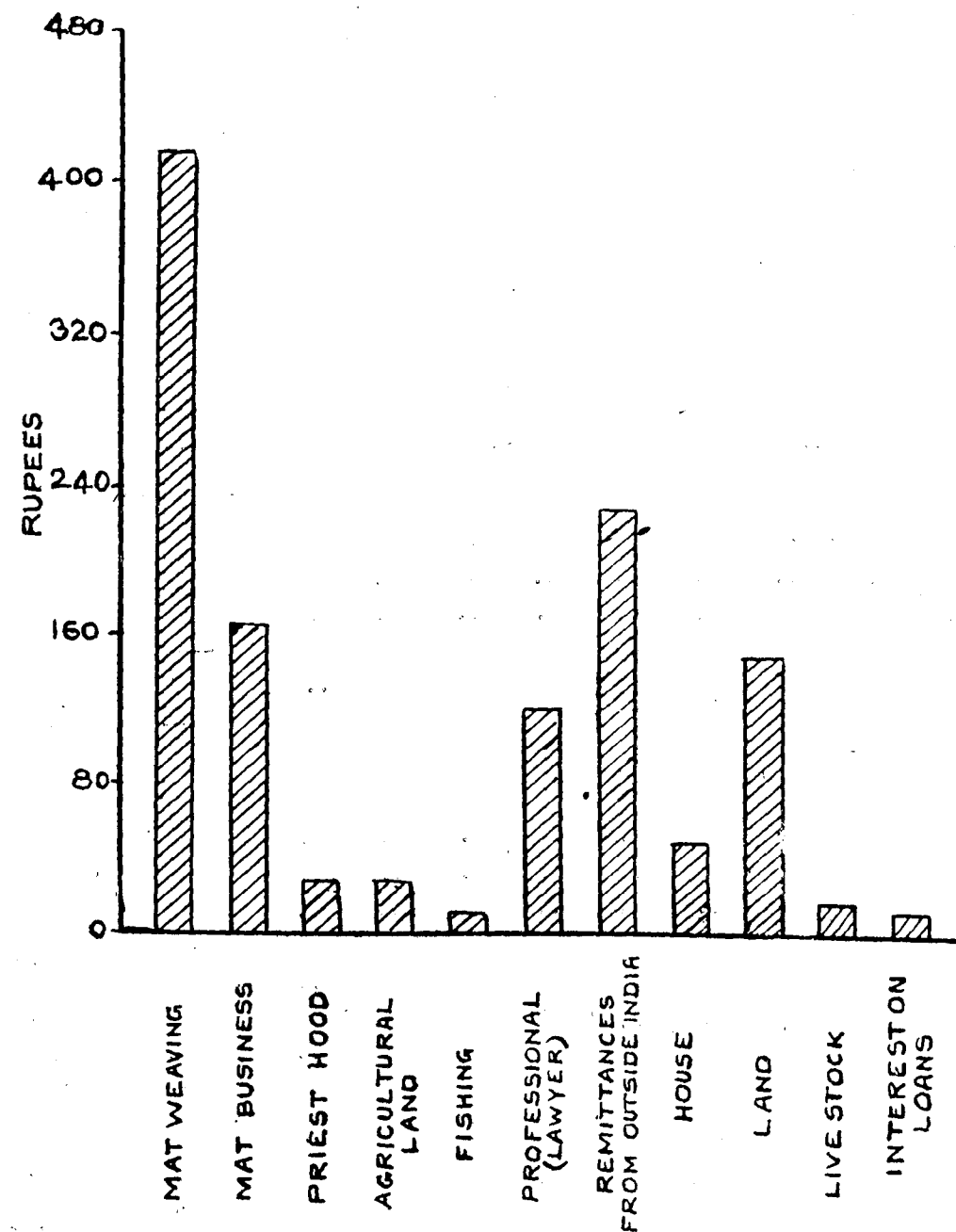
The following statement shows the value of fine mats sold through different channels by an average unit :—

27.1. *Average value of fine mats sold per unit per annum.*

								Percentage total.	
								RS.	
Local sales—									
Direct	..	..	..	..	..	..	..	216	39.9
Through merchants	..	..	..	..	..	..	..	101	18.7
Total								317	58.6
Other sales in Tirunelveli district—									
Direct	..	..	..	..	..	..	..	83	15.3
Through merchants	..	..	..	..	..	..	..	125	23.1
Through own agencies	..	..	..	..	..	..	..	16	3.0
Total								224	41.4
Grand total								541	100.0

Of the total sale of fine mats, 58.6 per cent formed local sales and 41.4 per cent district sales. Direct sales formed as much as 55.3 per cent of the total, sales through merchants 41.7 per cent and sales through own agencies 3 per cent.

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AVERAGE INCOME OF A FAMILY



Only a few of the manufacturers—two men belonging to the merchant-cum-manufacturer group had made any attempt to secure a wider market for fine mats. They had exhibited their mats at exhibitions, toured other States and executed some orders for foreign markets through other merchants. Marketing is the weakest of the links in the production chain of the industrial organization. An efficient organization is essential for fully exploiting the market at home and abroad.

28. *Price trend.*—There has been surprisingly little variation in the prices of fine mats over the years. In 1917, according to the District Gazetteer, the prices varied from Rs. 10 to Rs. 35; in 1926 they varied from Rs. 6 to Rs. 28 and at the time of the present survey from Rs. 15 to Rs. 40. In 1952, the rise in price has been only to the extent of 1.4 to 2.5 times the price in 1926. Increase in costs has not resulted in a proportionate rise in prices. The weavers were all along apprehensive of a fall in demand, and have therefore not dared to raise the prices commensurate with the general rise in prices.

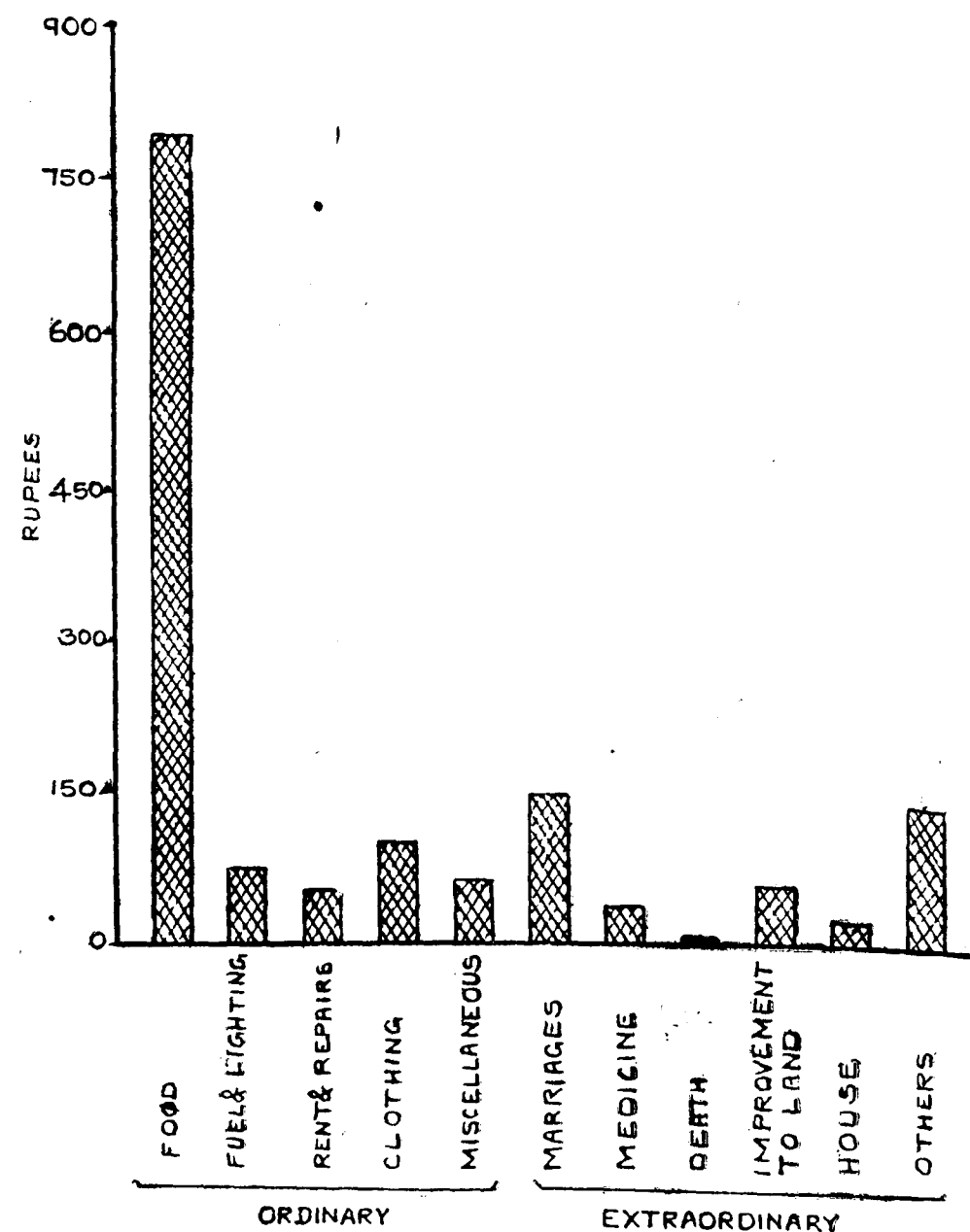
29. *Designs.*—There have been few changes in the designs of the mats woven; the weavers cling to traditional patterns and are chary of new innovations. Recently, however, some new designs have been successfully introduced. Mats woven in the 'Jamakkalam' or cotton carpet pattern have sold well. Attempts are also being made to weave mats suitable for table spreads, cushion covers and hand bags. The softness and pliability of the fine mats fit them for many such uses. The mat weavers should not concentrate too much on fine mats which have only a limited demand but should devote more attention to the production of medium varieties which have always a better demand in the country. Market research and investigation of consumer tastes, innovations in designs and colour combinations will expand and develop the market at home and abroad. Experiments are always costly. The poverty of the families and the fear of loss due to taking risks have stood in their way. This is a fit subject for study and investigation by the Central Cottage Industries Research Organization.

30. *Co-operation.*—No co-operative society has so far been organized for the benefit of the Pattamadai mat weavers. However a Mat Weavers' Association was formed in 1938 as a private organization with 72 members. In 1952, it was converted into a Registered Association with a membership of 107. Membership has been thrown open to all mat weavers in Tirunelveli district. An admission fee of Rs. 20 is collected from each new member and the annual subscription is Rs. 4. Women are eligible for admission on the same terms as men. The exclusive right of the Association to collect grass from the stretch of the Tambraparani bank was granted in 1938 and has been renewed every two years. Every member is entitled to an equal share of the grass from this block but this supply is insufficient to meet the needs of the weavers, being hardly 18.75 per cent of the normal demand. The deficiency is met by purchases from the reapers and the merchants. The open market price of korai grass is as high as Rs. 25 per bundle against the Association's cost price of Rs. 6 per bundle. Moreover, korai grass imported from Karur and other places is not fit for fine mat weaving while it can be used for medium and coarse mats. As the development of the fine mat industry depends to a large extent on an adequate supply of good korai grass, the Association's demand for allotment of additional blocks of the river bed is reasonable and deserves sympathetic consideration.

The Association also receives orders from outside and distributes them among the members. The practice of auctioning orders to the lowest bidder and dividing the profit equally among the bidders while avoiding favouritism does not always allow for adequate remuneration for labour, nor is it conducive to good workmanship or efficiency in production.

The Association is handicapped in its activities by lack of funds. An attempt made in 1952 by the Association to obtain a loan of Rs. 20,000 under the Madras State Aid to Industries Act ended in failure. It would appear that the Industries Department proposed

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giving loans to individual mat weavers on adequate security. The Revenue authorities who valued the properties of the applicants, however, found them to be inadequate except in the case of two or three persons. This is not peculiar to the mat industry. The problem of financing such cottage industrial workers who have few other securities than the skill of their hands is a difficult one; but it has to be tackled effectively if cottage industries are to progress.

The principal function of the Association has so far been only the supply of korai grass. Even in the discharge of this function, it is handicapped by lack of proper storage facilities; it does not even have an office or a building of its own. It is not able to help, to any appreciable degree, the marketing of the mats or even prevent distress sales to merchants at Veeravanallur, or give the members financial help. It is not in a position to undertake research work on such important items as evolution of new designs and introduction of new colour combinations. The Association was managed by the same Secretary since its formation until 1953 and there was some confusion in membership rolls, accounts and such matters. A new Committee with a new Secretary has since been formed which is expected to work better. It is believed that an industrial co-operative society under an experienced paid secretary will be able to solve many of the practical difficulties of the weavers. Both production and marketing should be organized on better lines.

31. *Income*.—Appendix 34 gives the average income of a family. The annual average income per unit was Rs. 1,216 of which Rs. 415 or 34.1 per cent was derived from mat weaving and Rs. 165 or 13.6 per cent from business in mats. Income from assets accounted for 18.8 per cent, remittances from relatives for another 18.8 per cent, the rest being made up from other occupations such as priesthood, agricultural labour, etc.

32. *Expenditure*.—Appendix 35 gives the details of annual expenditure per family. The average annual expenditure per unit was Rs. 1,494 leaving a deficit of Rs. 278. Of the total expenditure, 73 per cent was on ordinary items like food, clothing, etc., and 27 per cent on extraordinary items such as marriage, festivals, etc.

33. *Assets*.—The total assets of an average unit amounted to Rs. 5,417 or 4.5 times the average income. Houses formed 47.3 per cent of the total value of assets, lands 33.4 per cent, chit fund 8.5 per cent, jewels 4.4 per cent, loans given 2.3 per cent and industrial equipment 2.1 per cent. Other items of minor importance were livestock, deposits in the Mat Weavers' Association, carts, etc. The value of assets owned by an average unit is given in Appendix 36.

34. *Liabilities*.—Out of the 20 families surveyed, 14 or 70 per cent were indebted. The average debt per family was Rs. 463. Of this, 11.3 per cent was borrowed for business purposes and 88.7 per cent for domestic purposes. The average rate of interest worked out to 15.5 per cent—vide Appendix 37.

35. *Efficiency assessment*.—The merchant-cum-manufacturer unit leads in regard to consumption of raw material, provision of employment and output. An average merchant unit consumed annually 8.8 bundles of korai grass as against 5.2 by an employer unit and 3.5 by a family unit. It provided employment to 4.5 persons as against 3.9 persons by the employer unit and 3.0 by the family unit. The total number of mats of all types produced annually was 156, 60 and 41 respectively by each of the three types of units and of fine mats 21, 41 and 28 respectively. In regard to the number of days worked, however, the employer unit exceeded the other two; it amounted to 341 days against 310 days worked by the merchant unit and 290 days by the family unit. From the point of view of economy

in cost of production the merchant-cum-manufacturer unit was the most efficient, its cost being 257 (on the assumption that cost of raw materials is 100) as against 360 for the employer unit and 366 for the family unit.

It is not, however, possible to state from the above facts whether one type of unit is more efficient than the other or whether one type of unit should be favoured in preference to another. Variations between the three types of units can be regarded as indicators of differences in the scale and level of operations rather than tests of efficiency.

SUMMARY.

Out of the total of 41 units engaged in the weaving of fine mats in the firka, the survey was confined to 20 units. Of these, 10 were family units where work was confined to family members only, 4 were employer units working with outside labour and 6 were merchant-cum-manufacturer units.

An average unit's annual outlay on raw materials amounted to Rs. 168 of which 53.6 per cent was on korai grass. The supply of korai grass by the Mat Weavers' Association from the block of river bed assigned to it was inadequate to meet the full requirements of the weavers and the deficiency of 74.6 per cent had to be made up by purchase from reapers and merchants at much higher prices.

The average number of looms per unit was 2.4. The annual production of an average unit was 32.3 fine mats valued at Rs. 541, 29.3 medium mats valued at Rs. 141 and 23.5 coarse mats valued at Rs. 33. The annual production of fine mats for the entire firka is estimated at 1,320 valued at Rs. 22,200.

Including outside labour, the average number of workers employed per unit was 3.9, comprising 1.2 men and 2.7 women. In the firka as a whole the industry may be estimated to provide employment to 160 persons. The average annual wage paid to outsiders was Rs. 79-5-0 and the estimated wages payable to family labourers in a unit was Rs. 403.

The annual cost of production per unit was Rs. 704-8-0 and the sale proceeds Rs. 715, the profit being Rs. 10-8-0. The net profit after allowing for interest on working capital was however only Rs. 3-8-0 per unit. The income from the industry including imputed items entering the cost of production was Rs. 414-8-0 per unit and Rs. 82-14-0 per capita. For the entire firka this income may be estimated at Rs. 17,000.

The annual income of a mat weaver's family was Rs. 1,216 of which income from mat industry per unit formed 34.1 per cent of the total. The average expenditure was Rs. 1,494 and the average asset Rs. 5,417. Nearly 75 per cent of the families were indebted, the average debt per family being Rs. 463. There is no marketing organization and the mats are mostly disposed of by direct sales by the producers. Production of higher counts of fine mats is taken up only against orders.

The Pattamadai Mat Weavers' Association is the only organization in the industry. Its main function is the supply of korai grass to its members, but even this supply is far from adequate to meet their needs. Orders for mats are sometimes executed through the association. However the association is not able to meet all the needs of the industry. The need for a separate organization to organize production, finance the families, introduce new patterns and designs and market the goods seems called for.

RECOMMENDATIONS.

The Mat Weavers' Association, the only organization attending to the needs of the industry, is far from adequate. It is not able to tackle the two main problems of the industry, finance and marketing. An industrial co-operative society should be organized on the following lines to attend to needs of the mat weavers :—

(i) The membership of the society should be restricted to the fine mat weavers of Pattamadai only. Other prominent villagers who are interested in the industry may also be admitted so that their services can be utilized in honorary capacities. The society should purchase all the raw materials required by the mat weavers at wholesale rates and should arrange for their equitable distribution. It should arrange for proper storage facilities for the korai grass and consider the possibility of using twisted yarn from mills instead of hand twisting. The time saved in twisting yarn can be utilized in weaving.

(ii) All orders for mats should be received by the society direct and distributed among the members in accordance with their ability to execute them. The present method of auctioning orders to the lowest bidder should be discontinued as it is not conducive to efficiency in production or maintenance of high standard. Production in anticipation of demand should be organized during lean months. Distress sales by members should be prevented by the society purchasing all the surplus output of members at fixed prices. It should have adequate finance to meet all these requirements.

(iii) The quality of mats should be standardized and only such mats as conform to the standards should be accepted by the society. Remunerative prices for each variety should be fixed.

(iv) The society should provide technical guidance to its members and suggest new designs, colour combinations, etc. It should also undertake propaganda work.

(v) There should be at least for a few years, a full time paid Secretary, preferably an official who will be able to carry out the work efficiently. Non-official management of the Mat Weavers' Association has not been a success.

(vi) The society should also encourage the weavers to take to medium type mats as is done by the Giriammalpuram Mat Weavers' Co-operative Society near Veeravanallur instead of coarse mats which are unremunerative. Medium variety mats will find ready sales among the well-to-do classes of society and are likely to be more remunerative.

2. The block of the Tambraparani bed allotted to the Mat Weavers' Association does not yield sufficient korai grass to meet the needs of the weavers. Government should allot some more blocks in the Tambraparani river bed, adjacent to the present block either free of rent or on payment of a nominal fee. The local grass may be reserved entirely for fine mat weaving and the imported variety used for medium, prayer and coarse mats. At the same time, attempts should also be made to see whether korai grass cannot be grown in the other stretches of the river bank.

3. Government should explore possibilities of developing the markets for these fine mats both within the country and abroad. The mat weavers with poor resources are not in a position to conduct market research or study consumer tastes or undertake display of their mats in the various exhibitions organized in the different parts of the country. Government should purchase the quantities required for propaganda purposes and display them in their stalls. Similarly, the foreign markets for these artistic goods especially in the western countries, can be developed only by the Government through their trade agencies.

4. The Central Cottage Industries Research Institute may be asked to conduct research on such problems as the introduction of new colour schemes, designs, types of mats and other articles.

PRAYER AND COARSE MATS WEAVING INDUSTRY

Introduction.—The present survey included, besides the survey of the famous Fine Mat Industry, a survey of the Prayer and Coarse Mat Industry, in which the majority of the mat weavers in the firka are engaged. The first type of mats which have designs of mosque woven into them are known locally as “*Thozhuvu Pai*” which translated into English may be termed as “Prayer mats”. These are also known to trade as “Veeravanallur mats”, the name having been derived from a village six miles distant from Pattamadai. The prayer mats are usually 4’ by 1½’ in size with designs of mosques woven in the middle in attractive colours. They are used by Muslims for spreading on the ground and kneeling during prayer. It is considered an act of great merit to present them to co-religionists during the Ramzan and Id festivals. They are mainly exported to Bombay and Delhi by merchants at Veeravanallur.

Coarse mats are those used for sleeping purposes made with aloe yarn as warp. They are 5’ to 6’ long and 2½’ to 3’ wide. From the artistic point of view or even from the point of view of quantity and value of production in the firka they pale into insignificance. The firka is not noted for the production of coarse mats on a commercial scale.

2. *Selection of sample.*—The preliminary survey revealed that there were 278 families engaged in prayer and coarse mat manufacture out of whom 58 were selected by the random sample method for detailed study. The statement below shows the distribution of the families among the different villages:—

2.1. Number of families selected.

Name of the village.	Number of families engaged in the industry.	Number of families selected.
1 Pattamadai	119	24
2 Kesavasamudram	136	27
3 Ulagankulam	15	3
4 Omanallur	3	2
5 Chockalingapuram	5	2
Total ..	278	58

The sample formed 20.9 per cent of the total.

3. *Organization of the industry.*—This is a subsidiary cottage industry which provides employment to the women. It is practically a monopoly of the Rowther sect of the Muslims. Unlike the Labbais engaged in fine mat weaving, the majority of the prayer and coarse mat weavers are not hereditary craftsmen but have taken to this work in recent years. The economy of these Rowther families depends to a large extent on contributions received from the male members of the families who have migrated to Ceylon, Burma or Malaya. The female members left at home were dependent on this flow of income but when the flow either ceased suddenly during the war period or became intermittent in post-war years due to the restrictions imposed by the foreign Governments on export of currency, the families had to resort to some supplementary sources. The mat industry came in handy as it enabled the women of the households who observe gosha to work at home in seclusion and earn something. Unlike the case in fine mat industry, the male members are engaged in other occupations and do not take part in the manufacture of mats. All the processes are attended to by the female members only.

This explains why the industry is not hereditary and confined to only a few families. Out of the 58 sample units, only 14 units or 24.1 per cent were hereditary mat-weavers and the remaining 44 or 75.9 per cent were non-hereditary. Family units predominate, forming nearly 75.9 per cent while the employer units formed 20.7 per cent and the merchant-cum-manufacturers 3.4 per cent. Outside labour is employed only for splitting korai grass and not for weaving. There is not much difference between the condition of the three types of units or their methods of working. In view of the general poverty of the families engaged in the industry and in view of the observance of purda by the women workers, an intermediary has crept in between the workers and the merchants at Veeravanallur to whom the mats are usually sold. Some women at Pattamadai and Kesavasamudram act as the agents of the merchants, take some advances from them which they distribute among the families at the rate of Rs. 5 to Rs. 10 in cash or in the form of korai and yarn on condition that the mats are sold to them. They make a profit of about 12½ per cent both in the supply of raw materials and in the sale of finished goods. Out of the 58 units, 35 units or 60.3 per cent had taken such advances.

4. *Composition of families.*—Excluding the male members (0.8 per family on the average) who were residing in Burma, Ceylon and other parts of India, the average size of the family was 4.1 comprising 0.6 men, 1.9 women, 0.7 boys and 0.9 girls. The average number of workers per family among the members residing in the centre was 2.4, comprising 1.8 women and 0.6 men and 1.7 dependents. All the women workers were engaged in mat-weaving while the men were engaged in other occupations like agricultural labour, teaching, shop-keeping, etc.

5. *Housing of the industrial portion.*—The majority of the work-places were located in thatched buildings. For the sample as a whole, 67.7 per cent of the industrial portions were thatched, 24.2 per cent tiled and 8.1 per cent terraced. For the sample as a whole there were 106 workers and 94 looms. There was on the average 103.4 square feet per family, 56.0 square feet per worker and 63.8 square feet per loom. The family units had the least working space per worker amounting to 53.2 square feet as against 58.3 square feet in the case of employer units and 116.7 square feet in the case of merchant-cum-manufacturer units. The average estimated value of the industrial portion was Rs. 133 per family. Only 2 out of the 58 families paid rents, the others living in their own houses. The average rent paid for the industrial portion was Re. 0-1-0 and the estimated rent Rs. 3-13-0 while the average repairs charge was Rs. 1-6-0.

6. *Raw materials and fuel.*—The important raw materials are korai grass, cotton yarn, aloe yarn, dyes and turmeric. The statement below shows the average quantity and value of the different raw materials used by a unit in 1951-52 (November 1951 to October 1952):—

6.1. Quantity and value of raw materials per unit per annum.

Description.	Unit.	Quantity.	Average price per unit.	Value.	Percentage to total value.
(1)	(2)	(3)	(4)	(5)	(6)
			RS. A. P.	RS. A. P.	
1 Korai	Bundles	20.0	4 15 9	99 13 3	64.2
2 Yarn 20's twisted	Skeins	16.7	2 0 0	33 7 0	21.5
3 Aloe fibre yarn	Thulam	0.8	8 8 11	6 9 8	4.2
4 Dyes	Tolas	27.9	0 8 0	13 14 8	9.0
5 Turmeric	Palams	25.8	0 1 0	1 9 10	1.1
Total				155 6 5	100.0

The average value of raw materials consumed per unit was Rs. 155-6-5 and per loom Rs. 95-14-2. Korai grass was the most important of the raw materials forming 64.2 per cent of the total cost followed by cotton yarn 21.5 per cent, dyes 9 per cent, aloe yarn 4.2 per cent and turmeric 1.1 per cent.

Korai grass.—The korai grass used by these weavers was of the shortest variety measuring only four spans and most of it was imported. The average annual consumption of korai per family was 20 bundles valued at Rs. 99-13-3 and per loom 12·3 bundles costing Rs. 61-9-6. The main source of supply was Veeravanallur where korai is imported from other centres like Karur, Tanjore, etc. Out of the total quantity, as much as 86·8 per cent was purchased at Veeravanallur. The average price of the local variety of korai of four spans was Rs. 6 per bundle as against Rs. 4 of the imported variety, i.e., nearly 1·5 times the price of the latter. Most of the purchases amounting to 72·8 per cent was for cash while the rest amounting to 27·2 per cent was for credit. Credit purchases were made through the agents of the Veeravanallur merchants. The agents supplied 40·9 per cent of the total value of korai consumed of which 66·6 per cent was for credit and 33·4 per cent for cash.

Yarn.—Unlike the practice in fine mat-weaving, triple twisted yarn is purchased and not twisted in the houses of the workers. The average quantity of yarn consumed by a family was 16·7 skeins valued at Rs. 33-7-0 and by a loom 10·3 skeins valued at Rs. 20-10-1. Cash purchases formed 62·1 per cent and credit purchases 37·9 per cent. The agents supplied 54·4 per cent of the total value of yarn consumed while the balance was directly bought by the mat-weavers. Out of the agent's supply, 69·7 per cent was for credit and 30·3 per cent for cash.

Aloe yarn.—Aloe yarn was largely used as warp for the weaving of coarse mats. The average quantity consumed per family was 0·8 thulam (or 11 lb.) valued at Rs. 6-9-9 and per loom 0·5 thulam (7 lb.) valued at Rs. 4-1-2. Some of the families collected the raw material and converted it into fibre and yarn, but it formed only 25·8 per cent of the total consumption.

Dyes.—The average quantity consumed by a family was 27·9 tolas valued at Rs. 13-14-8 and per loom 17·2 tolas valued at Rs. 8-9-5. It was bought locally as and when necessary. The consumption of turmeric was very small and it was purchased locally for cash.

Fuel.—Fuel is required for dyeing the korai. The average annual consumption per family was 28 thulams (400 lb.) valued at Rs. 7-8-9 and per loom 17·9 thulams (253·7 lb.) valued at Rs. 4-10-0.

7. *Tools, machinery and equipment.*—There was practically no difference in the types of tools and machinery used in this industry and in fine mat-weaving. The only difference was in the type of reeds used. Here only wooden reeds were used instead of bamboo reeds and those reeds were also of rough variety easy to make and therefore cheaper. The accessories consisted mainly of knives. There was no charka as triple twisted yarn was supplied by the merchants themselves. The statement below shows the average number and value of looms, reeds and accessories owned by a unit :—

7·1. Number and value of tools per unit.

Description.	Number.	Initial cost.			Replace-ment value.			Present market value.			Cost of main-ten-ance per annum.			Deprecia-tion per annum.		
		(3)			(4)			(5)			(6)			(7)		
(1)	(2)	RS. A. P.			RS. A. P.			RS. A. P.			RS. A. P.			RS. A. P.		
1 Looms	1·6	15	15	2	23	14	1	14	12	8	1	2	10	2	4	4
2 Reeds	1·7	5	7	2	7	11	8	5	2	6	0	3	11	0	10	11
3 Other accessories	3·3	2	0	3	3	5	0	1	11	4	0	10	3	..	..	..
Total	6·6	23	6	7	34	14	9	21	10	6	2	1	0	2	15	3

On the average, a family owned 1·6 looms. The average initial cost of tools and machinery per family was Rs. 23-6-7, cost of annual maintenance Rs. 2-1-0 and depreciation charges Rs. 2-15-3.

8. *Manufacturing process.*—Except in regard to one or two important respects, the preparatory processes for prayer and coarse mats follow generally those for fine mats. Instead of the elaborate processes of soaking in running water for seven days, removal of pith and splitting of each korai into three or four fine filaments found in fine mat-weaving, the process is much simpler. Some of the newly-purchased korai are kept under water for three days, split into two and dried in the sun and stored. The process of splitting into two is relatively easy, requiring no special dexterity ; in one hour sufficient korai for a day's weaving can be split. The pith is not removed. Dried korai grass sufficient for fifteen days' weaving is usually dyed at a time and kept ready. Dye is used only sparingly. For example, dyestuff costing Re. 0-12-0 can be used for about 24 mats, i.e., at the rate of half anna per mat. Another significant difference is that this is entirely a woman's job ; the male members of these families are completely ignorant of the processes connected with the industry and do not help the women workers. All processes like soaking, splitting, drying, dyeing, weaving, tightening the weft, etc., are done by the women. The mats are sold as they are woven directly or through some agent, to the merchants at Veeravanallur who arrange to bind the edges before selling them.

9. *Production.*—The statement below shows the average annual quantity and value of production of prayer and coarse mats by a unit :—

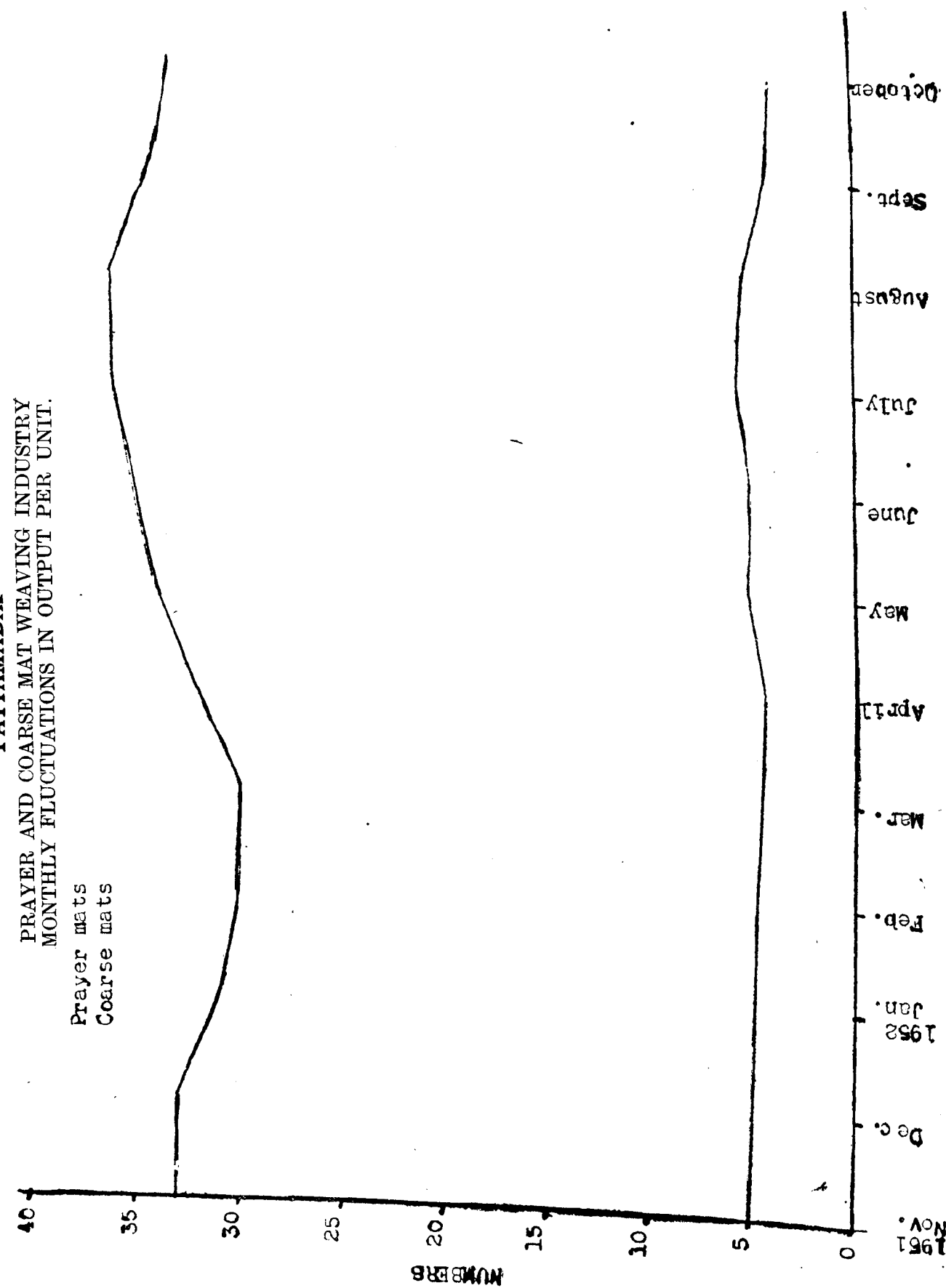
9·1. Quantity and value of production per unit per annum.

<i>Description.</i>	<i>Quantity.</i>	<i>Percentage to total.</i>	<i>Value.</i>	<i>Percentage to total.</i>
(1)	(2)	(3)	(4)	(5)
			RS. A. P.	
I. Prayer mats—				
(a) Short variety	358	77·0	135 2 4	60·2
(b) Long variety	39	8·4	20 15 5	9·4
Total	397	85·4	156 1 9	69·6
II. Coarse mats	68	14·6	68 4 3	30·4
Grand total	465	100·0	224 6 0	100·0

The annual production per family amounted to 358 prayer mats of the short variety valued at Rs. 135, 39 prayer mats of the long variety, valued at Rs. 21 and 68 coarse mats valued at Rs. 68 making up a total of 465 mats valued at Rs. 224. This worked out to 38·7 mats per month valued at Rs. 18-11-2. Annual production per worker was 226 mats valued at Rs. 109-5-8 and per loom 286·6 mats valued at Rs. 138-7-1.

Of the different types of mats, prayer mats formed 85·4 per cent of the quantity and 69·6 per cent of the value while coarse mats formed 14·6 per cent of the quantity and 30·4 per cent of the value. The bulk of production of prayer mats representing 77·0 per cent of the quantity and 60·2 per cent of the value was of the short variety. The average prices of short and long variety of prayer mats were Re. 0-6-0 and Re. 0-9-7 respectively against Re. 1-0-1 for a coarse mat and for all varieties Re. 0-7-9.

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PRAYER AND COARSE MAT WEAVING INDUSTRY
MONTHLY FLUCTUATIONS IN OUTPUT PER UNIT.



10. *Estimated production for the firka.*—On the above basis of production per unit, the total production for the entire firka can be estimated as follows :—

10.1. *Estimated quantity and value of production for the firka per annum.*

Description.	Quantity.	Value.
	NO.	RS.
I. Prayer mats—		
(a) Short variety	109,000	41,490
(b) Long variety	12,000	6,440
Total	121,900	47,930
II. Coarse mats	20,900	21,000
Grand total	142,800	68,930

The total production for the firka would be 143,000 mats valued at Rs 69,000.

11. *Fluctuations in output.*—There is some slight fluctuation in output in the case of prayer mats. As they are generally presented to co-religionists during Ramzan, Bakrid and Meeladi Nabi occurring about June, August and November respectively, the pace of production is stepped up from May and maintained at a slightly higher level till August when it is slowed down. Production is highest during the three months June, July and August. In the case of coarse mats, production is practically uniform throughout the year.

The statement below shows the fluctuations in output in respect of the two varieties :—

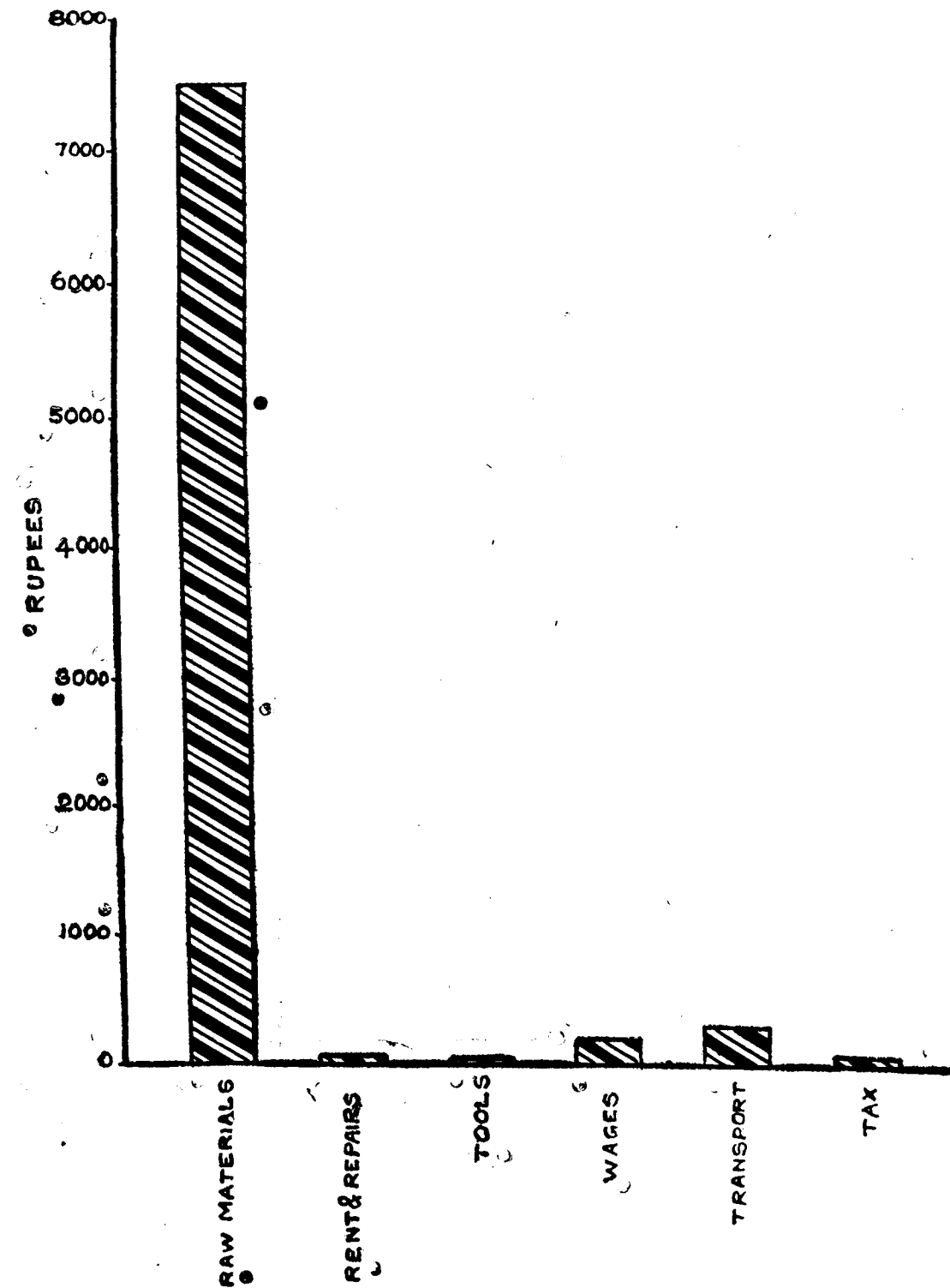
11.1. *Fluctuations in output per unit.*

Variety of mats.	Production per unit during the month of													Total.
	November 1951.	December 1951.	January 1952.	February 1952.	March 1952.	April 1952.	May 1952.	June 1952.	July 1952.	August 1952.	September 1952.	October 1952.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1 Prayer mats (Nos.)	33	33	31	30	30	32	34	35	36	36	34	33		397
2 Coarse mats (Nos.)	5	5	5	5	5	5	6	6	7	7	6	6		68

12. *Labour force and employment potential.*—The average number of workers engaged in the industry per unit was 1.8 members belonging to the family and 0.2 outsiders. Each unit was employed on the average for 274 days in the year. Assuming 295 days to be the full employment level, the families were employed for 92.9 per cent of the full employment level and 75.1 per cent of the days in the year. The average production of mat per worker per working day was 0.6.

13. *Wages.*—There were no workers engaged purely on a wage basis. Usually neighbours help each other in certain processes in times of pressure of work. There are prescribed rates of wages for such items of work. The main item of work for which such mutual assistance is sought is for splitting korai grass. The usual rate is 2½ annas for splitting grass weighing 30 palams after drying. This work involves first soaking the grass, then splitting it into two or three and drying it in the sun. The rate for weaving is 1 anna to

PATTAMADAI
PRAYER AND COARSE MAT WEAVING INDUSTRY
INCOME PER UNIT PER ANNUM



1½ annas for a prayer mat and 3 annas to 6 annas for a coarse mat depending on the size. The merchants at Veeravanallur engage labourers for binding the edges for which they pay 6 pies to 1 anna per prayer mat and from 1½ annas to 2 annas per coarse mat.

Only the employer units paid wages to workers for doing some of the preparatory processes. It is not worthwhile employing outside labour for doing any work as it will be unremunerative and may even result in loss. The average wage paid to outside workers for the sample as a whole worked out to Rs. 4-5-0. The residuary income after meeting all the expenses formed the wages payable to the members of the families engaged in the industry. This amounted to Rs. 37-11-6 per unit on the average.

14. *Transport*.—The rate for transport from Veeravanallur to Pattamadai is 8 annas per bundle of short variety korai. The average amount incurred by a unit was Rs. 9-2-1 per annum.

15. *Cost of production*.—A statement showing the cost of manufacturing prayer and coarse mats is given in Appendix 38. The following statement shows the various items in the average cost of production per industrial unit :—

15.1. *Cost of production per industrial unit per annum.*

Names of different items.	Amount.			Percentage to total.
	RS.	A.	P.	
1 Raw material and fuel—				
(a) Raw material	155	6	5	69.3
(b) Fuel	7	8	9	3.3
2 Rent and repairs—				
(a) Rent paid	0	1	0	2.3
(b) Estimated rent	3	13	0	
(c) Repairs	1	6	0	
3 Tools, machinery and equipment—				
(a) Maintenance	2	1	0	0.9
(b) Depreciation	2	15	3	1.2
4 Wages—				
Paid	4	5	0	1.9
Payable	37	11	6	17.0
5 Transport	9	2	1	4.1
Total cost	224	6	0	100.0
Total sale value	224	6	0	

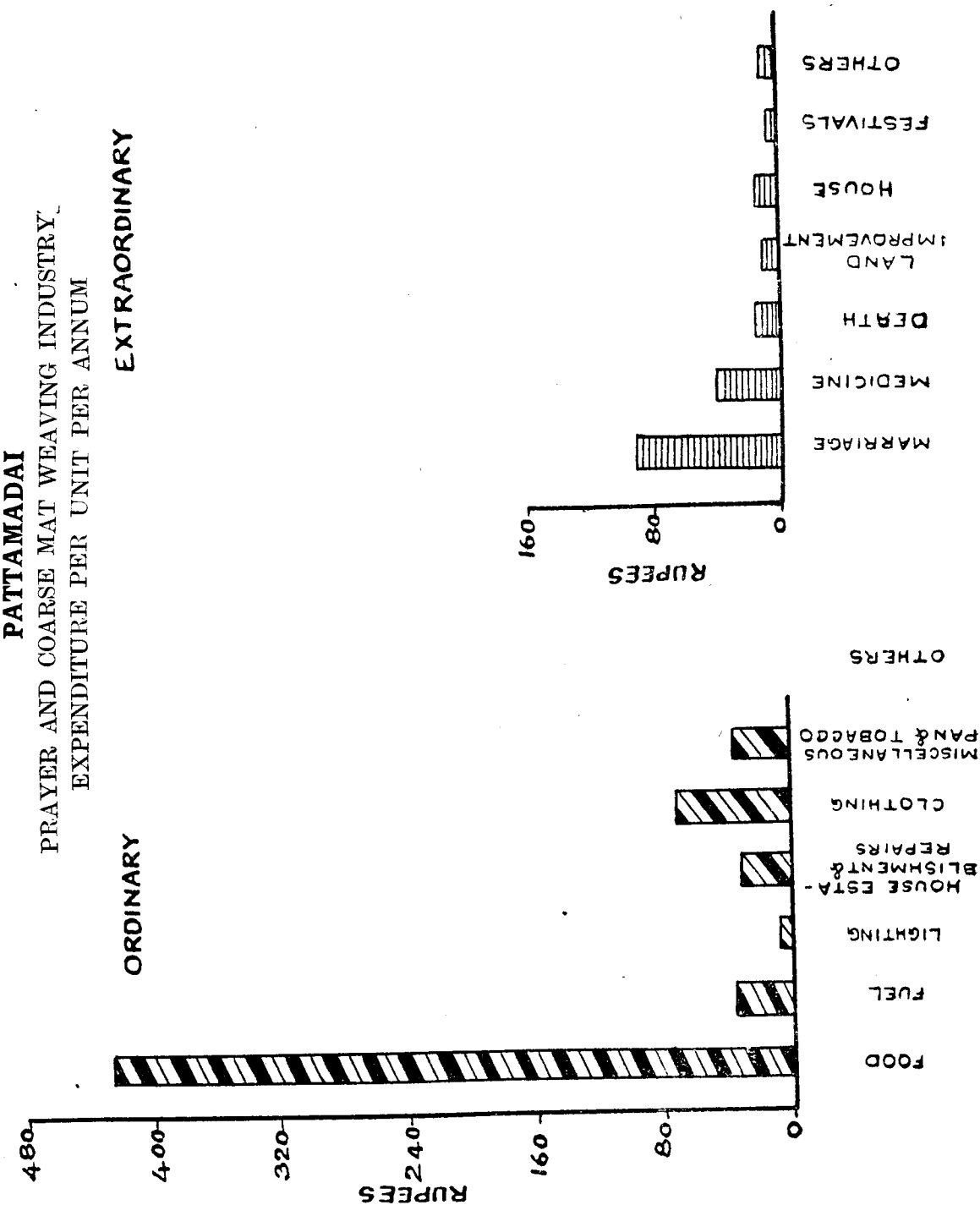
The total cost of production amounted to Rs. 224-6-0 per industrial unit of which raw materials formed 69.3 per cent, fuel 3.3 per cent and wages paid and payable 18.9 per cent. The other items were insignificant. The residuary income from the sale proceeds has been computed as wages payable to the members of the family engaged in the industry.

16. *Capital*.—The average amount of capital invested in the industry was Rs. 156 per industrial unit of which Rs. 133 was on buildings and Rs. 23 on tools and machinery. Working capital was practically nil as the units were supplied with the raw materials by the middle men or purchased their requirements as and when necessary. Provision for rent and depreciation has already been made for the fixed capital in the cost of production.

17. *Income from the industry*.—The average annual income from the industry per unit was Rs. 44-7-9 comprising wages payable, depreciation and rent payable. This worked out to Rs. 24-11-5 per worker and Rs. 10-13-7 per capita. Income per worker per working day was Re. 0-1-5.

PATTAMADAI
PRAYER AND COARSE MAT WEAVING INDUSTRY
EXPENDITURE PER UNIT PER ANNUM

ORDINARY **EXTRAORDINARY**



18. *Marketing and export.*—The principal sales of prayer mats were made at Veeravanallur from where they were exported. The method of financing the industry affected the method of marketing as well. As 60.3 per cent of the families were indebted to the middlemen, most of the production was sold to them. Some of the merchants from Veeravanallur and local merchants also purchased the prayer mats. The disadvantage in local sales was that the price of a mat was less by 6 pies than at Veeravanallur. As most of the mat weavers were Muslim women observing purdah, they had perforce to sell their output locally. Some families however arranged to dispose of their mats at Veeravanallur either through some male members in their own family or with the help of some reliable member among their neighbours. Out of the total value of output of prayer mats, 53.8 per cent was sold by the producers through the local agents, and 46.2 per cent direct to merchants. Of the latter 28.2 per cent was sold locally and 18 per cent at Veeravanallur. In the case of coarse mats, most of them were sold direct to the merchants who visit the place. A few mats were sold to consumers in the neighbouring villages.

19. *Co-operation.*—There is no co-operative society in the village catering to the needs of these mat weavers.

20. *Income.*—The mat industry provided only a subsidiary source of income to these families whose main source was remittances from abroad. Appendix 39 gives the average income of a unit from each source. The average income per family was Rs. 468 and per capita Rs. 114. The contribution of the mat industry to the family income was Rs. 98 per annum or 21.0 per cent of the total. The other important sources of income were remittances from abroad (64.7 per cent), agricultural and other casual labour (12.2 per cent).

21. *Expenditure.*—A statement showing the average annual expenditure incurred by a unit is given in Appendix 40. The average expenditure per family was Rs. 802 and per capita 196 leaving a net deficit of Rs. 334. This was due to the smallness of the remittances from abroad. The ordinary items accounted for 76.9 per cent and extraordinary items 23.1 per cent of the total expenditure. Among the ordinary items food formed 53.5 per cent, clothing 8.9 per cent, fuel and lighting 5.7 per cent, house rent and repairs 4.1 per cent and miscellaneous items 4.6 per cent. Among the extraordinary items, marriage accounted for 11.5 per cent and medicine 5.0 per cent.

22. *Assets.*—In spite of the poor annual income, these families had greater assets than usually found in those of similar circumstances. This is because the present poor income of the families is a temporary phase while they had enjoyed better times a few years back. This is illustrated by the statement in Appendix 41 showing the assets of the families. The average asset of a family was Rs. 2,212. Of the different items, house formed 52.5 per cent, lands 31.4 per cent and jewels 10.6 per cent. The assets of an average family formed nearly five times its average income.

23. *Liabilities.*—A statement showing the liabilities of an average family is given in Appendix 41-A. Of the 58 units selected, all but two units were indebted, the average debt per indebted family being Rs. 628 and that for all families Rs. 607. The average per capita debt was Rs. 15. The debt load was however not much forming only 27.4 per cent of the assets. Of the debts, mortgage formed 6.6 per cent, pro-note 18.2 per cent, hand loans 57.9 per cent and pawn 17.3 per cent. The loans were taken from private money-lenders. The rate of interest varied from 9 per cent to 36 per cent, the average rate being 16.3 per cent.

SUMMARY.

24. The manufacture of prayer mats forms a subsidiary industry to 278 Muslim families in Pattamadai (Melachavel) firka. It is practically a monopoly of the Rowther sect of the Muslims. Unlike the case of fine mat weaving, only the female members

of the families are engaged in the industry while the men are engaged in agriculture and other occupations. The families do not depend on the industry for their livelihood but receive regular remittances from the male members who have migrated to Burma, Ceylon, etc. A family manufactured on the average 465 mats valued at Rs. 224 of which 85.4 per cent were prayer mats and only 14.6 per cent coarse mats. On the above basis, the total production for the firka as a whole has been estimated at 143,000 mats valued at Rs. 69,000. The families secured employment for 274 days in the year or 92.97 per cent of the full employment level of 295 days. The average annual income from the mat weaving industry per unit was only Rs. 44-7-9 or Rs. 25 per worker and Re. 0-1-5 per worker per working day. The capital invested in the industry on tools and equipment was however only a small sum of Rs. 23.

The principal market for these prayer mats is Veeravanallur, a town six miles distant from Pattamadai and hence these mats are known to trade as Veeravanallur mats. The prayer mats are exported to Bombay, Delhi and other North Indian Centres, where it is a practice for rich Muslims to present their co-religionists with them on important festival days like Ramzan, Bakrid and Meeladi Nabi. In view of the poverty of the families and the practice of observing purdah, there are a set of intermediaries between the Veeravanallur merchants and workers who exploit them both in the supply of raw materials and marketing of finished mats. The industry is far from remunerative but is carried on by the Muslim women in the absence of any other alternative occupation.

The average income of a family amounted to Rs. 468 of which the income from mat industry was only Rs. 98 or 21 per cent. Nearly two-thirds of the family income (64.7 per cent) was derived from remittances of the male members of the family living abroad. The families were undergoing financial difficulties as there were restrictions on the export of currency by the foreign countries. Almost all the units were indebted, the average debt per family being Rs. 607. The average asset of a family was Rs. 2,212 or nearly five times its average income.

RECOMMENDATIONS.

Prayer-mat weaving, carried on by Muslim women, is in the nature of a subsidiary industry; it cannot provide the entire means of livelihood but can supplement the earnings of the families engaged in other occupations. It is a virtual monopoly of the Rowther sect of Muslims, as different from the Labbais of the fine mat industry. The industry is carried on only by women at very unremunerative rates and has many of the characteristics of a sweated industry. The grip of the middle men over the workers has to be relaxed before any improvement can be effected. As such, the reorganization of the industry needs to be approached through agencies different from those necessary for fine mat weaving. A separate co-operative society may be established for the weavers of prayer mats. For the society to function efficiently, it should first be necessary to release them from their small debts to the agents of the Veeravanallur merchants. The society should be given a special loan to liquidate the prior debts of its members.

The society should arrange for the distribution of requisite raw materials to its members at their homes. As most of the weavers are Muslim women observing 'purdah', this function of distributing raw materials raises its own problems. At present, in the absence of a suitable organization, the women are forced to obtain korai grass and other requisites through intermediaries at prices much higher than the market rates.

The society should also undertake the marketing of finished mats. There is plenty of scope for the development of the markets as these mats are chiefly distributed by rich Muslims and Muslim associations among their co-religionists for use during prayer. Special steps should be taken by the society to develop the markets for these mats in important Muslim centres besides Delhi and Bombay to which they are now exported.

SUNHEMP MAT WEAVING INDUSTRY.

Introduction.—The sunhemp mat weaving industry is carried on in one of the villages in Pattamadai (Melachaval firka) viz., Gopalasamudram, two miles to the north of the main road from Palayamkottai to Shenkotta. A metalled road connects the village to the main road at about the 7th mile from Palayamkottah. This is one of the cottage industries whose fortunes are on the ebb. For many decades, it was carried on by a community of Telugu Chettians who had settled in about 14 villages in the Tirunelveli district. Now except for a few families in nine villages * all the others have migrated to Tuticorin in search of more remunerative employment. Forty-seven families live in Gopalasamudram in a separate street named after these Chettians. Out of 252 families in the village they formed 14.7 per cent.

2. Three factors may be said to account for the localization of this industry in this village. First is the existence of this particular community of immigrant Telugu Chettians who brought with them this as their traditional handicraft. The cultivation of the plant and its conversion into mat are known only to them. The second factor which is of lesser significance is natural facility. As the cultivation of sunhemp depends on an adequate supply of water after the harvesting of paddy, its cultivation is possible only on lands adjacent to tanks with good storage. The existence of one of the biggest tanks in Tirunelveli district, viz., Piranjeri lake, near this village helped the growth of the industry. The third factor is the continuous demand for these mats. There is also a constant demand for these mats which are used as water hoses in the surrounding villages where lift irrigation is practised on a large scale. They are also used as screens in the veranda of houses of well-to-do people and also in bullock carts. This local demand has helped the survival of the industry.

3. *Organization of the industry.*—All the families engaged in the industry were hereditary craftsmen. The industry was carried on as a family unit in which both men and women co-operated. None of the family units engaged outside labour. Few people worked on a wage basis. There was however one merchant in the village who sometimes employed outside labour and also marketed some of the products of the family units. But generally the family units themselves attended to marketing as well.

4. *Selection of sample.*—Out of 47 families engaged in the industry, 44 were family units and 3 merchant-cum-manufacturers. Of these 10 belonging to the former category and 2 to the latter category were selected for detailed study on the principle of random sampling. The percentage of sample to the total was 25.5.

5. *Composition of the family.*—The average size of the family was 4.5, consisting of 1.8 men, 1.2 women, 0.6 boy and 0.9 girl. Of the total, 2.7 were earners and 1.8 dependents.

6. *Condition of the work place.*—All the ten family units lived in thatched houses and the two merchant-cum-manufacturers in tiled houses of their own. No rent was paid. The entire work was practically carried on in the open. The front veranda of the houses was used for cleaning the fibre and spinning. Except one family which had its loom located in a thatched portion 80 sq.ft. in area, all others had their looms in the open backyards of their houses under the shade of trees. This means that work will have to be suspended when there is rain.

7. *Types of articles manufactured.*—The chief articles manufactured are bags and hoses suitable for lifting water from wells by the method known colloquially as "Kamalai" and hence their name "Kamalai Val Thadukku." They are usually 9 feet long and one foot wide. Other articles of manufacture are veranda screen canvas, bags, easy chair canvas, side canvas for bullock carts, etc.

* The villages are Gopalasamudram, Narasinganallur, Udayarpatti, Muthalanguichi, Ambur, Pallakkal, Pudukudi-Vellakkal, Aykudi and Veerakeralampudur.

8. *Raw materials and fuel—Sunhemp.*—The chief raw material is sunhemp fibre. In Tirunelveli district, sunhemp is cultivated as a catch crop after the harvest of the second paddy crop. In appearance, the plant resembles korai grass and grows to a height of about 6 to 7 feet. Immediately after the harvest of paddy at the end of February, water is let into the fields from the tank and the land is ploughed and levelled. After the sowing of seeds, water is drained off. Weeding is done when the plants are about 15 days old. The plant is watered at least twice a month till it is harvested at the end of the third month. It is susceptible to an attack from a kind of insects when one month old. Unless these insects are removed and destroyed, all the labour and money spent would be a waste. Hence a large number of labourers are employed to remove these insects one by one from each and every stalk. The cultivators are anxious that a suitable insecticide should be found and it should be supplied to them. It would be a great relief to these people if suitable insecticides are discovered and made available to them. The crops are harvested just when they begin to flower at the end of May.

Usually the people belonging to the Chettiar community who are either land owners or take lands on lease for cultivation of paddy, grow sunhemp after the paddy harvest is over. It will be grown only in as much area as would yield sufficient fibre for their family needs. If a man takes land on lease for cultivation of paddy, it does not automatically entitle him to grow sunhemp but a separate lease amount has to be paid for. A man can also lease land separately for the cultivation of sunhemp without cultivating paddy. The additional lease amount ranges from Rs. 37-8-0 to 62-8-0 per acre according to the quality of the land. Appendix 42 gives the cost of cultivating an acre of land with sunhemp. The total cost of cultivation amounts to Rs. 239-8-0 against which the value of yield is Rs. 256-4-0 resulting in a profit of Rs. 16-12-0 per acre. The major items in the cost of cultivation are lease amount, irrigation seeds, insect removal and weeding which together form 75·2 per cent of the total. It will be seen that the cost of cultivation is greater than the yield if the sunhemp is harvested for the fibre without waiting for the plants to yield seeds. Only when the plants are allowed to stand for a longer period and harvested with ripened seeds is there some surplus. Actually, there is no incentive for these people to grow sunhemp but as it is their hereditary occupation and as most of the work is done by the members themselves, its cultivation is continued. Of late, the Agricultural Department are encouraging the people to grow sunhemp for manurial purposes, but few people outside these families have taken to it in the village. The other raw materials are rice used for sizing and coconut oil. The statement below shows the average consumption by a family :—

8.1. *Raw materials per unit per annum.*

Description.	Quantity bought.	Grown in their own fields.	Total.	Price per unit.	Price of items bought.	Price of other items.	Total value.	Percentage to total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
1 Sunhemp fibre.	10·83 (thulams)	19·42 (thulams)	30·3 (thulams)	3 14 5	42 8 0	87 5 0	129 13 0	87·8
2 Rice ..	..	30·25 (seers)	30·3 (seers)	0 8 0	15 1 8	..	15 1 8	10·3
3 Coconut oil ..	0·98 (viss)	..	0·98 (viss)	2 14 5	2 14 4	..	2 14 4	1·9
Average for all units.	..	..	..	..	60 8 0	87 5 0	147 13 0	100·0

(1 thulam = 14·2857 lb.) (1½ seers = 1 M.M. = 3·391 lb.) (1 viss = 3·12 lb.)

The average cost of raw materials per family was Rs. 147-13-0 of which sunhemp fibre formed 87·7 per cent, rice 10·3 per cent and coconut oil 1·9 per cent. Nearly two-thirds of the

quantity of sunhemp fibre consumed was grown by the family itself while one-third was bought. Each family consumed on the average 30·3 thulams (432·9 lb.) of sunhemp fibre valued at Rs. 129-13-0. The average consumption of rice per family for preparation of "Kanji" or sizing material was 30·25 seers (68·5 lb.) valued at Rs. 15-1-8 and that of coconut oil a little less than a viss valued at Rs. 2-14-4.

Fuel is required for the preparation of "Kanji" but as this was only a by-product of the cooked rice and there was no separate cooking for preparing it, no separate fuel cost was debited to the account of the industry.

Availability of raw material.—The weavers complain that they do not get necessary facilities for growing sunhemp. When the fishing rights in the tank are sold in auction, the lessees drain away the tank. In view of the manurial value of sunhemp, its cultivation should be encouraged by providing adequate water facilities.

9. *Tools, machinery and equipment.*—The tools and machinery are of primitive types. The important items are looms and weaving planks. The loom is of the same type as for a coarse korai mat except that it is of a simpler pattern. Planks made of tamarind wood are used to press the weft yarn to the previously woven length. Three such planks are required by each family and they vary in width ranging from 3 inches to 9 inches. The statement below shows the average number of tools owned by each family, their cost, maintenance and depreciation charges :—

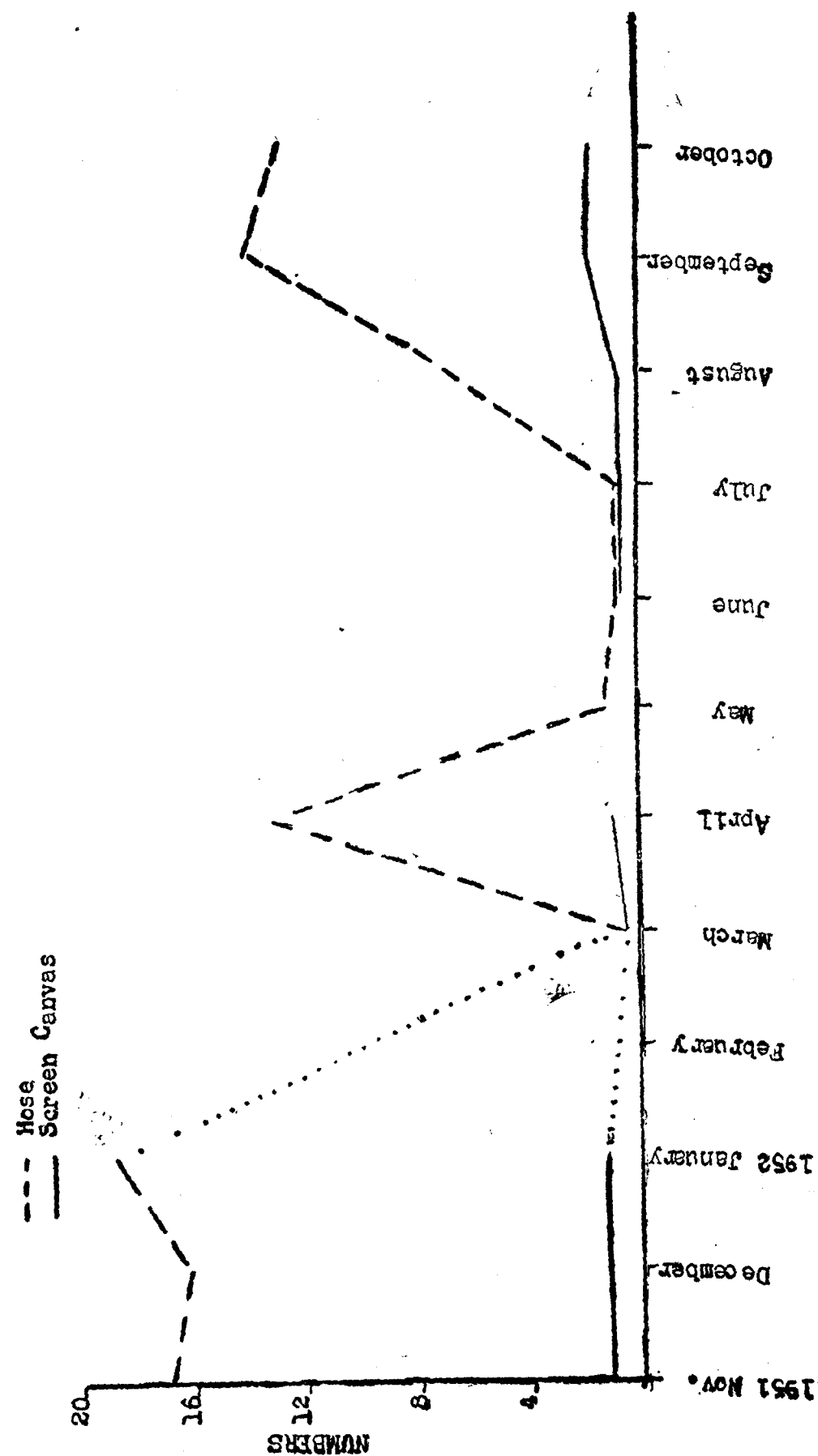
9.1. *Tools and implements per unit.*

Description.	Number.	Initial cost.	Replacement value.	Present value.	Annual maintenance charges.	Depreciation.
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Looms ..	1	4 8 0	6 1 8	4 8 0	1 11 3	0 14 4
2 Weaving Planks ("Nesavu-Palakai").	3	5 9 8	6 14 4	5 8 0	1 1 8	..
Average for all units ..		10 1 8	13 0 0	10 0 0	2 12 11	0 14 4

Each family owned on the average one loom and three weaving planks, their initial cost being Rs. 10-1-8, the annual maintenance charges Rs. 2-12-11 and depreciation charges Re. 0-14-4. It is with such simple and inexpensive tools that the cottage industrial worker plies his craft and produces some of the most useful articles to the local people. There have been no changes so far in the type of tools used or in the technique of weaving.

10. *Manufacturing processes.*—The weaving of sunhemp fibre mats involves the following processes. After harvesting, the stems are first dried for about four days, then brought home tied in bundles, each bundle weighing a head load or roughly 112 lb. They are again dried in the sun for a day and beaten on stones to remove the leaves and seeds, if any sticking to the stems. They are then stored outside the houses in the open. Fibre is extracted during the months of June, July and August. Each big bundle is divided into two or three smaller bundles and soaked for five days in a small tank in the village which is exclusively allotted for their use. First the soaked stalks are beaten on the water five to six times. The fibres which stick to the stalk are washed to remove dirt. They are then brought home and dried in the sun, each bundle being kept vertically in a conical shape. After drying, the fibres are separated from the stalks by hand. The stalks are used as fuel. For most of the families these waste stalks provide sufficient fuel to meet their requirements for nine months in a year. These waste stalks are also used as roofing material for thatched houses, once in three years. The fibre is hand spun into yarn by the women. No charka is used. The possibilities of using charkas have not been investigated as the families are content to follow

PATTAMADAI
SUNHEMP MAT WEAVING INDUSTRY
MONTHLY FLUCTUATIONS IN PRODUCTION PER UNIT



in the footsteps of their ancestors. The yarn is double twisted to form the warp. A somewhat inferior kind of sunhemp fibre yarn is used as weft. For weaving a water hose, 120 warp threads are taken to the required length of 9 feet; they are drenched in water, beaten by a wooden hammer on a stone, then washed in water and the water removed. The warp is then tied to two pegs on opposite sides and "Kanjee" from boiled rice is smeared over it. The preparation of warp is a tedious process taking up nearly 2½ hours as against 4 hours for weaving a mat, 9 feet in length. It would be useful to investigate whether warping cannot be done by a simple machine. After weaving, the mat is stretched to its full length by being tied to two separate pegs or poles. After some more sizing to give greater strength and better finish, it is dried in the sun for about six hours. Both men and women participate in all the preliminary processes except spinning and weaving; while the former is exclusively reserved for women, the latter is the prerogative of men.

11. *Production.*—The following statement shows the average quantity and value of production by a unit :—

11.1. Production of sunhemp goods per unit per annum.

Description.	Quantity.	Percentage to total.	Value.		Percentage to total.
	NUMBERS.		RS.	A. P.	
1 Water lift hoses	102.7	90.7	204	8 0	81.2
2 Screen canvas	11.0	9.3	47	5 0	18.8
Average for all units ..	113.7	100.0	251	13 0	100.0

The average production per family was 102.7 water lift hoses and 11 screen canvases valued at Rs. 251-13-0. Of the total water lift hose formed 90.7 per cent of the quantity and 81.2 per cent of the value while the balance was contributed by screen canvas. It was observed that the family units concentrated on water lift hoses while the manufacturer-cum-merchant units on screen canvas. The average output per family unit was 97.2 water lift hoses and 1.7 screen canvases valued at Rs. 186-11-0 as against 130 hoses and 57.5 screen canvases valued at Rs. 385 per manufacturer-cum-merchant unit.

12. *Estimated production for the firka.*—On the basis of average production per unit the production for the firka as a whole may be estimated at about 5,300 articles valued Rs. 12,000 nearly as shown below :—

12.1. Estimated production for the firka per annum.

Description.	Quantity.	Value.	
	NUMBER.	RS.	A. P.
1 Water lift hoses	4,826.9	9,611	8 0
2 Screen canvas	517.0	2,223	0 0
Total ..	5,343.9	11,834	8 0

13. *Fluctuations in production.*—The following statement shows the fluctuations in production per average unit :—

13.1. Fluctuations in production per unit.

Description.	1951.		1952.										Total.
	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	
1 Hose	18.8	16.2	18.8	..	0.7	13.2	1.2	0.8	0.8	6.9	14.3	13.0	102.7
2 Screen canvas	1.2	1.3	1.3	..	0.6	1.0	..	0.6	0.7	0.8	1.8	1.7	11.0
Total ..	18.0	17.5	20.1	..	1.3	14.2	1.2	1.4	1.5	7.7	16.1	14.7	113.7

The main season for the production of the sunhemp goods was the six-month period between August and January when the production amounted to 82.7 per cent of the total. November, December and January were the three months when production was at its highest and this was due to the fact that there was no agricultural work during these months. The cultivation of sunhemp and the working of the cottage industry has been happily blended to fit in with the main paddy cultivation in the area so as to provide employment during the slack season in agriculture.

14. *Labour force.*—All the women were engaged in the industry while out of 22 men in the sample, four were dependents, one was employed in hotel keeping and the rest (17) or 77.3 per cent in the industry. All the children were dependents. The average number of workers per family engaged in the industry was 1.4 men, and 1.2 women. One of the merchant-cum-manufacturers engaged two workers for wages for spinning the fibre into yarn. It would take 3 days and 5 hours nearly for the manufacture of one hose and 5 days and 5 hours for the manufacture of a screen canvas—vide Appendix 43. On the basis of output per unit, an average family was employed for 157.6 days per annum in the industry.

15. *Wages.*—With the exception of one of the merchant-cum-manufacturer who engaged two women for spinning the fibre on a wage basis, all the other units were dependent only on family labour. The two outsiders together were paid Rs. 88, the average wage paid per unit being Rs. 7-3-3. On the basis of wage of Re. 0-11-3 for a hose and Re. 1-0-0 for screen canvas, the total wage payable for a unit would be Rs. 79-8-0. Deducting the average amount paid as wage to outsiders, the net wage payable to family members will be Rs. 72-3-0.

16. *Transport.*—No transport charges were incurred by any of the families.

17. *Cost of production.*—A statement showing the cost of production of a hose and a screen canvas is given in Appendix 44.

The cost of production of a hose amounted to Rs. 1-11-3 while the selling price was Rs. 1-14-7 leaving a profit of Re. 0-3-4 while the corresponding figures for a screen canvas were Rs. 2-11-3, Rs. 3 and Re. 0-4-8 respectively. The following statement shows the cost of production incurred by a unit :—

17.1. *Various items of cost of production per industrial unit per annum.*

Description.	Amount.		Percentage to total.
	RS.	A. P.	
1 Raw materials	147	13 0	62.2
2 Rent and repairs	..	..	..
3 Tools, machinery and equipment—			
(a) Maintenance charges	2	12 11	0.2
(b) Depreciation	0	14 4	0.1
Wages—			
(a) Paid	7	3 3	3.1
(b) Payable	72	3 0	34.4
Total cost	230	14 6	100.0
Total sale value	251	13 0	
Profit	20	14 6	

Raw material constituted the major item forming 62.2 per cent of the total cost followed by wages 37.5 per cent. There was no question of payment of rent as all the families carried on their work mostly in the open. Maintenance and depreciation charges were insignificant. The profit amounted to Rs. 20-14-6 or 9 per cent of the cost of production

18. *Capital.*—The families did not require any working capital to carry on the industry as the raw materials came mostly from their own fields and the family members constituted the labour force.

19. *Income from the industry.*—The average income from the industry per unit was Rs. 94 and this comprised the wages payable, profit and depreciation charges. The average income per adult worker per annum was Rs. 36-2-6 and per adult worker per working day Re. 0-3-8.

20. *Marketing.*—The usual method of marketing was direct sale to consumers either in the village or in the neighbouring villages. Sometimes consumers placed orders direct with them. More often, the producers hawked the goods or sold to the local merchants. A few merchants from Tuticorin and Alleppey also visited the village and purchased the product. The statement below shows the different methods of marketing :—

20.1. *Marketing of sunhemp products per unit per annum.*

Description.	Sold direct.		Sold through the merchants.		Total.		Percentage to total.
	RS.	A. P.	RS.	A. P.	RS.	A. P.	
1 Local	70	10 0	79	7 0	150	1 0	59.7
2 Tirunelveli district	71	10 0	3	3 0	74	13 0	29.7
3 Other parts of the State	26	12 0	0	3 0	26	15 0	10.6
Total	169	0 0	82	13 0	251	13 0	100.0

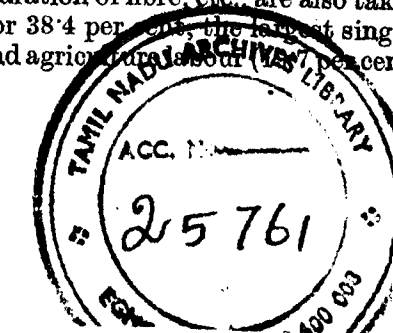
Out of the total sales, 59.7 per cent was sold locally, 29.7 per cent within the district and 10.6 per cent in other parts of the State. Direct sales to consumers formed 67.1 per cent and those through merchants 32.9 per cent. There is much competition between these sunhemp hoses and leather hoses. The latter are being preferred in view of their durability. Similarly there is competition from jute fabrics for sunhemp screen canvases. The demand for screen canvas for bullock carts and for household use shows a declining trend.

21. *Income.*—The statement below shows the average income of a family and its sources :—

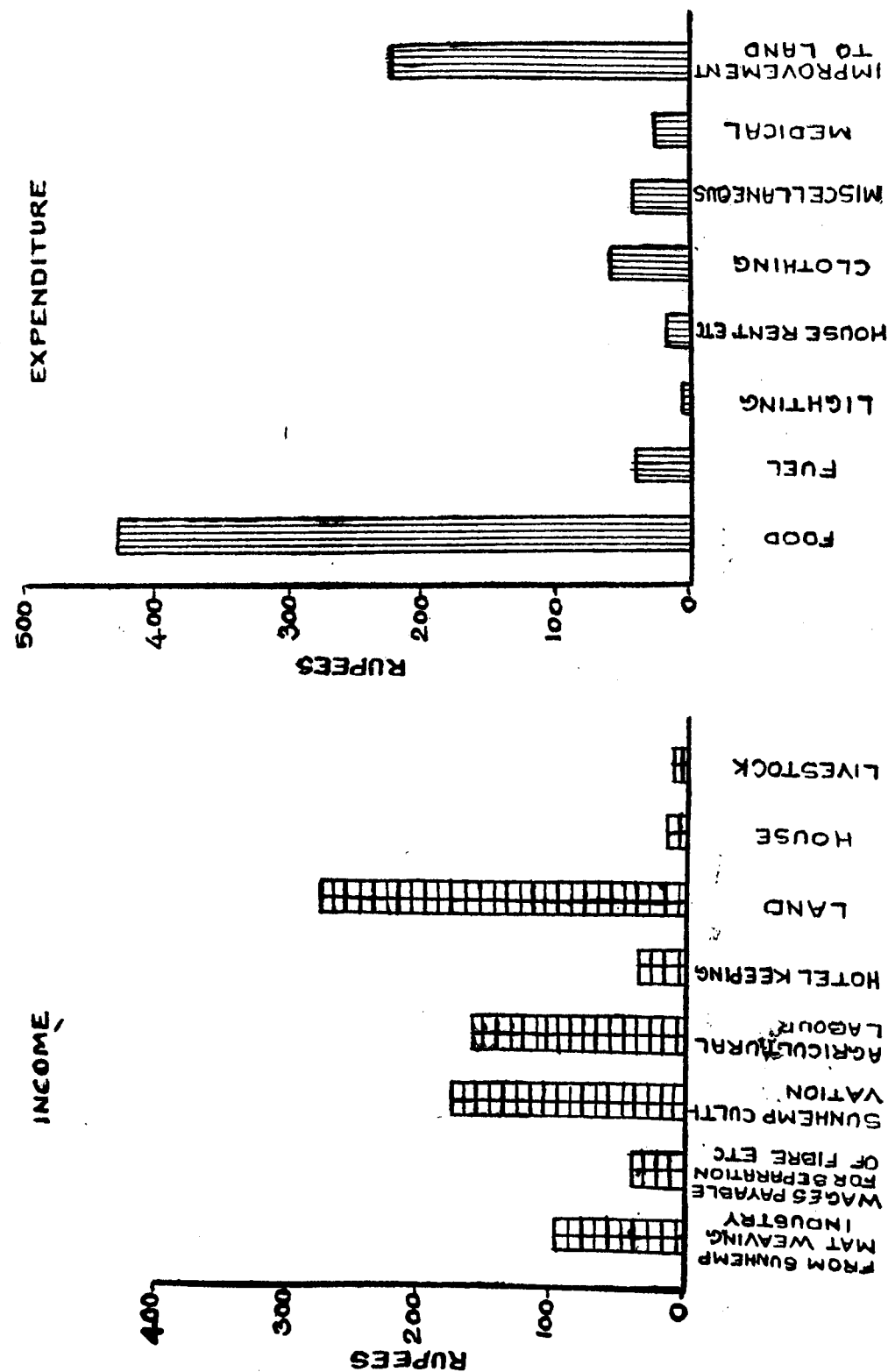
21.1. *Income per unit per annum.*

Description.	Amount.		Percentage to total.
	RS.	A. P.	
1 From sunhemp mat weaving industry	94	0 0	11.7
2 Wages payable for preparation of fibre, etc.	40	1 0	5.0
3 Sunhemp cultivation	174	5 0	21.7
4 Agricultural labour	158	6 0	19.7
5 Hotel keeping	36	11 0	4.6
6 Land	273	6 0	34.0
7 House	12	11 0	1.6
8 Livestock	13	11 0	1.7
Total	803	3 0	100.0

The average income of a family amounted to Rs. 803-3-0 of which income from sunhemp weaving amounted to Rs. 94 or Rs. 20-14-5 per capita. The income from sunhemp mat weaving formed 11.7 per cent of the total. If the income from sunhemp cultivation and wages payable for such processes as preparation of fibre, etc., are also taken into account, the total income amounted to Rs. 308-6-0 or 38.4 per cent, the largest single source of income. Other sources were land (34.0 per cent) and agricultural labour (19.7 per cent).



PATTAMADAI
SUNHEMP MAT WEAVING INDUSTRY
INCOME AND EXPENDITURE PER UNIT PER ANNUM



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22. *Expenditure.*—A statement showing the average expenditure of family is given in Appendix 45. The average expenditure of a unit was Rs. 850 against an average income of nearly Rs. 803 leaving a deficit of Rs. 47. Of the several items, expenditure on food was 50·8 per cent, fuel and lighting 5·5 per cent, house rent (estimated) and repairs 2·1 per cent, clothing 7·5 per cent and miscellaneous items 4·6 per cent. Among extraordinary items improvement to land was significant (26·4 per cent).

23. *Assets.*—Appendix 46 gives the average asset per family. The main items of asset were land, jewels and houses. The average asset of a family was Rs. 2,305 and per capita Rs. 512.

24. *Liabilities.*—Out of the 12 sample units surveyed, 8 or two-thirds were indebted. The average debt per indebted family was Rs. 350 and for all families Rs. 233-5-0. The average debt formed 29·0 per cent of the average income and 10·1 per cent of the asset. The main source of credit was the private money-lender. Out of the total debt, 96·4 per cent was for domestic purpose. The rate of interest varied from 6 per cent to 12 per cent. There was no public institution providing credit facilities for the industry.

SUMMARY.

25. The sunhemp mat weaving industry is one of the "dying" industries in the firka. The industry is carried on by 47 families belonging to a particular community of Telugu Chettiars as a hereditary occupation. It provides these families with additional work for 158 days which helps them to supplement their income. The average income per family from the mat weaving industry was Rs. 94 or Rs. 36-2-6 per adult worker per annum and Re. 0-3-8 per adult worker per working day. Including the income from cultivation of sunhemp, it amounted to Rs. 308-6-0 or 38·4 per cent of the total family income. The demand for the products is not keen especially as there is competition from leather hoses and jute canvas. One of the prohibitive items in the cost of cultivation is rent for land. In view of the manurial value of sunhemp cultivation to the owners of the lands, there should be possibilities of reducing the rates of rent if the owners are led to appreciate the indirect benefit. The workers were also handicapped in its cultivation for want of water facilities and insecticides. The industry can hope for a better future only if the demand for the product among the local people is encouraged. The export markets via Alleppey and Tuticorin can also be developed to some extent by paying closer attention to its needs.

RECOMMENDATION.

The industry which is confined to a particular community of Telugu Chettiars is not a prosperous one as it has to face competition from leather hoses and jute canvas. It is likely to die out unless it is actively supported by Government. Most of the mat weavers take land on lease and the rent demanded for this catch crop by the landlords is prohibitive adding enormously to the cost of raw materials. One of the methods of helping it is to encourage the cultivation of sunhemp by other ryots so that the cottage industry workers can get their raw material, sunhemp stalks at low prices. The Agricultural Department can help in this direction in view of the manurial value of sunhemp. Facilities should also be given to the present cultivators and others to raise sunhemp by provision of adequate water. The export markets for sunhemp fibre via Alleppey and Tuticorin of which little information is available locally should be studied and steps taken to extend it.

The Agricultural Department should arrange for an investigation into the insect attack on these plants and find out how best the crop can be made resistant to insect attack. If this insect pest is studied and effective insecticides discovered, it should be made available to the growers as they are ignorant of these now.

CHAPTER III.

PALMYRA PRODUCTS INDUSTRIES IN RAMANATHAPURAM AREA. *

Introduction.—Ramanathapuram area was selected for a survey of the palmyra products industries. The survey was not confined to Rameswaram Firka but extended over an area lying to the east of the road running from Kilakarai to Devipatnam through Ramanathapuram town. It covers 29 villages out of 39 in the taluk. The palmyra palm grows wild in the district and forms a perennial source of wealth and employment to the people. Like the coconut palm, the palmyra is a "*Kalpa Vriksha*," all its parts from the root to the fruit being useful to man. Roots and fruits afford food while its timber is used for building purposes. Its leaves are used in a variety of ways for roofing, for manufacture of umbrellas, fancy products, toys, mats, baskets, containers for drawing water from wells, for fencing garden and such other purposes. The dry leaves, the stem and the bark are used also as fuel; from the juice of the palm, palm gur is manufactured. "*Neera*," as the sweet juice is called, is a delicious and invigorating drink. Many industries have sprung up utilizing its products. The present survey was confined to the following four major industries: (1) Manufacture of rough mats, (2) manufacture of palmyra leaf fancy products, (3) manufacture of fibre and (4) manufacture of palm gur. A map of the area showing the villages where these industries are carried on is given on page 104.

2. *Location of the industries.*—A statement showing the villages in the area, the number of families engaged in the palmyra products industries and in other cottage industries is given in Appendix 47. Out of 29 villages in the area the industries are carried on in 27 villages. Out of 2,812 families engaged in cottage industries, 2,286 families or 81.3 per cent are found in the cottage industries connected with palmyra products.

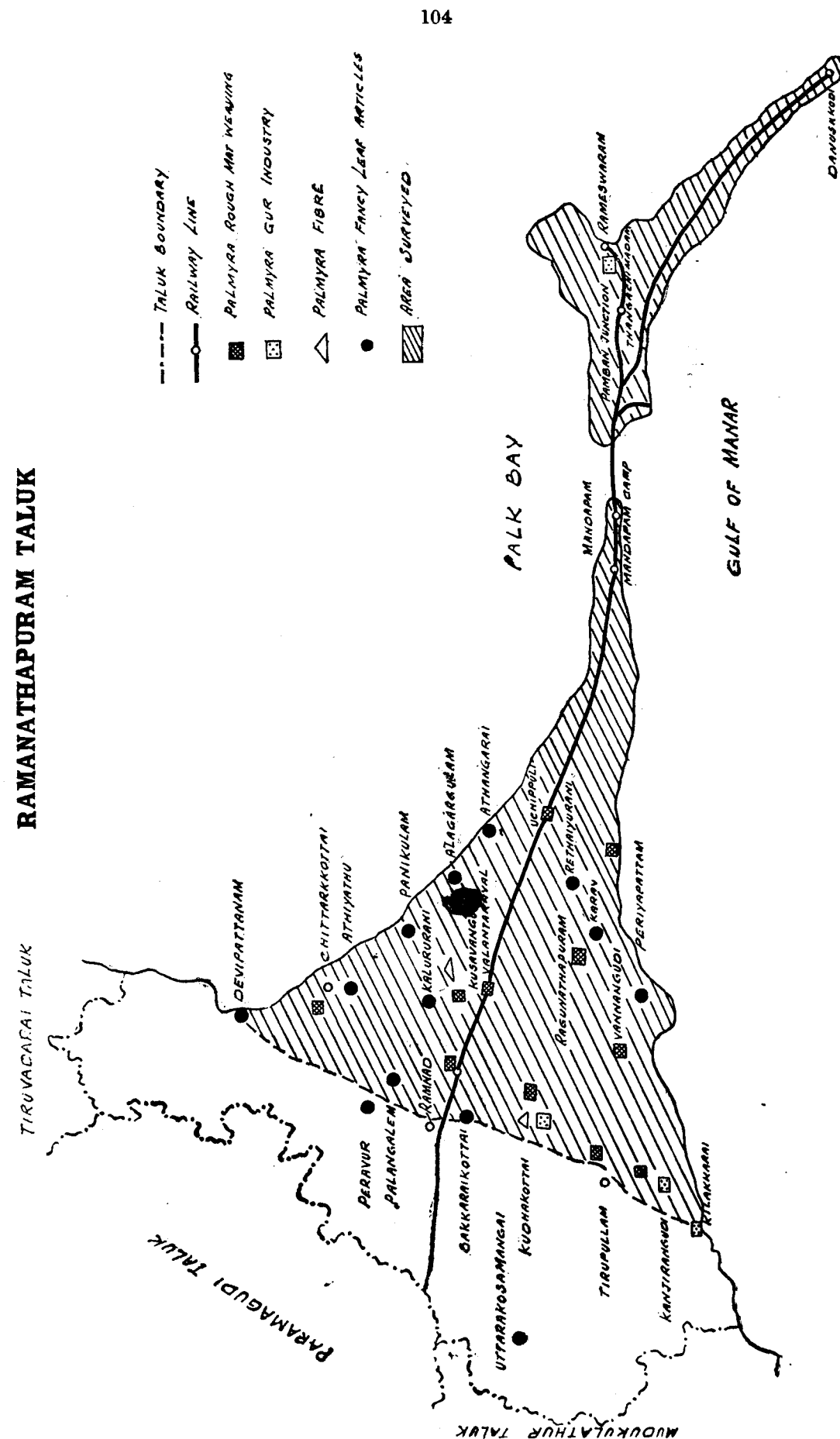
3. *Causes for the localization of the industry.*—The chief reasons for the development of these industries are the abundant supply of raw materials and their cheapness. Ramanathapuram district ranks third among the districts of the State growing palmyra palm—(vide Appendix 48). The palmyra grows almost wild in the district. Other factors favouring the growth of these industries are the following:—

- (1) Due to scanty and precarious rainfall, agriculture is not remunerative and there is a large number of unemployed and under-employed among the agricultural population;
- (2) the industries can be learnt both by young and old without much difficulty and form hereditary occupations of certain communities;
- (3) the simple tools and implements required are within the reach of even the poorest families;
- (4) very little capital is required for purchase of raw materials;
- (5) some of these industries like manufacture of mats, fancy products, etc., are ideal cottage industries in as much as they can be taken up or left off as and when convenient; and
- (6) there is a constant and continuous demand for these products both within the district and from outside.

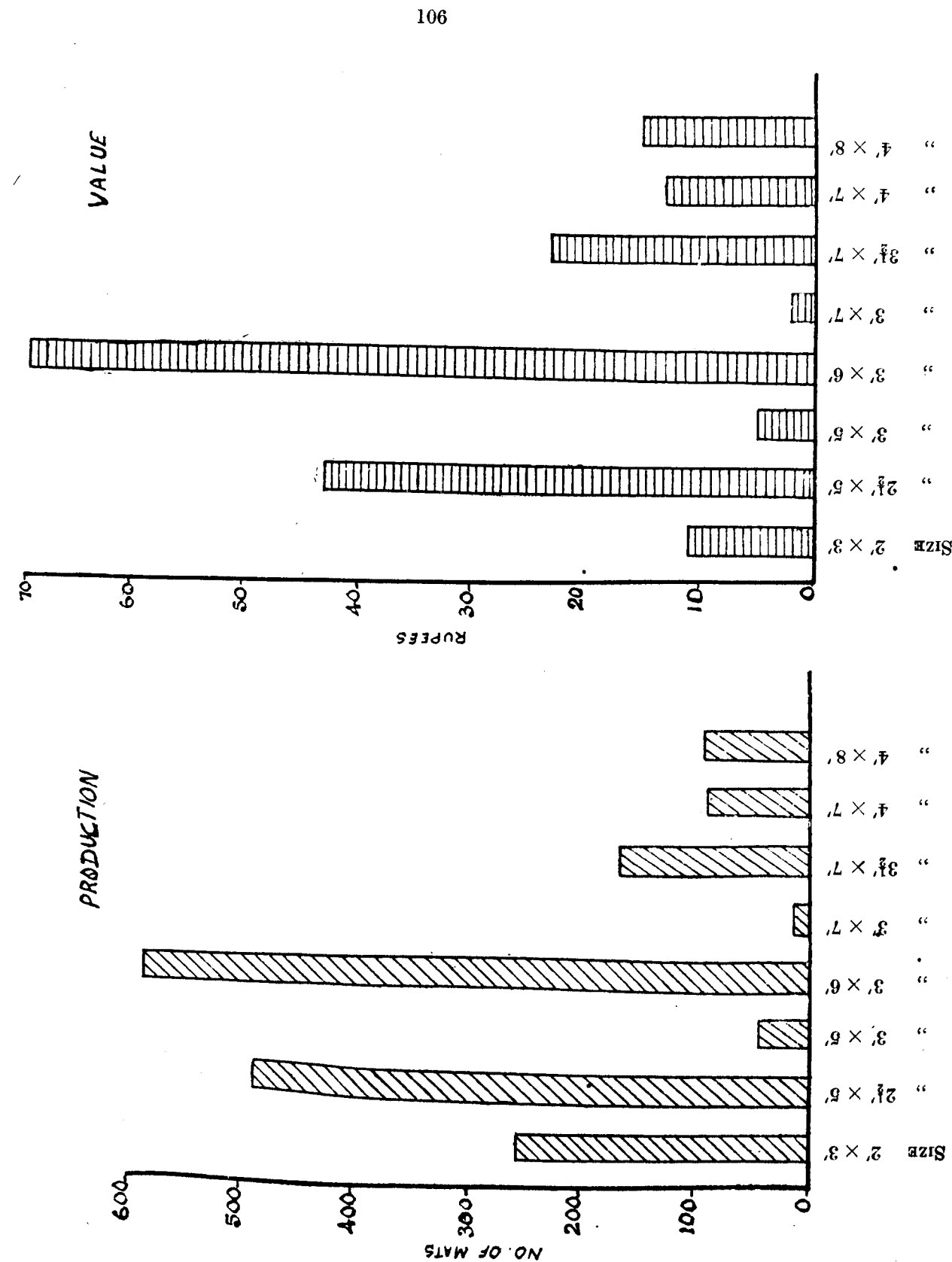
Of the four industries of palmyra products surveyed, the commonest and the easiest is the manufacture of rough mats which are required in large quantities mainly for packing purposes. Being cheaper than jute bags, they are usually preferred to the latter.

The palmyra leaf fancy products consist of both utility articles in constant demand such as winnows, sieves, baskets, etc., and what are termed "artistic utilities" such as hats, purses, fans, handbags, toys, etc., the demand for which received a fillip during the

* The survey extended over an area lying to the east of the road running from Kilakarai to Devipatnam through Ramanathapuram town.



RAMANATHAPURAM AREA
ROUGH MATS INDUSTRY
PRODUCTION OF ROUGH MATS PER UNIT PER ANNUM



15. *Fluctuations in production.*—A statement showing the month-war fluctuations in production is given in Appendix 24. Production attained its peak level in February 1952 and the position was maintained till June when it began to show a downward trend. The busy season for production of lead wares generally coincides with that for brass wares, the largest demand being immediately after the harvest. There is no special demand for these wares during the marriage season and hence the level of production is more uniform than in the case of brass wares.

16. *Labour force and employment potential.*—The following table shows the number of persons employed in the different units :—

16.1. *Average number of persons employed per day.*

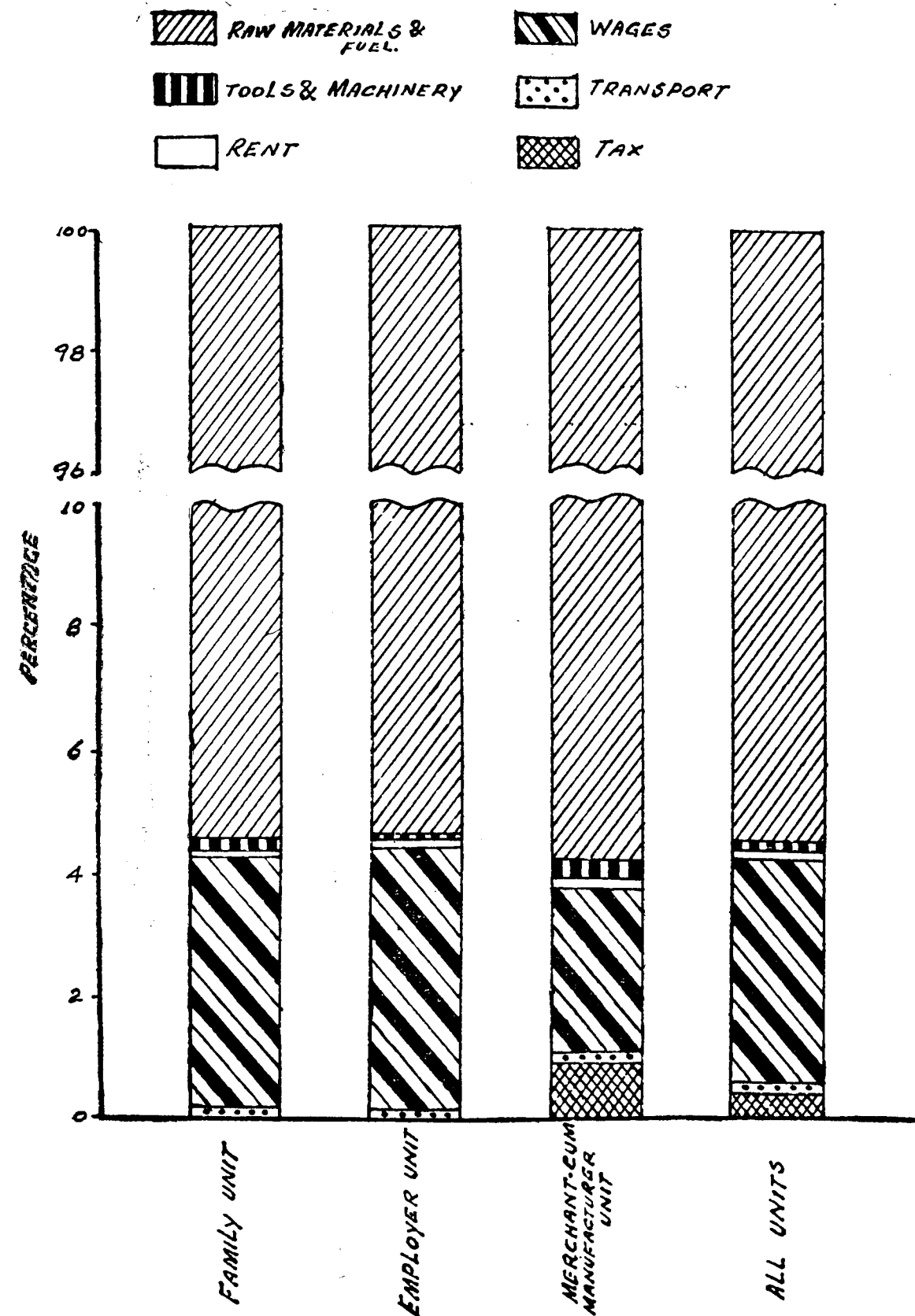
Type of unit.	Number of days employed.	Own labour.	Outside labour.	Total.
Family unit ..	210	1.5	Nil.	1.5
Employer unit ..	240	1.3	3.5	4.8
Merchant-cum-manufacturer unit ..	295	1.5	4.0	5.5
Average for all units ..	246.3	1.4	3.7	4.1

It will be seen from the above table that the merchant-cum-manufacturer unit engages the largest number of persons. Assuming 295 days in a year to be the maximum available for employment, the merchant-cum-manufacturer units were fully employed, the family units for 70.1 per cent and the employer units for 80.1 per cent of the full employment level.

17. *Wages.*—Wages are not paid by processes as a worker has to attend to all the processes from melting the lead to the polishing of the finished vessel himself. Wages are paid on piece rate basis which ranges from four to five annas per seer of finished articles irrespective of its size and design. A family unit received on the average Rs. 525 as wage or Rs. 350 per worker and the employer unit Rs. 2,310 of which Rs. 1,343-8-0 was retained by it and Rs. 966-8-0 paid to outside labour. As each unit employed on the average 3.5 outside workers, the average wage received by an outside worker was Rs. 276-2-0 which worked out to Re. 1-2-4 per working day. The average wage paid by a merchant-cum-manufacturer unit was Rs. 1,056-8-0 and the wage received by each of the four outside workers was Rs. 264-2-0 and the average wage earned by an outside worker per working day in this type of unit was Re. 0-14-4. The family units and employer units had to meet certain incidental expenses out of the wages received and their residuary amount constituted their wage and charges for supervision.

18. *Transport.*—The family units incurred an average expenditure of Rs. 14 on transport of raw materials and finished goods, the employer units Rs. 72-2-0 and the merchant-cum-manufacturer units Rs. 114. The average for all units was Rs. 68-1-0. The cost of transport per 100 seers of output for each of the three types of units was Re. 0-10-10, Re. 0-12-7 and Re. 0-13-10 respectively and for all units Re. 0-13-1.

KUMBAKONAM FIRKA
LEAD WARE INDUSTRY
COMPONENTS OF COST OF PRODUCTION OF LEAD WARES
PER UNIT PER ANNUM



19. *Cost of production.*—The following statement shows the cost of production per unit :—

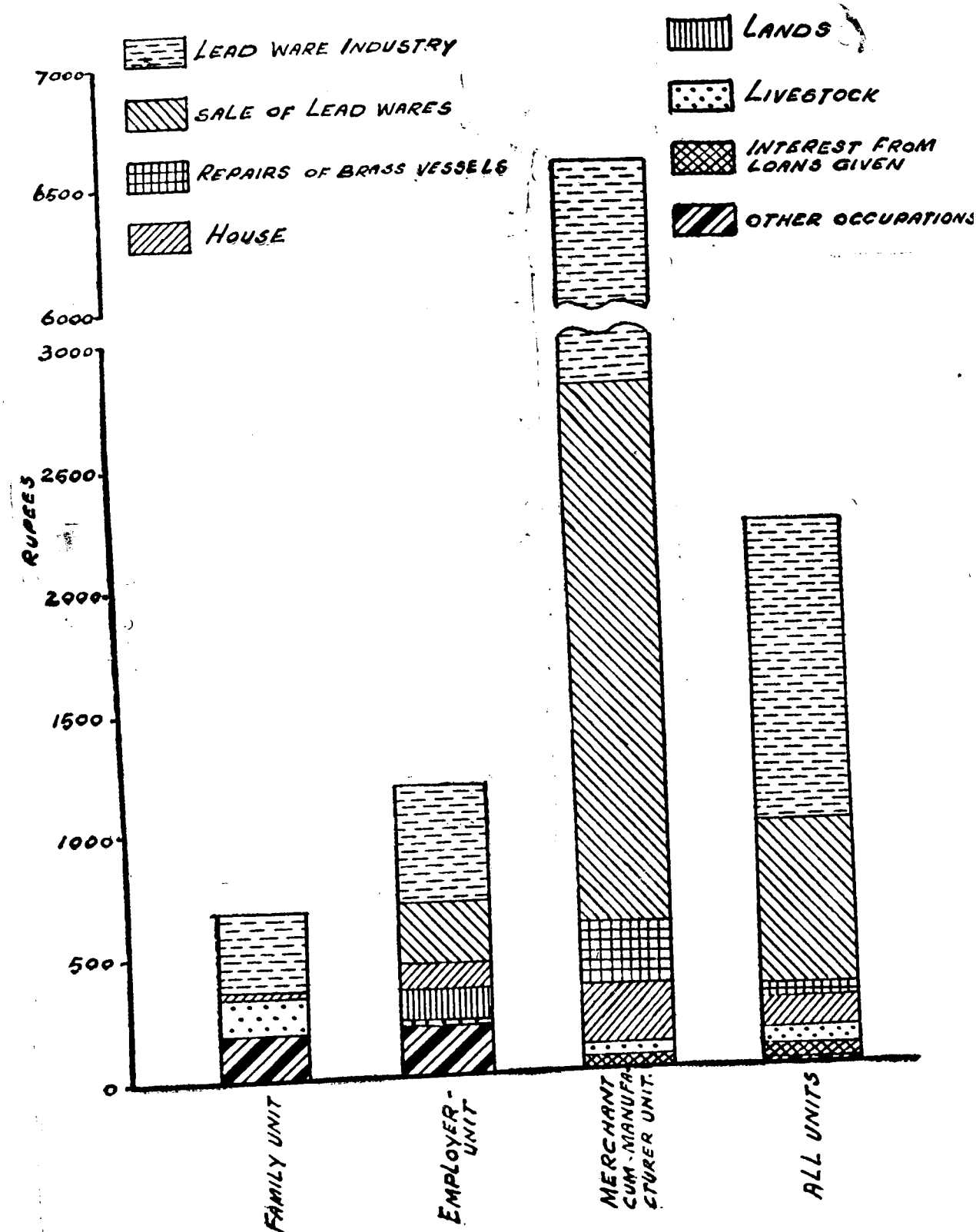
19-1. *Components of cost of production and profit realized per unit per annum.*

	Family unit.	Percentage to total.	Employer unit.	Percentage to total.
	(1)	(2)	(3)	(4)
	RS. A. P.		RS. A. P.	
I. Raw materials and fuel—				
(a) Raw materials	6,906 8 0	92.9	30,542 0 0	93.0
(b) Fuel	19 1 6	0.3	88 2 0	0.3
(c) Wastage	163 12 0	2.2	690 10 0	2.1
II. Tools—				
(a) Maintenance charges	15 0 0	0.2	23 8 0	0.1
(b) Depreciation	..	..	14 15 11	..
III. Rent—				
(a) Rent paid	6 0 0	0.1	15 0 0	..
(b) Estimated rent	..	..	21 0 0	0.1
(c) Repairs and maintenance charges	..	..	8 4 0	..
IV. Wages—				
(a) Paid	307 0 0	4.1	966 8 0	2.9
(b) Payable	14 0 0	0.2	424 8 0	1.3
V. Transport	..	..	72 2 0	0.2
VI. Tax	..	..	..	..
Total ..	7,431 5 6	100.0	32,866 9 11	100.0
Total sale value ..	8,563 0 0	..	38,529 0 0	..
Total profits ..	1,131 10 6*	..	5,662 6 1*	..

	Merchant-cum-manufacturer unit.	Percentage to total.	Average for all units.	Percentage to total.
	(5)	(6)	(7)	(8)
	RS. A. P.		RS. A. P.	
I. Raw materials and fuel—				
(a) Raw materials	46,674 8 0	93.3	28,666 6 5	93.1
(b) Fuel	126 0 0	0.3	80 9 4	0.3
(c) Wastage	1,101 12 0	2.2	661 11 0	2.1
II. Tools—				
(a) Maintenance charges	105 0 0	0.2	41 12 0	0.1
(b) Depreciation	39 2 2	0.1	17 4 6	0.1
III. Rent—				
(a) Rent paid	100 0 0	0.2	34 0 0	0.1
(b) Estimated rent	..	..	10 8 0	..
(c) Repairs and maintenance charges	..	..	4 1 10	..
IV. Wages—				
(a) Paid	1,056 8 0	2.1	747 6 0	2.4
(b) Payable	251 0 0	0.5	351 12 0	1.2
(c) Transport	114 0 0	0.2	68 2 0	0.2
V. Transport	450 8 0	0.9	112 10 0	0.4
VI. Tax	..	..	..	..
Total ..	50,018 6 2	100.0	30,796 3 1	100.0
Total sale value ..	53,507 0 0	..	34,781 11 8	..
Total profits ..	3,488 9 10	..	3,985 8 7	..

* Profit goes to the merchant-cum-manufacturer.

KUMBAKONAM FIRKA
LEAD WARE INDUSTRY
INCOME PER UNIT PER ANNUM



CUTLERY INDUSTRY.

Introduction.—There are six cottage industrial units in Kumbakonam town engaged in cutlery industry of which two were selected for detailed study. The more important of the cutleries manufactured are 'Aravamalai', 'Jallikarandi', 'Murukkuachu' and small knives. Besides these, ordinary locks and keys are also manufactured.

2. *Organization of the industry.*—Cutlery manufacture is carried on by hereditary craftsmen on a very small scale to meet the limited local demand. One of the units selected belonged to the Viswakarma community and the other to the Vellala community. Work was confined mainly to the members of the family, outside labour being employed occasionally to meet special demands.

3. *Composition of the families.*—The average strength of a family was 4.5 comprising 1 man, 2 women, 0.5 boy and 1 girl. There were 1.5 workers per family and 3 dependants.

4. *Housing.*—Work was carried on in thatched sheds, the average size of which was 99 square feet.

The average expenditure on rent per annum was Rs. 18 and that on repairs and maintenance Rs. 10. The average value of a work shed was Rs. 20.

5. *Raw materials and fuel.*—The main raw material is iron scraps, old and new, which are obtained at retail rates for cash from the hardware merchants in the town dealing in cutlery who buy the scraps in lots from workshops. A quantity of 36 maunds of old iron scraps valued at Rs. 170-4-0 and 45 maunds of new iron scraps valued at Rs. 225 was purchased annually on the average.

Fuel.—An average unit consumed 152 maunds of charcoal costing Rs. 228.

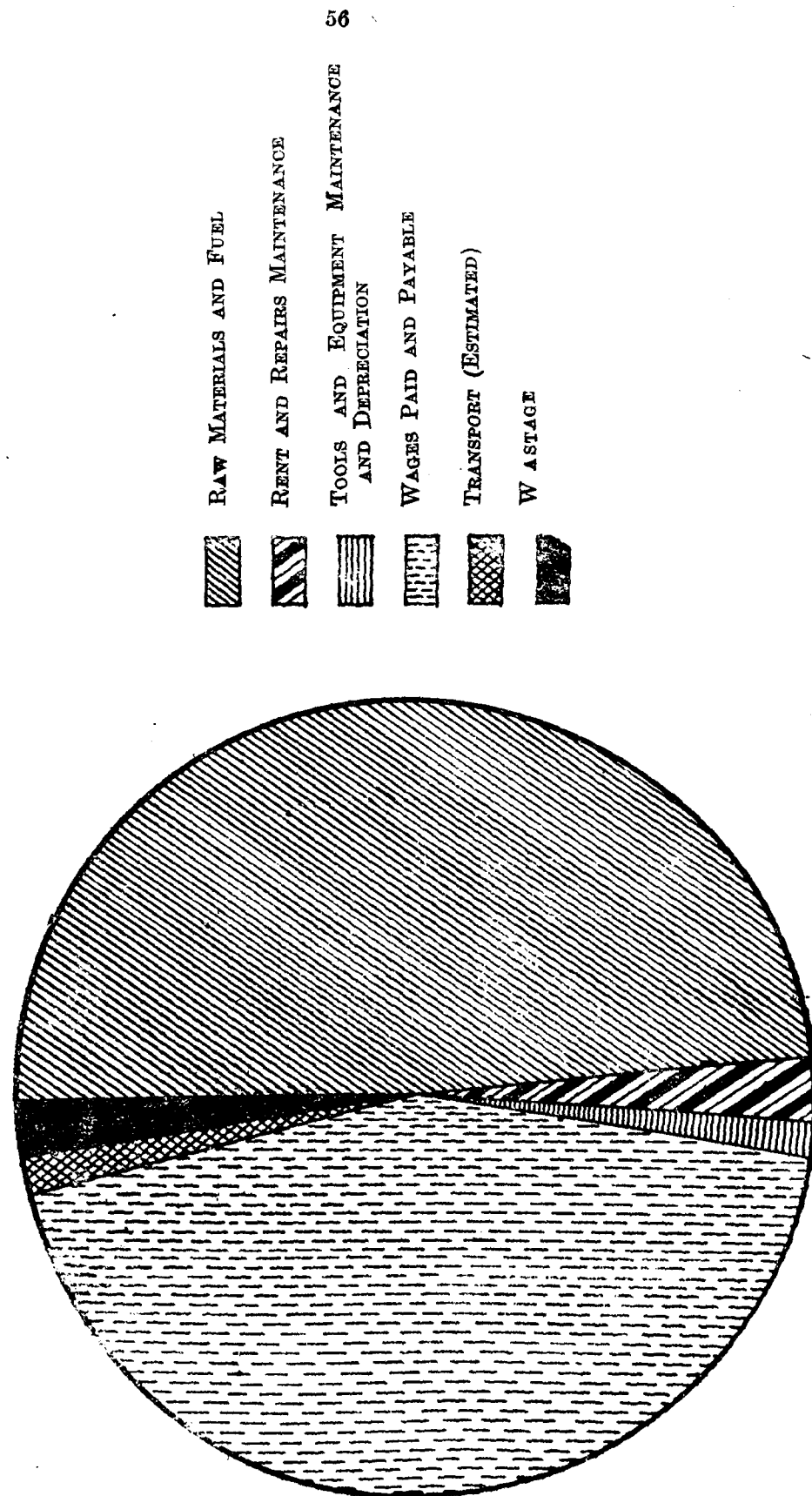
6. *Tools and machinery.*—The main tools used were 'Karavai', 'Panaiyal', hand vice, plier, hammer, file, bellows. A statement showing the number and value of tools used by an average unit is given in Appendix 28. A unit owned 14 tools with a total initial cost of Rs. 41 and replacement cost of Rs. 52. The annual maintenance charges amounted to Rs. 16 and depreciation Rs. 3.

7. *Manufacturing processes.*—From the lot of iron scraps, pieces are selected suitable for the manufacture of each type of cutlery. These pieces are heated and then hammered into required shapes. Sometimes, as in the case of 'Jallikarandi' and 'Murukkuachu' two or three parts are made separately and welded together. In the case of knives, the wooden handles are not manufactured by the units. The merchants who buy them arrange to have the handles fixed by carpenters.

8. *Production.*—The average annual output per unit of articles weighing 75.25 maunds valued at Rs. 1,325. Appendix 29 gives the types of articles manufactured. Of the total value of output, padlocks formed 36.2 per cent, murukkuachu 28.3 per cent, keys 24.2 per cent and aravamalai 11.3 per cent. Production was highest during the festival seasons, i.e., in February, July and September.

9. *Estimated production for the centres.*—On the basis of an average production of 75.25 maunds per unit, the total annual production of all the 6 units in the centre engaged in the manufacture of cutlery may be estimated at 451.5 maunds valued at Rs. 7,950.

KUMBAKONAM FIRKA
CUTLERY INDUSTRY
COMPONENTS OF COST OF PRODUCTION OF CUTLERY PER INDUSTRIAL UNIT PER ANNUM



10. *Labour*.—The average number of workers per unit was 2 of which 1·5 were members of the family. A unit worked on the average for 240 days in the year. Taking 295 days as the maximum working days available per year there was employment for 81·4 per cent of the maximum. Outside labour was employed for 150 days or 50·8 per cent of the maximum working days.

11. *Wages*.—Outside labour was paid a daily wage of Rs. 1-8-0. The average wage paid to outside labour by a unit was Rs. 112-8-0. On the same scale, the wage payable to the adult family labour (1·25 persons) would amount to Rs. 450.

12. *Transport*.—No expenditure was actually incurred on transport of raw materials and finished goods, as the family members themselves carry them. The cost of transport per unit was estimated at Rs. 24.

13. *Cost of production and profit*.—The statement below shows the cost of production incurred by a unit :—

13·1. *Components of cost of production and profits realized per unit per annum.*

Description.	Amount.			Percentage to total.
	RS.	A.	P.	
1 Raw materials and fuel—				
(a) Raw materials	395	4	0	30·8
(b) Fuel	228	0	0	17·8
2 Rent—				
(a) Rent paid	18	0	0	2·2
(b) Repairs and maintenance	10	0	0	
3 Tools and equipment—				
(a) Maintenance of tools	16	0	0	1·4
(b) Depreciation	3	0	0	
4 Wages—				
(a) Wages paid	112	8	0	43·8
(b) Wages payable	450	0	0	
5 Transport (estimated)	24	0	0	1·8
6 Wastage	27	8	0	2·2
Total	1,284	4	0	100·0
Sale value of output	1,325	0	0	..
Profit	40	12	0	3·4

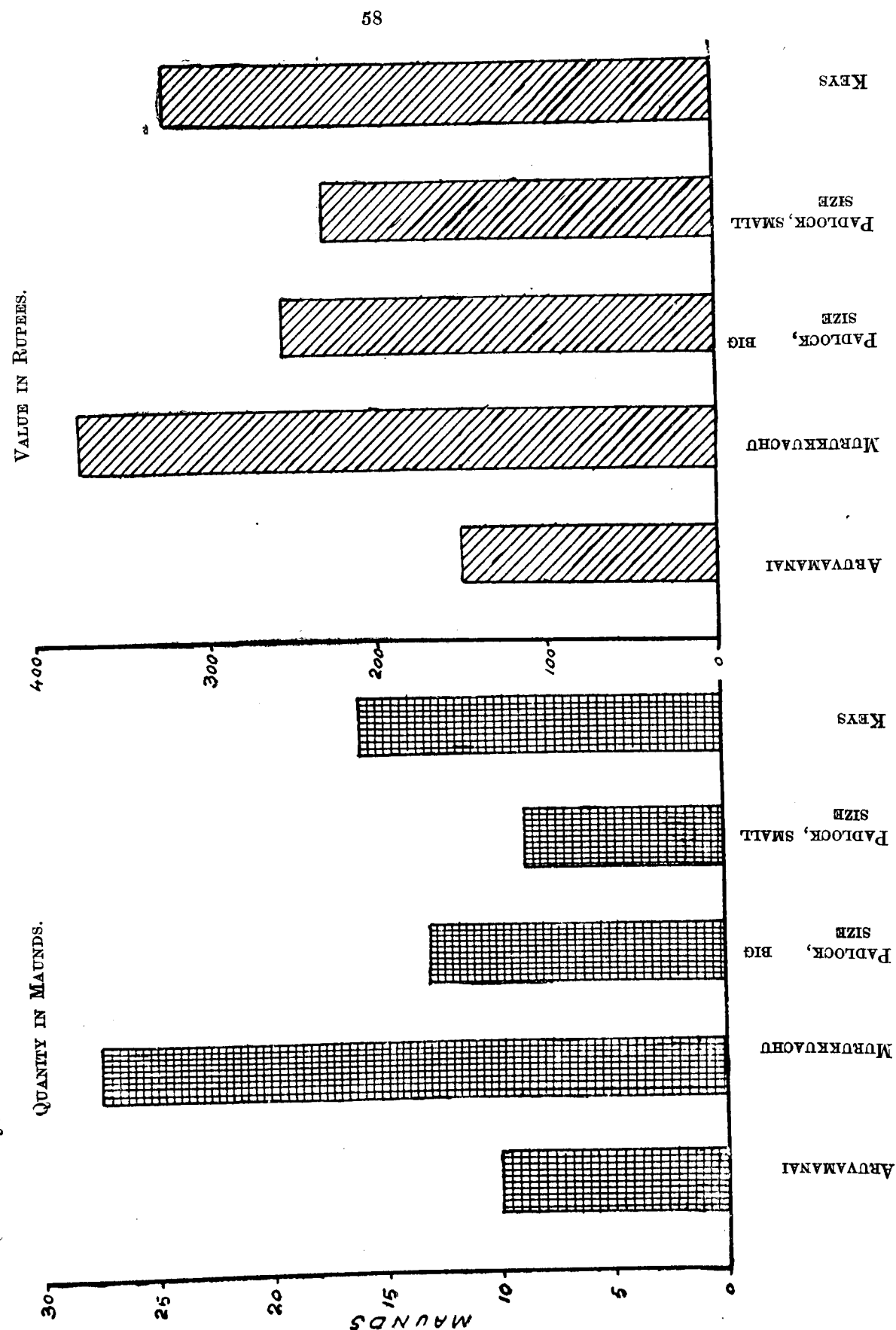
Wages formed 43·8 per cent, raw material 30·8 per cent and fuel 17·8 per cent. The other items were of minor importance. The cost of production worked out to Rs. 17-1-6 per maund of output.

14. *Profit*.—Profit earned by a unit was Rs. 40-12-0, or 3·4 per cent of the total cost. Profit per maund of output was Re. 0-8-0.

KUMBAKONAM FIRKA

CUTLERY INDUSTRY

QUANTITY AND VALUE OF OUT PUT OF ARTICLES PER UNIT PER ANNUM.



cent, from land Rs. 58 or 9.5 per cent, non-agricultural labour Rs. 13 or 2.2 per cent and from others such as sweet toddy tapping, remittances from outside, house, livestock and other miscellaneous items Rs. 108 or 17.5 per cent.

23. *Expenditure.*—A statement showing the expenditure of the families is enclosed (vide Appendix 52). The average expenditure per family was Rs. 636 against an average income of Rs. 617 leaving a net deficit of Rs. 19. Of the total expenditure, expenditure on ordinary items amounted to Rs. 602 or 94.6 per cent and that on extraordinary items Rs. 34 or 5.4 per cent. Of the ordinary items, expenditure on food was Rs. 490 or 77.1 per cent, clothing Rs. 75 or 11.8 per cent, fuel and lighting Rs. 16 or 2.4 per cent, house-rent (estimated) and repairs Rs. 21 or 3.8 per cent. Among the extraordinary items, marriage accounted for Rs. 11 or 1.7 per cent and medical Rs. 2 or 0.3 per cent.

24. *Assets.*—A statement showing the asset of an average family is given in Appendix 53. The main assets are house, land, livestock and jewels. The average asset of a family was Rs. 1,100 made up of Rs. 242 or 22.0 per cent from house, Rs. 708 or 64.3 per cent from lands, Rs. 89 or 8.1 per cent from livestock and Rs. 30 or 2.7 per cent from jewels. The other sources consisted of carts, deposits and loans, etc.

25. *Liabilities.*—Appendix 54 gives the amount of liabilities of an average family. Of the 66 families, 60 were indebted, the average debt per indebted family being Rs. 358 and for all families Rs. 325. The entire debt of an average family except Rs. 9 was incurred for domestic purposes. Of the total liabilities, Rs. 173 or 53.2 per cent was secured by mortgage with possession, Rs. 2 on simple mortgage, Rs. 67 or 20.6 per cent by pro-note and Rs. 82 or 25.3 per cent by hand loans and Re. 1 or 0.3 per cent by pawn.

SUMMARY.

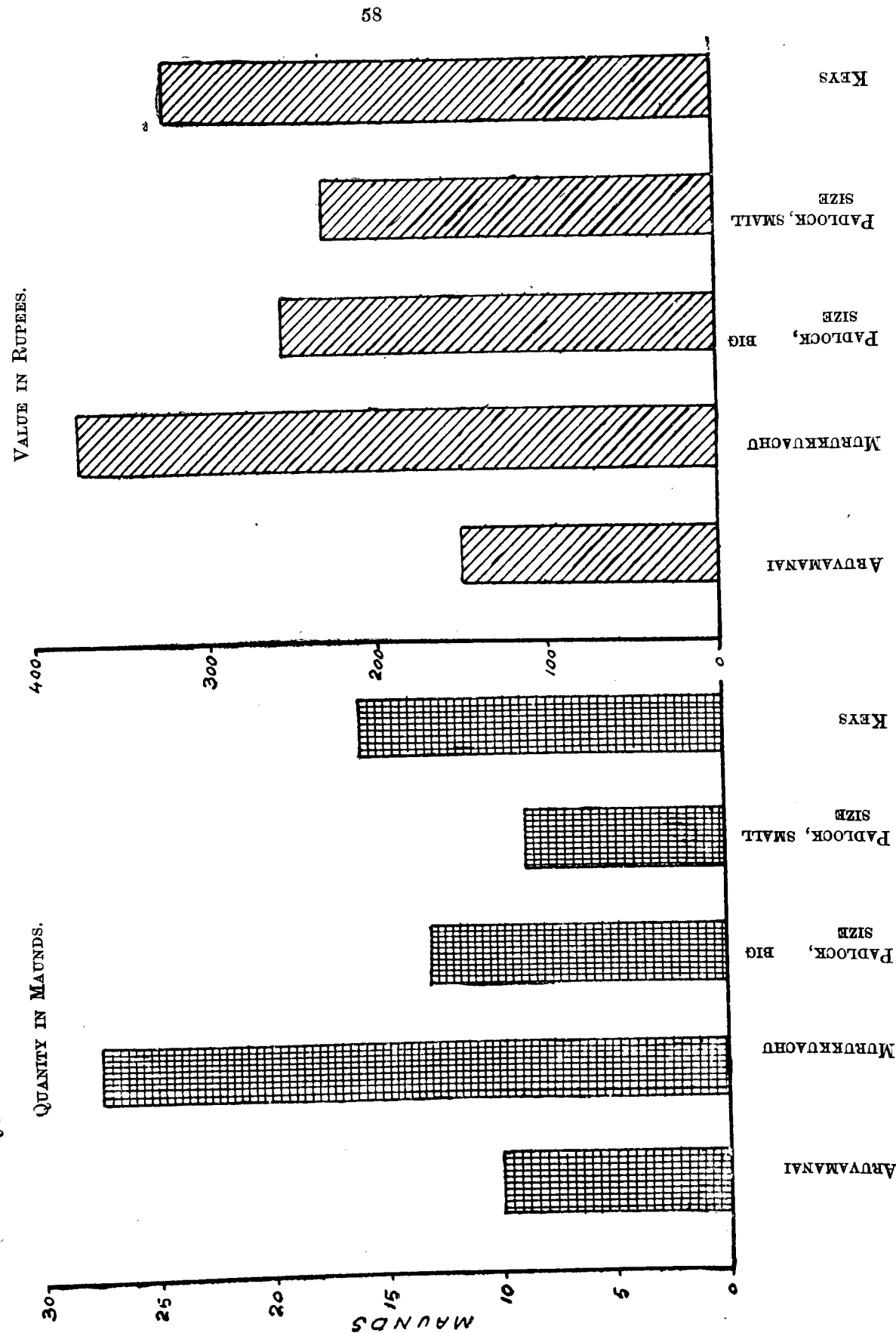
26. The manufacture of rough mats out of palmyra leaves is one of the commonest and widely spread cottage industries found in this centre providing employment to women and girls during the agricultural off-season. As it does not require any special skill or costly equipment and can be taken up or put off as and when convenient it is a cottage industry *par excellence*. The survey has shown that it provided employment to 43.2 per cent of the people in the 66 families surveyed for 245.5 days in the year. The average annual production of mats per family was 1,736 valued at Rs. 180-15-0. To these poor families living on the border line of poverty and whose average income was not more than Rs. 617 per annum, this industry contributed Rs. 152 or 24.7 per cent. The survey has also shown that the profit of the merchants amounted to 64.8 per cent of the cost price. The average asset of a family was Rs. 1,100 or 178.3 per cent of the average income. Out of the 66 families 60 were indebted, the average debt per family being Rs. 325 or nearly 50 per cent of the average income.

RECOMMENDATION.

27. The most important requirement of the workers in the industry is the provision of adequate marketing facilities with a view to the elimination of the large profits that now accrue to the merchants. This can be done if there is a Government depot or co-operative production and sale society with adequate capital to purchase the daily output of the workers and sell them profitably in the various markets.

KUMBAKONAM FIRKA

CUTLERY INDUSTRY
QUANTITY AND VALUE OF OUT PUT OF ARTICLES PER UNIT PER ANNUM.



Ribs formed a by-product of the industry, the average quantity of ribs sold by a family being 690 lb. valued at Rs. 17-5-0.

13. *Estimated production for the centre.*—On the basis of production for an average family, the estimated production for the centre amounted to 17.17 lakhs of mats valued at Rs. 1.79 lakhs.

14. *Fluctuations in output.*—As this is a subsidiary industry to agriculture, production is generally low during the busy agricultural season when the families work as agricultural labourers. But due to the prevalence of prolonged drought in the district for the past three to four years, there was not much demand for agricultural work and the women were engaged mainly in mat manufacture. Hence there was not much fluctuation in output from month to month during the year of survey.

15. *Labour force and employment potential.*—The average number of workers per family was 3.7 of whom 2.2 were engaged in mat manufacture. The average adult labour force per family engaged in mat industry was 2 and the average number of days they were employed was 245.5. Assuming 295 days to be the full employment level, the industry provided employment for 83.3 per cent of the total days available.

16. *Wages.*—There was no question of payment of wages in this cottage industry as each family worked as an independent unit.

17. *Transport.*—As the members of the families themselves carried the raw materials to their homes from the nearby gardens and the finished products to the merchants either in the village or the neighbouring village, no separate charge for transportation has been calculated.

18. *Cost of production.*—The cost of manufacturing a big size rough mat (8' x 4') would be as follows: Three leaves costing Re. 0-0-6 would be required for a mat and it can be plaited in about 3 hours by an adult. In a day, 2½ mats can be plaited, which would fetch Re. 0-7-6 at 3 annas each. Deducting the cost of palmyra leaves, Re. 0-1-3, the income for a day's work will be Re. 0-6-3.

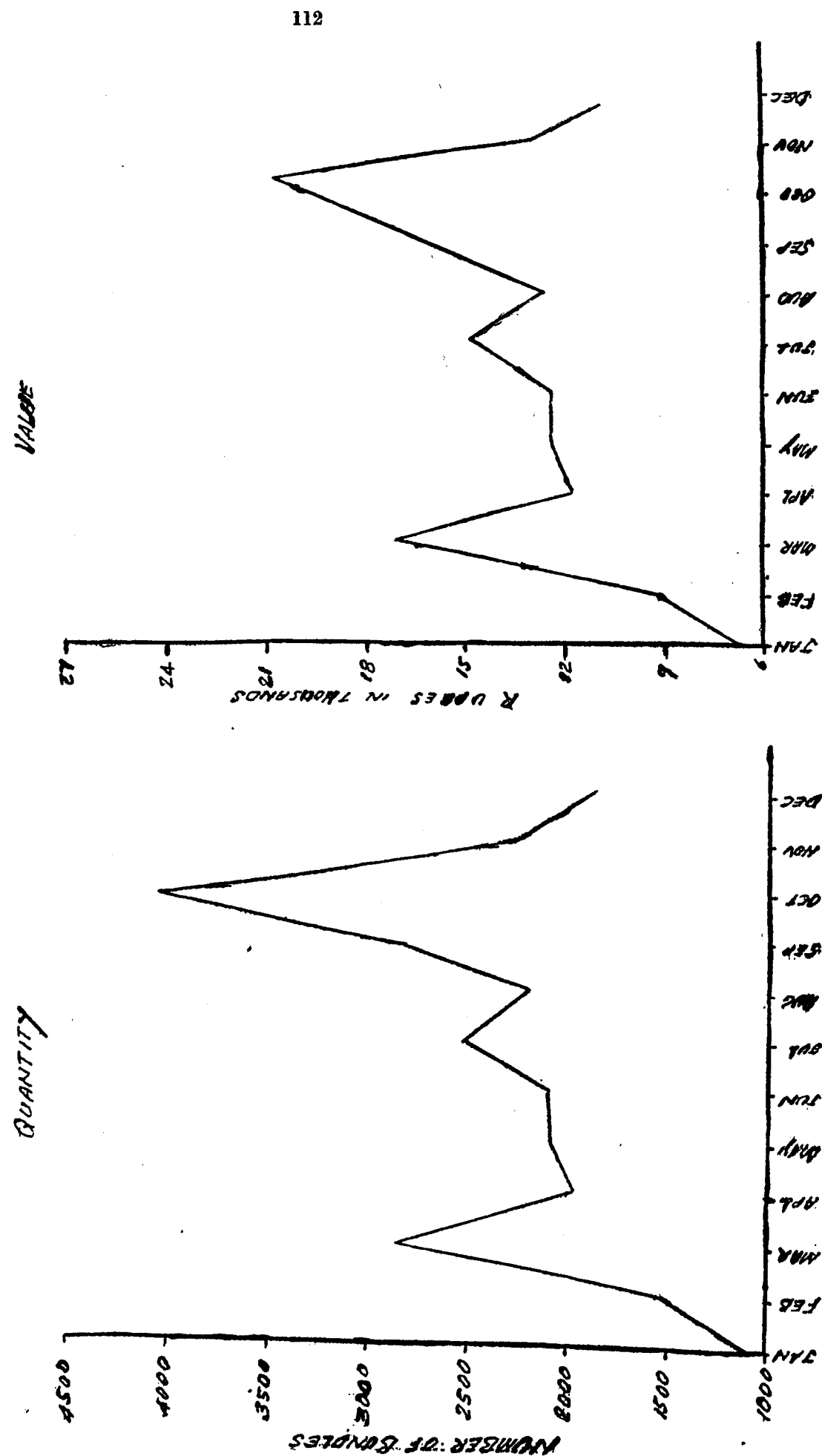
The following statement shows the cost of production per unit :—

18.1. Components of cost of production per industrial unit per annum.

Description.	Amount.			Percentage to total.
	(1)	(2)	(3)	
		RS. A. P.		
1 Raw materials	45	6 0	22.8	
2 Rent and Repairs—				
Rent (estimated)	4	1 0	2.0	
Repairs	1	2 0	0.6	
3 Tools and machinery—				
Maintenance	0	8 0	0.3	
Depreciation (estimated)	147	3 0	74.3	
4 Wages payable (or income of the family unit)				
Total	198	4 0	100.0	
Sale value of mats	180	15 0		
Sale value of ribs	17	5 0		
Total	198	4 0		

Of the total cost, raw materials formed 22.8 per cent and wages payable 74.3 per cent. The other items were insignificant. The residuary amount after meeting the other expenses of production has been deemed as the wages payable or net income to the family members for their labour.

RAMANATHAPURAM AREA
ROUGH MATS INDUSTRY
EXPORT OF ROUGH MATS (QUANTITY ONLY) BY TWO MERCHANTS OF UCHIPULI



19. *Income from the industry.*—The average income from the industry including imputed items in the cost of production such as rent, depreciation and wages payable was Rs. 151-12-0 per family and Rs. 75-14-0 per adult worker per annum. The average income per working day was Re. 0-10-0 per family and Re. 0-5-0 per adult worker.

20. *Capital.*—Very little capital is required by the workers in this industry as the cost of raw materials of 25 to 50 palmyra leaves which they usually purchase at a time is only Re. 0-4-0 to Re. 0-8-0.

21. *Marketing.*—The local demand for these products is very limited. A certain quantity is required by those who deal in the export of dried fish for packing purposes while very poor people use them as bed spreads. Almost the entire production is exported outside the district, Uchipuli being the most important marketing centre. It is on the main railway line and there are five export merchants at this place.

In times of great demand, the merchants send their agents to the surrounding villages and place orders with the families and collect the mats in due course. But at other times the mat weavers themselves deliver them to the merchants who pay them in cash or kind, whichever is convenient.

The merchants buy in anticipation of demand and stock them in their godowns. This provides a constant market to the producers who are thus able to market their daily output and thus eke out their livelihood. But as the mats lose their colour after a year, they cannot be stocked for more than one year.

Out of the five merchants, two are the most important. A statement showing the quantity and value of mats exported by these two is given in Appendix 50. They exported 27,275 bundles (1 bundle=30 mats) valued at Rs. 1.64 lakhs. The average selling price per bundle was Rs. 6. The demand is continuous and reached its peak in October.

The mats are used mainly as packing materials. The cost of a mat of 8' x 4' is only 3 annas compared with jute canvas which costs about Re. 1 for the same dimension. It is thus one of the cheapest packing materials available and hence the constant demand.

The main centres to which the mats were exported by the two merchants were (1) Rajapalayam, (2) Aruppukottai, (3) Srivilliputtur, (4) Sivakasi, (5) Sattur, (6) Tirupuvanam, (7) Virudunagar in Ramanathapuram district, (8) Koilpatti and Tuticorin in Tirunelveli district, Madurai, Dindigul and Theni in Madurai district, Vedaranyam and Nagapattinam in Tanjavur district, Salem, Tiruchirappalli, Pollachi, Palladam and Coimbatore in Coimbatore district, Madras, Trichur (Travancore-Cochin), Calcutta, Delhi and Poona. Actual figures for each of these destinations are however not available.

The merchants buy at rates varying from Re. 0-0-9 to Re. 0-3-0 per mat or at Rs. 3-2-0 per bundle of 30 mats on the average. But they have to incur expenses such as rent for storage, establishment charges, bundling and transporting to the railway station and travelling expenses for the agents. From the accounts of the two important merchants, it was observed that this amounted to Rs. 13,996 made up of Rs. 340 for rent, Rs. 8,898 for bundling and transporting, Rs. 2,868 for establishment and Rs. 1,800 for travelling expenses. This is in respect of 27,275 bundles. Marketing expenses thus amount to Rs. 0-8-3 per bundle. The total cost works out to Rs. 3-10-3 while the selling price is Rs. 6. The net profit per bundle is Rs. 2-5-9. The profit of the merchant works out to 64.8 per cent on the cost price. The workers are entitled to a greater share of the sale price.

22. *Income.*—A statement showing the different sources of income for an average family is enclosed—vide Appendix 51. The average income per family was Rs. 617. The income from palmyra mat industry was Rs. 152 and formed 24.7 per cent of the total. Of the other sources of income income, from agricultural labour was Rs. 285 or 46.2 per

cent, from land Rs. 58 or 9.5 per cent, non-agricultural labour Rs. 13 or 2.2 per cent and from others such as sweet toddy tapping, remittances from outside, house, livestock and other miscellaneous items Rs. 108 or 17.5 per cent.

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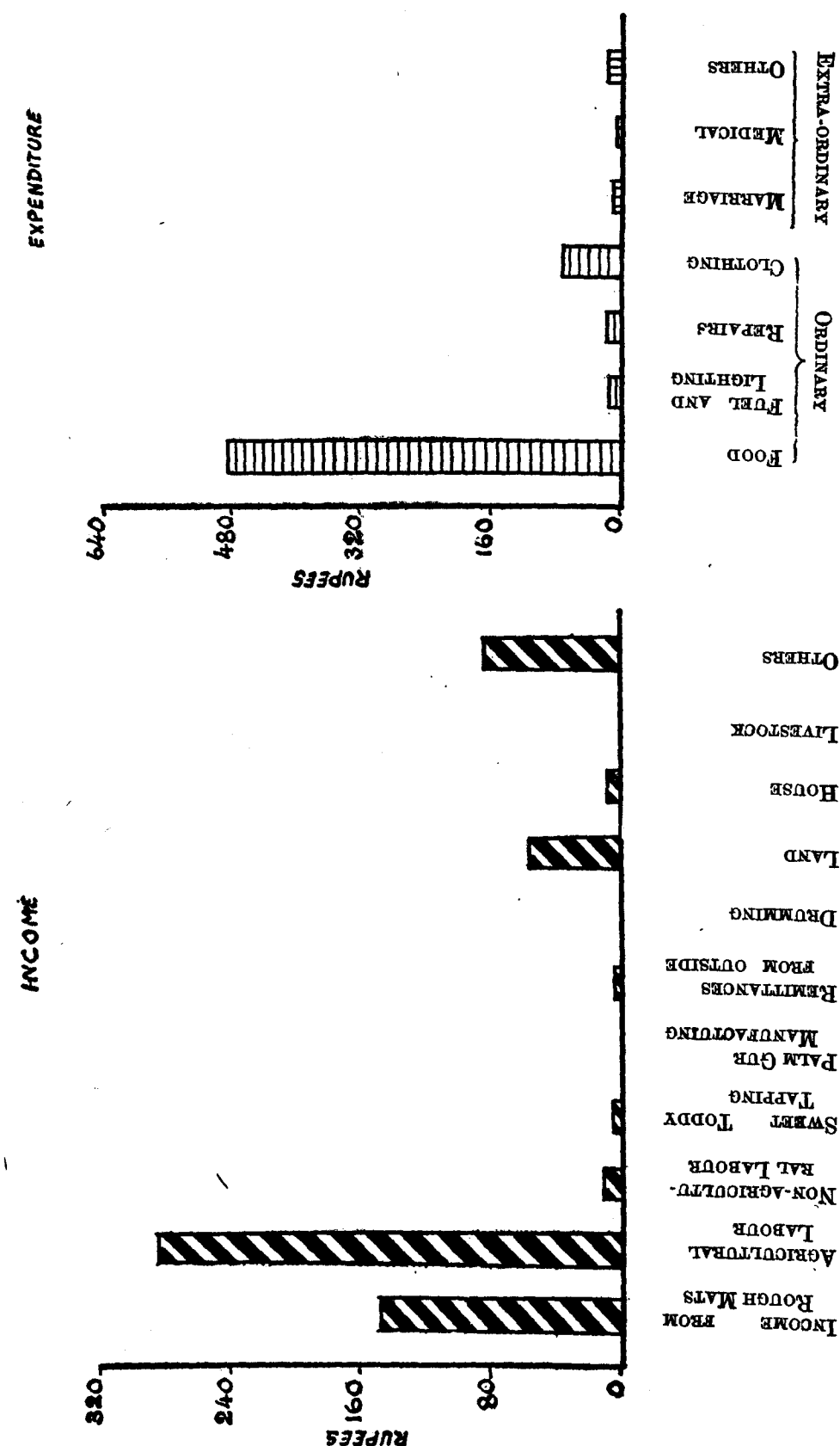
SUMMARY.

26. The manufacture of rough mats out of palmyra leaves is one of the commonest and widely spread cottage industries found in this centre providing employment to women and girls during the agricultural off-season. As it does not require any special skill or costly equipment and can be taken up or put off as and when convenient it is a cottage industry *par excellence*. The survey has shown that it provided employment to 43.2 per cent of the people in the 66 families surveyed for 245.5 days in the year. The average annual production of mats per family was 1,736 valued at Rs. 180-15-0. To these poor families living on the border line of poverty and whose average income was not more than Rs. 617 per annum, this industry contributed Rs. 152 or 24.7 per cent. The survey has also shown that the profit of the merchants amounted to 64.8 per cent of the cost price. The average asset of a family was Rs. 1,100 or 178.3 per cent of the average income. Out of the 66 families 60 were indebted, the average debt per family being Rs. 325 or nearly 50 per cent of the average income.

RECOMMENDATION.

27. The most important requirement of the workers in the industry is the provision of adequate marketing facilities with a view to the elimination of the large profits that now accrue to the merchants. This can be done if there is a Government depot or co-operative production and sale society with adequate capital to purchase the daily output of the workers and sell them profitably in the various markets.

RAMANATHAPURAM AREA
ROUGH MATS INDUSTRY
INCOME AND EXPENDITURE PER FAMILY PER ANNUM



8. *Types of articles manufactured.*—Rough mats of varying sizes are manufactured but usually they are of three sizes: (1) big (8' × 4'), (2) medium (6' × 3') and (3) small (3' × 2').

9. *Raw materials and fuel.*—The only raw material used in the industry is palmyra leaves. During the year under survey (November 1951 to October 1952) the average consumption per family was 4,460 palmyra leaves valued at Rs. 45-6-0. The average price per hundred leaves ranged between Re. 1 and Re. 1-4-0 according to locality. Usually a family purchased 25 to 50 leaves at a time which would last for about 2 to 4 days depending on the number of workers in the family. The families found no difficulty in getting the raw materials for their work.

10. *Tools, machinery and equipment.*—The only tools available with the workers are a small curved knife and a big knife. The former is used for separating the ribs. Its handle is shaped in such a way as to facilitate insertion of the ends of the leaves while weaving. The big knife is used for cutting the leaves from the palm tree and for separating the stem from the leaf. An average family had 2 small knives and 1-1 big knife. Their initial cost was Rs. 2-5-3, their replacement value Rs. 2-8-0 and their present market value Rs. 1-8-0. The price of a small knife ranged between Re. 0-4-0 and Re. 0-6-0 and that of a big knife was Rs. 1-8-0. There was no maintenance charge, but depreciation charges amounted to Re. 0-8-0. As and when required, the knives were sharpened by the workers themselves by rubbing them against sand and rough stone.

11. *Manufacturing processes.*—The first process is to cut the leaves from the trees. The owners of palmyra trees do not arrange for cutting the leaves, but the workers attend to this. The leaves are cut from the trees by men and taken to the houses in headloads by the women. The next process is to separate the ribs from the leaves which is done with the help of the curved knife by women, girls and old men. The leaves are then plaited into rough mats mostly by women.

12. *Production.*—Mats of about eight sizes varying from 3' × 2' to 8' × 4' were manufactured in the centre. Their prices ranged from Re. 0-0-9 to Re. 0-3-0 per mat. The annual production of rough mats by an average family was 1,736 valued at Rs. 180-15-0. As the families were engaged for 245-5 days in a year on the average, the number of mats manufactured per day by a family was 7-1 valued at Re. 0-11-10. As each family consisted of 2 adult workers, the average annual production per adult worker was 868 mats valued at Rs. 90-7-0 and per adult worker per working day 3-5 mats valued at Re. 0-6-0.

The following statement shows the different types of mats produced by an average family :—

12.1. *Production of rough mats per unit per annum.*

Description.				Number of	Price per	Value.	Percentage	Percentage
(1)				mats.	mat.	(4)	of column (2)	of column (4)
(Size of mat.)				(2)	(3)	(5)	to total.	to total.
				NOS.	RS. A. P.	RS. A. P.	(5)	(6)
1	3' × 2'	..	..	255	0 0 9	11 0 0	14-6	6-1
2	5' × 2½'	..	..	489	0 1 6	42 12 0	28-2	23-8
3	5' × 3'	..	..	47	0 1 9	5 2 0	2-7	2-8
4	6' × 3'	..	..	586	0 2 0	69 4 0	33-8	38-1
5	7' × 3'	..	..	15	0 2 3	2 2 0	0-9	1-1
6	7' × 3½'	..	..	165	0 2 6	22 12 0	9-5	12-6
7	7' × 4'	..	..	87	0 2 9	12 15 0	5-0	7-2
8	8' × 4'	..	..	92	0 3 0	15 0 0	5-3	8-3
Total ..				1,736	0 1 8	180 15 0	100-0	100-0

Among the different sizes of mats, those measuring 6' × 3', 5' × 2½', 3' × 2' and 7' × 3½' were the more popular in the order of their importance accounting for 86-1 per cent of the total number and 80-6 per cent of the value.

8. *Types of articles manufactured.*—Rough mats of varying sizes are manufactured but usually they are of three sizes: (1) big (8' × 4'), (2) medium (6' × 3') and (3) small (3' × 2').

9. *Raw materials and fuel.*—The only raw material used in the industry is palmyra leaves. During the year under survey (November 1951 to October 1952) the average consumption per family was 4,460 palmyra leaves valued at Rs. 45-6-0. The average price per hundred leaves ranged between Re. 1 and Re. 1-4-0 according to locality. Usually a family purchased 25 to 50 leaves at a time which would last for about 2 to 4 days depending on the number of workers in the family. The families found no difficulty in getting the raw materials for their work.

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The following statement shows the different types of mats produced by an average family:—

12.1. *Production of rough mats per unit per annum.*

Description.	Number of mats.	Price per mat.	Value.	Percentage of column (2) to total.	Percentage of column (4) to total.
(1) (Size of mat.)	(2) Nos.	(3) Rs. A. P.	(4) Rs. A. P.	(5)	(6)
1 3' × 2'	255	0 0 9	11 0 0	14-6	6-1
2 5' × 2½'	489	0 1 6	42 12 0	28-2	23-8
3 5' × 3'	47	0 1 9	5 2 0	2-7	2-8
4 6' × 3'	586	0 2 0	69 4 0	33-8	38-1
5 7' × 3'	15	0 2 2	2 2 0	0-9	1-1
6 7' × 3½'	165	0 2 6	22 12 0	9-5	12-6
7 7' × 4'	87	0 2 9	12 15 0	5-0	7-2
8 8' × 4'	92	0 3 0	15 0 0	5-3	8-3
Total	1,736	0 1 8	180 15 0	100-0	100-0

Among the different sizes of mats, those measuring 6' × 3', 5' × 2½', 3' × 2' and 7' × 3½' were the more popular in the order of their importance accounting for 86-1 per cent of the total number and 80-6 per cent of the value.

last world war. There is one special factor which has helped the growth of the manufacture of these artistic products. These goods find a ready sale among the visitors to the district. Ramanathapuram district is studded with many sacred places consecrated to the memory of Sri Rama which attract pilgrims from all over India. Rameswaram and Dhannushkodi have been places of pilgrimage from time immemorial to people both in the North and the South. The sacred temple at Tirupullani or Dharbasayanam, Utharakosamangai, Devipatnam or Navapashanam and Sethukarai, a sacred bathing place, attract a large Concource of visitors throughout the year. The palmyra leaf fancy products, which are so cheap and at the same time attractive find a ready sale with most visitors, especially from the North. Palmyra fibre is another important by-product from the stems of the palmyra leaves which has great potentialities of development as an export industry. Palm gur industry has been a boon to the ex-toddy tappers thrown out of employment since the introduction of prohibition. It has also helped to some extent the State in its fight for self-sufficiency in sugar. A survey of the industries would clearly demonstrate what a significant contribution they make to the employment and income of the people in the area poorly endowed by nature.

ROUGH MATS.

4. *Manufacture of rough mats—Organization of the industry.*—The rough mats industry is found in all but four of the 29 villages selected for survey in the area. Among the industries connected with palmyra products, it provided employments to the largest number, accounting for 43-3 per cent of the total.

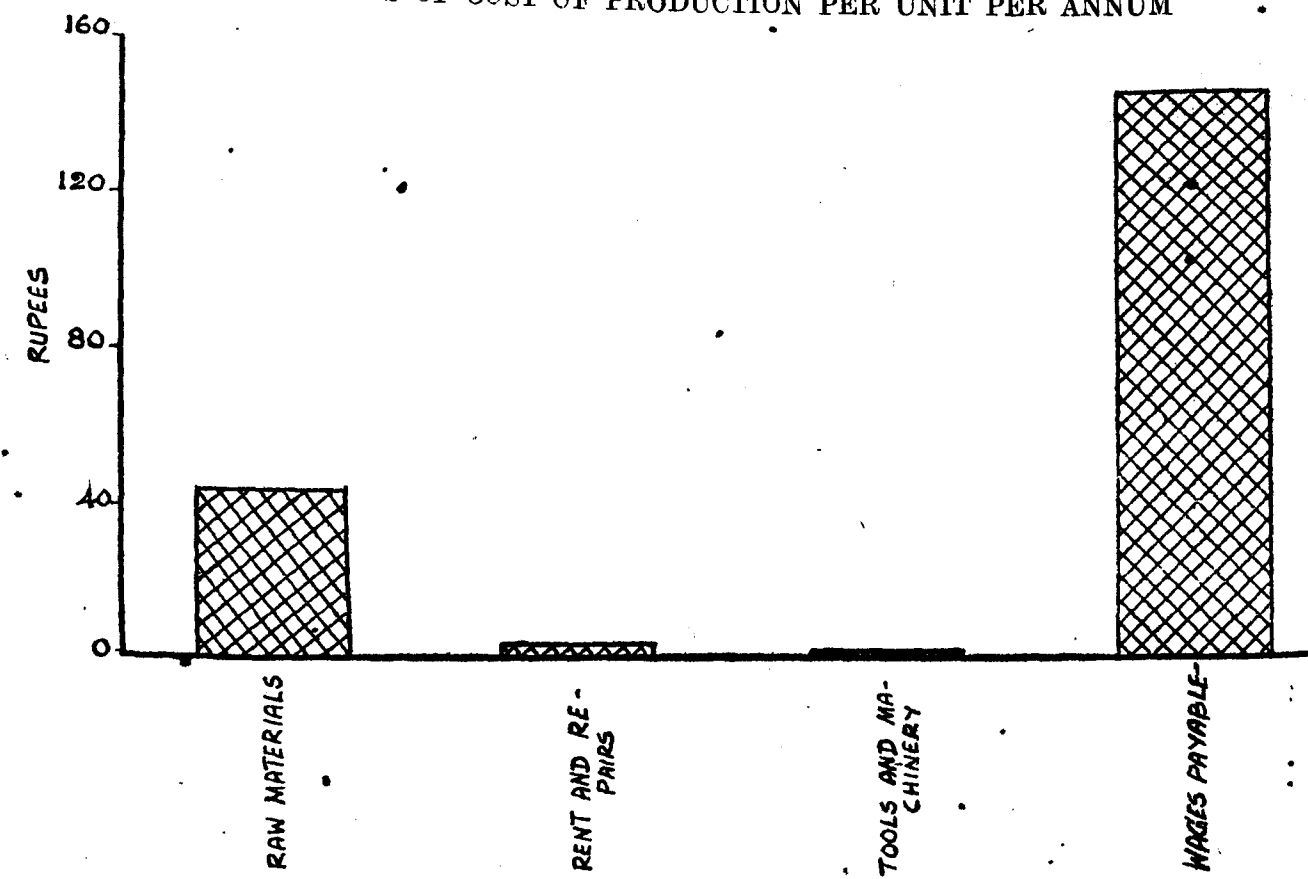
The industry is carried on mainly by the Nadars, Muslims, Koravas and Harijans. They work in their own homes with their own raw materials and tools. Each day's manufacture is taken to the merchants most of whom deal exclusively in palmyra products. A few of the merchants also combine grocery business and pay for the mats either in cash or in kind. The families are not given any advance by the merchants. Merchants are not found in each of the villages where the mats are manufactured but only in a few villages which are situated in a central place and accessible to two or three surrounding villages. Uchipuli is the biggest marketing centre for rough mats, fibre and ribs; and here are six merchants dealing in these products.

5. *Selection of sample.*—For purpose of detailed survey, 12 villages out of 25 were selected. Out of 614 families engaged in the industry in these 12 villages, 66 units or 10-7 per cent were selected by the principle of random sampling. All were family units. The names of the villages selected together with the total number of families engaged in the industry in each village are given in Appendix 49. The industry is hereditary to all the families.

6. *Composition of families.*—The average size of a family was 5-1 of whom 1-2 were men, 1-9 women, 1 boy and 1 girl. Of these, 3-7 were workers and 1-4 dependents. Among the workers, 2-2 persons were principally engaged in rough mats and the rest in other occupations. The workers consisted of 0-1 man, 1-7 women and 0-4 girl. The industry is mostly run by women who formed 96-6 per cent of the workers engaged in it.

7. *Housing.*—Most of the families lived in thatched houses. For the sample as a whole, 93-5 per cent lived in thatched houses and 6-5 per cent in tiled houses. The average floor space per family was 242-3 square feet and the average value Rs. 224. None of the families paid any rent, the estimated average rent per family being Rs. 16-4-0 per annum. The average annual repairs per family was Rs. 4-8-0. No portion of the house was exclusively set apart for the manufacture of rough mats; 25 per cent of the rent and repairs is debited to the cottage industry in estimating the cost in this survey. In that case the estimated value of the industrial portion was Rs. 56, the estimated rent Rs. 4-1-0 and repairs Re. 1-2-0.

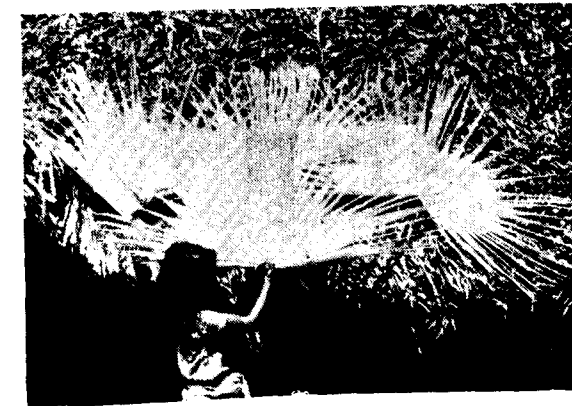
RAMANATHAPURAM AREA
ROUGH MATS INDUSTRY
VARIOUS ITEMS OF COST OF PRODUCTION PER UNIT PER ANNUM



PALMYRA PRODUCTS OF RAMANATHAPURAM.



A TYPICAL PLACE WITH PALMYRA TREES.

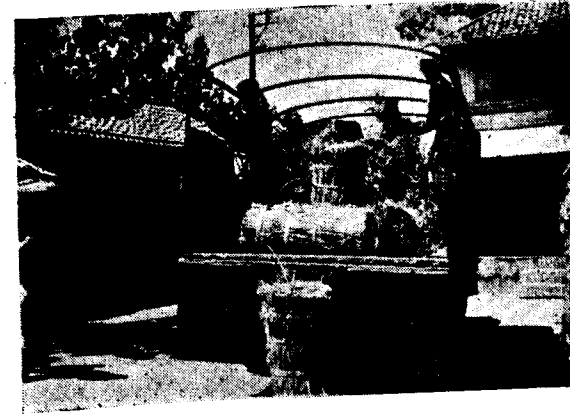


PALMYRA LEAVES.



PLAITING PALMYRA ROUGH MAT.

MANUFACTURE OF ROUGH MATS.

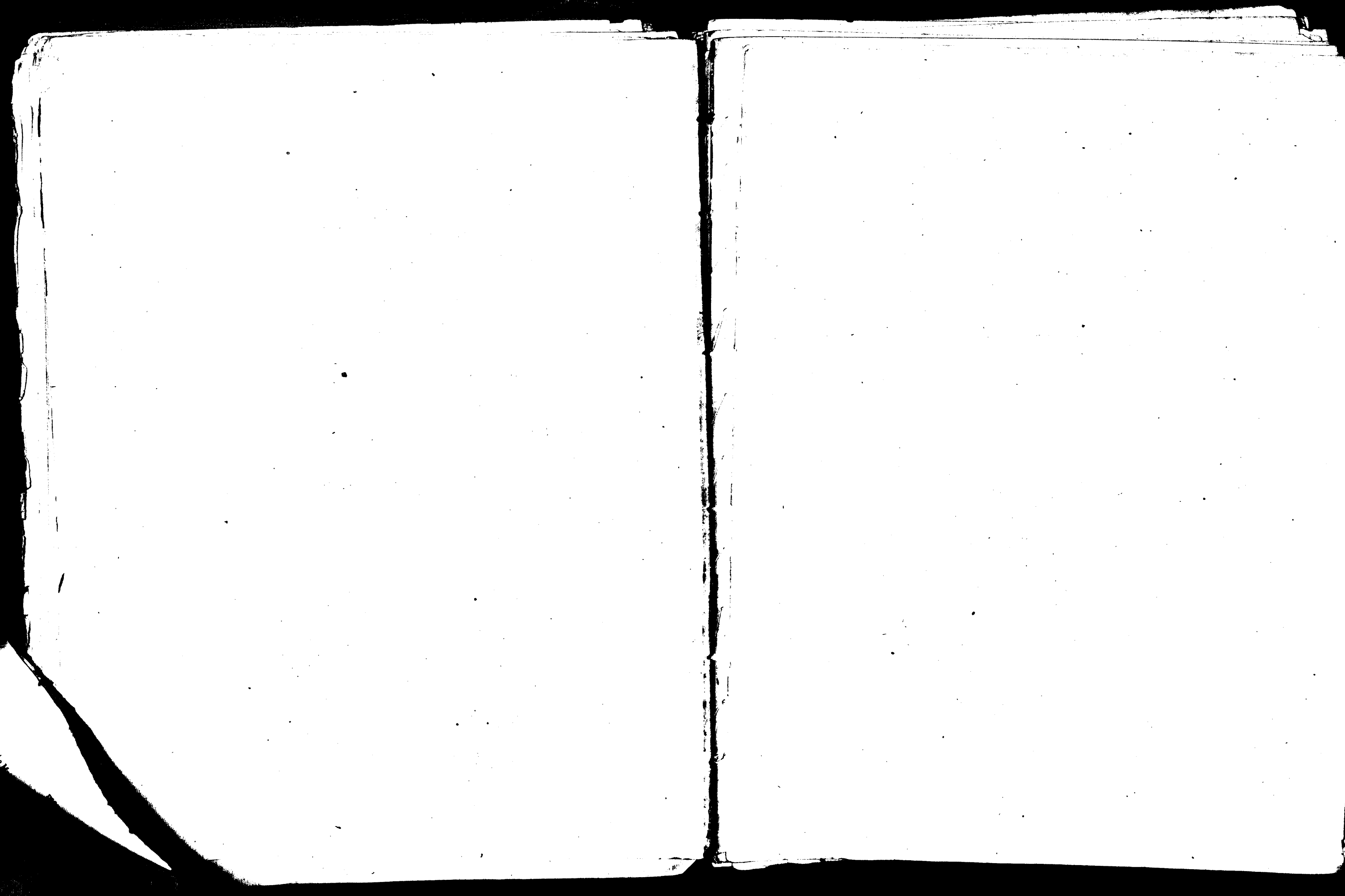


BUNDLES OF PALMYRA LEAF RIBS, THE BY-PRODUCTS OF
ROUGH MATS.



ROUGH PALMYRA MAT.





LEAD WARE INDUSTRY—*cont.*DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF
LEAD WARES.

POURING MOLTEN LEAD IN MOULDS.



SHAPING LEAD WARES.

PALMYRA LEAF FANCY ARTICLES. *

1. *Introduction.*—The leaves and stems of the palmyra palm are, as already stated, put to many industrial uses. In almost all the villages of Ramanathapuram centre many utility articles of rough quality, such as baskets are, made out of palmyra leaves and stems generally by the Korava community. The Koravas are a nomadic people and the present survey did not include a study of the economics of this section of the industry. It was confined to a study of the problems of the manufacture of the better type of articles out of tender leaves, ribs and stems of the palmyra which has great potentialities for development. In recent years as a result of an increasing demand for these fancy articles, there has been a rapid expansion of the industry. This demand received a fillip during World War II when there was a large number of foreigners present in the country. The articles made are hand fans, hand bags, winnows, sieves, trays, boxes for keeping clothes, square mats, hats, purses, trunk boxes and toys like "*Kilukiluppais*".

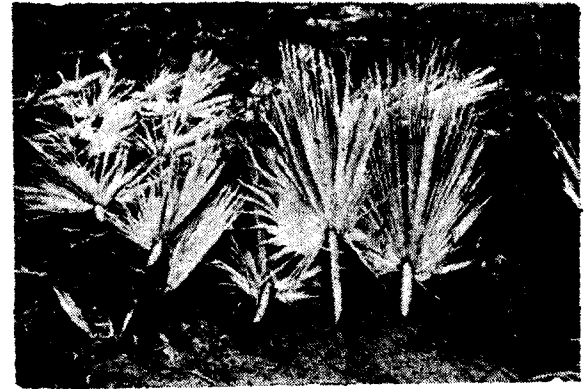
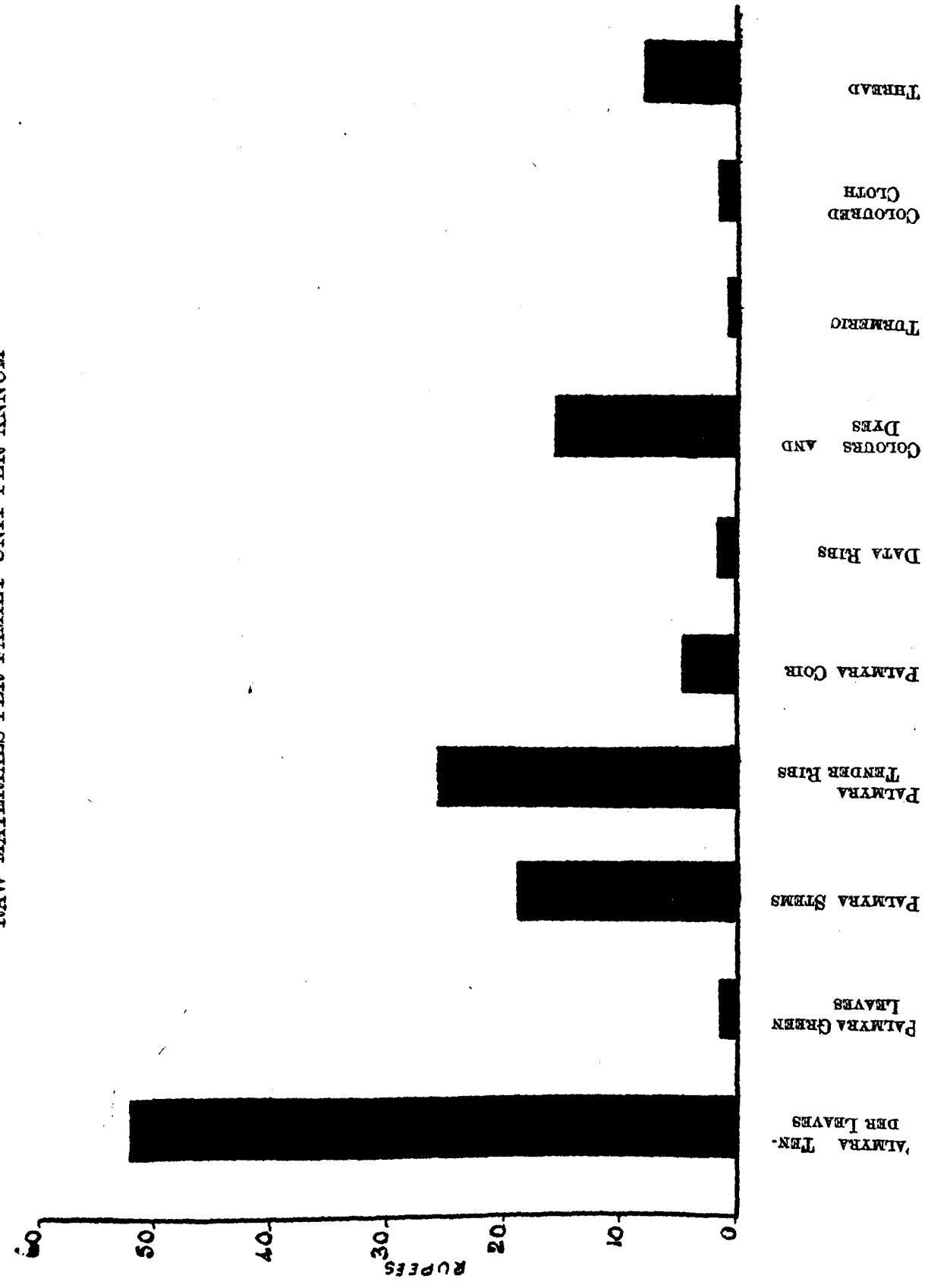
2. *Location of the industry.*—In the Ramanathapuram area selected for survey, these articles are manufactured mainly in six centres, viz., Chittarkottai, Devipatnam, Ramanathapuram, Athiyuthu, Tirupullani and Rameswaram. Specialisation of a sort is seen in each of these centres. Chittarkottai is noted for the manufacture of fancy articles like hats and purses, Ramanathapuram for winnows, sieves, trays and "*Kilukiluppais*", Tirupullani for boxes for keeping clothes, for hand bags and "*Kilukiluppais*", Devipatnam for hand-fans and square mats or "*Thadukkus*" and Rameswaram for trunk boxes. But specialisation has not been complete so that all or some of these articles may be manufactured in the same centre, though on a smaller scale.

The causes for the localization of the industry in these centres are not far to seek. There is abundant supply of the main raw material, viz., palmyra leaves and there is a fairly good demand for both types of articles. The people at Chittarkottai manufacture a greater variety of artistic goods than those in other places and this is due to the fact that the Muslim families who are mainly engaged in it have regular social contacts with those at Nagore, the famous centre in Tanjavur district for these goods. But the goods produced at the latter place are definitely superior to those at the centres surveyed in Ramanathapuram area. Many of the families who are dependent on remittances from abroad from the male earners found themselves in difficulties during the war and post-war periods as these remittances became intermittent and took to the manufacture of fancy articles with a greater vigour to supplement the family income. The demand from the European and American soldiers and other foreigners for these fancy goods gave an impetus to the growth of the industry.

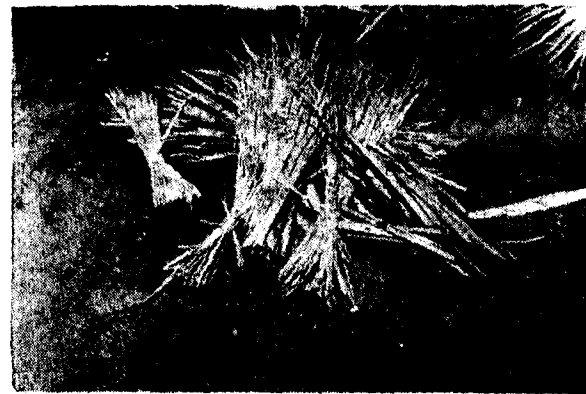
3. *Organization of the industry.*—The industry is carried on in the homes of the workers, generally by women, although a few men are also found here and there engaged in it. As the raw materials can be had in plenty locally and at cheap rates, there is no intermediary at this stage to control its supply or to regulate production. But the need for an intermediary arises at the marketing stage. This is mainly because there is very little local demand for these goods. They have either a seasonal demand as in the case of hand-fans during summer, or they have to be taken to the pilgrim centres where large concourse of people collect on certain days or they have to be exported to distant places within the State or outside. This requires capital investment for purchase of the goods, stocking them in anticipation of demand and contacts with outside merchants which are all too difficult for the individual worker to tackle. In the six centres there were 27 merchants who dealt in these articles. Though not generally engaged in actual production, some

* The survey extended over an area lying to the east of the road running from Kilakarai to Devipatnam through Ramanathapuram town.

RAMANATHAPURAM AREA
PALMYRA LEAF FANCY ARTICLES INDUSTRY
RAW MATERIALS PER FAMILY UNIT PER ANNUM

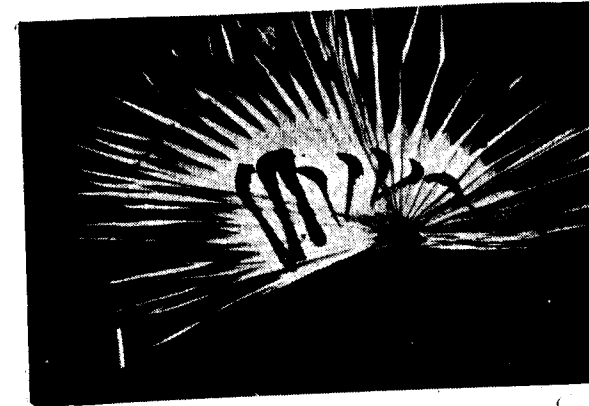


PALMYRA TENDER LEAVES.



PALMYRA TENDER LEAVES SPLIT INTO SIZES.

PALMYRA LEAF FANCY ARTICLES.



TOOLS.

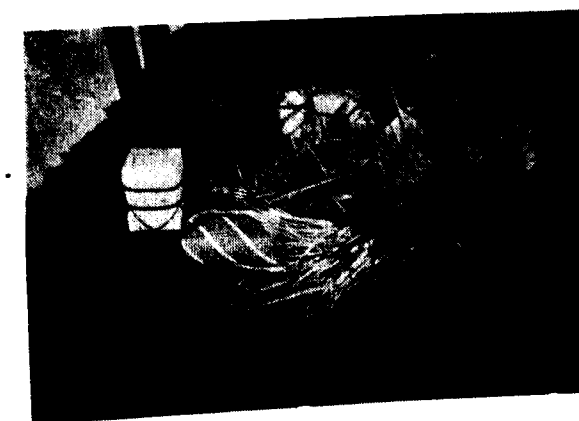


MAKING THE PALMYRA LEAVES INTO FANCY ARTICLES.

MANUFACTURE OF PALMYRA LEAF FANCY ARTICLES.



DYEING THE PALMYRA TENDER LEAVES IN
BOILING COLOURED WATER.

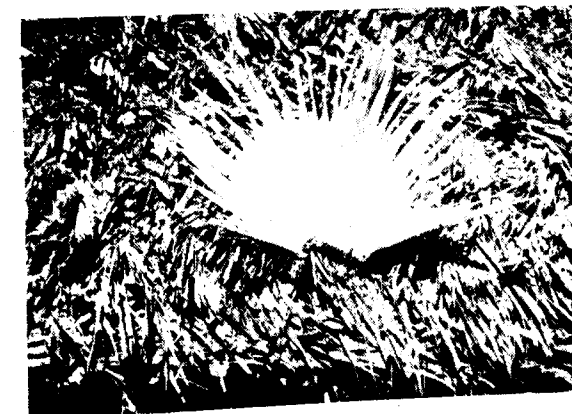


A WOMAN AT WORK ON THE PALMYRA LEAF PRODUCTS.

MANUFACTURE OF PALMYRA LEAF
FANCY ARTICLES—*cont.*

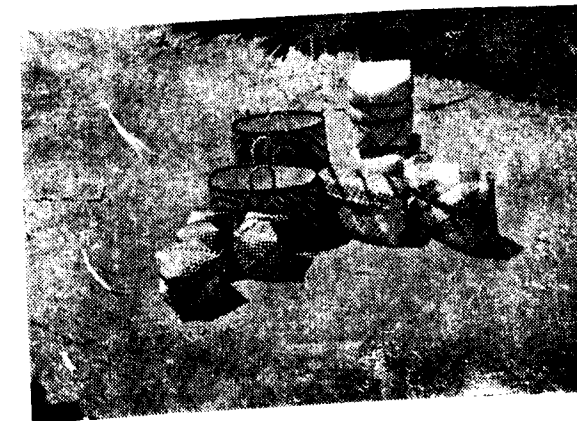
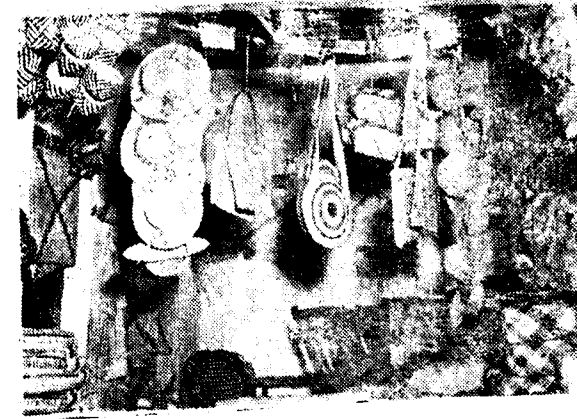


LEAF'S FANCY ARTICLES

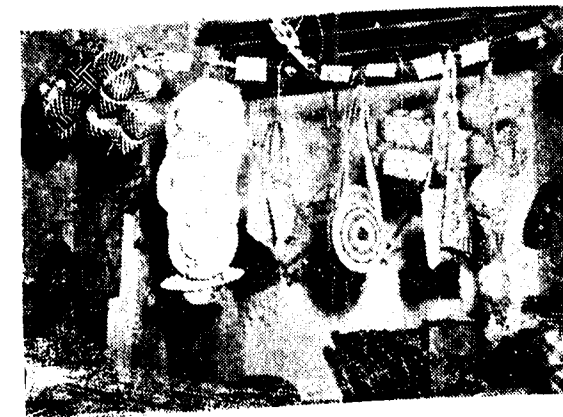


PALMYRA TENDER LEAVES.

MANUFACTURE OF PALMYRA LEAF
FANCY ARTICLES—*cont.*
PALMYRA LEAF FANCY ARTICLES.



PALMYRA BASKETS.



FANCY ARTICLES.

families work like any other workers' families or give finishing touches to the articles produced by others. The two merchants at Tiruppulani, for example, were actually engaged in production of these articles while those at Chittarkottai were engaged merely in painting the hats with flower designs, etc.

4. *Selection of sample.*—Out of the six centres in which the industry is carried on, four centres, viz., Ramanathapuram, Tiruppulani, Chittarkottai and Rameswaram were selected for special study. There were on the whole 405 families engaged in the industry in all the six centres of whom 397 were found in the four centres besides one co-operative society. A statement showing the number of families engaged in this industry in each of these centres and the number of families selected for survey is given in Appendix 55. On the whole, 37 families representing 9.3 per cent of the total were selected on the principle of random sampling of which 33 were family units and four merchant units besides the co-operative society. All the family and merchant units were hereditary workers.

5. *Composition of families.*—A statement showing the composition of an average family is given in Appendix 56. The average size of a family was 4.7 comprising 1 man, 2.1 women, 0.8 boy and 0.8 girl. Of the total, 3.3 or 70.2 per cent were workers and 1.4 or 29.8 per cent dependents. Among the workers, 2.9 were engaged in this industry.

6. *Housing.*—All the units lived in their own houses of which 22 or 66.7 per cent were thatched and 11 or 33.3 per cent tiled. The average floor space was 95 square feet and the average value Rs. 1,002. The annual average estimated rent of a house was Rs. 28-3-0 and the annual repair charges Rs. 8-3-0. No portion of the house was exclusively set apart for this industry. Assuming 25 per cent to be the cost of the industrial portion, the annual estimated rent would be Rs. 7-0-9 and the repair charges Rs. 2-0-9.

7. *Types of articles manufactured.*—The main types of articles manufactured are fancy baskets, square fancy mats, hats, hand bags, winnows, boxes, trunk boxes and miscellaneous items like hand fans, "*Killukituppais*", etc. All these are made out of tender palmyra leaves dyed in attractive colours.

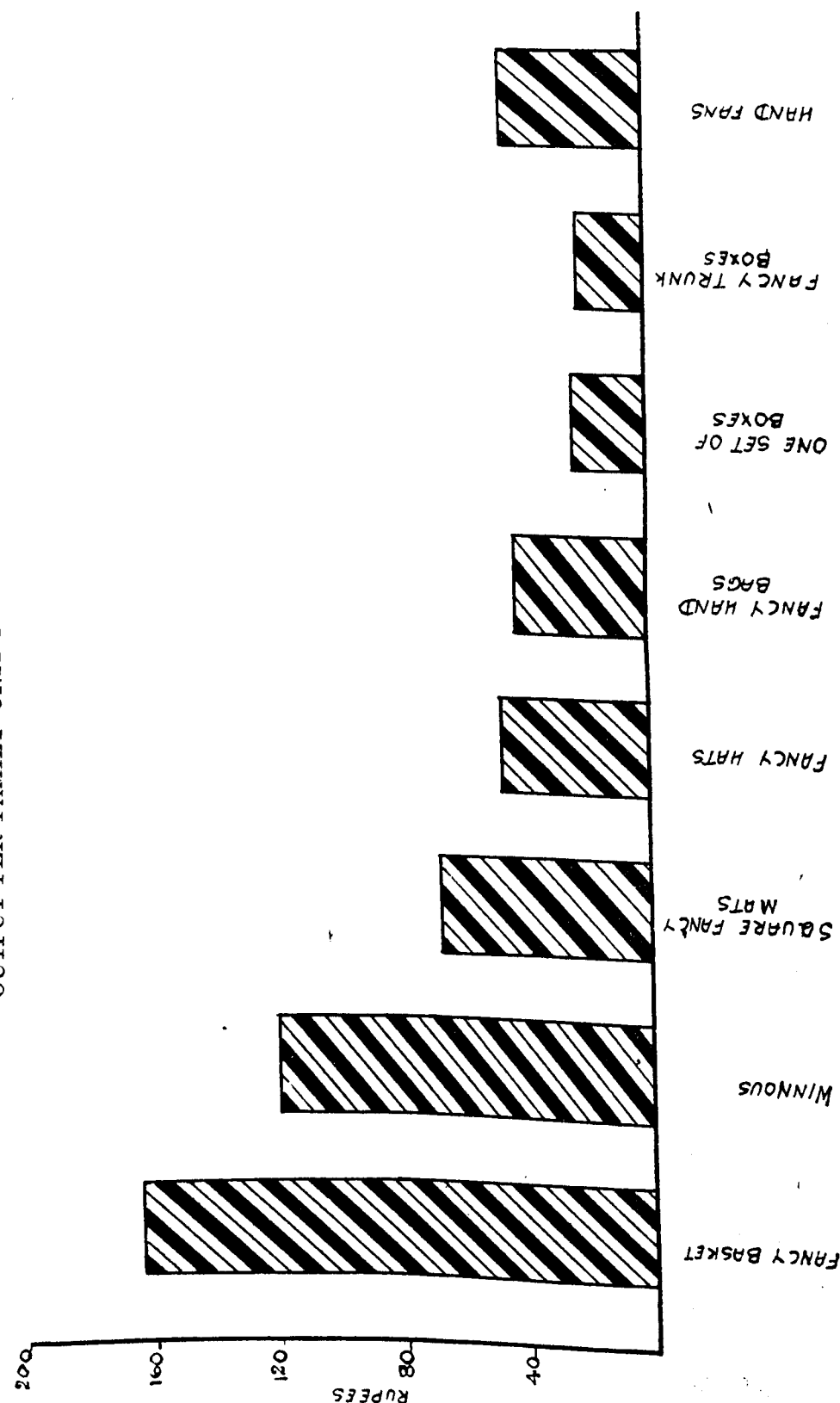
8. *Raw materials and fuel.*—The most important raw material for this industry is palmyra tender leaves. Although each palm throws out 12 leaves in a year at the rate of one leaf per month, only about four to five tender leaves are cut from a tree annually lest the palm should wither away. At Chittarkottai, where many fancy articles with varied designs and colours are made, in addition to tender leaves, green leaves of the palmyra, dyes, thread, coloured cloth, ribs of date-palm leaves, varnish, paints and turpentine are also used. At other centres besides tender leaves, stems of the palmyra leaves, ribs, dyes, turmeric and palm coir are used. The products of the palmyra palm are obtained locally while other items like dyes, cloth, varnish, paints, turpentine, etc., are purchased at Ramanathapuram :—

The statement below shows the average quantity and value of the different raw materials consumed by a unit per annum :—

8.1. *Raw materials per family unit per annum.*

Description.					Quantity bought.	Cost per unit.			Total cost.	Percentage to total.		
						RS. A. P.			RS. A. P.			
1	Palmyra tender leaves	..	..	..	1,682 leaves	..	0	0	6	52	1	0
2	Palmyra green leaves	..	..	..	206 "	..	0	0	3	1	12	0
3	Palmyra leaf stems	..	..	..	1,202 stems	..	0	0	3	18	12	0
4	Palmyra tender ribs	..	..	..	775 lb.	..	0	10	0	25	13	0
5	Palmyra coir (2½ feet in length)	..	..	..	765 Nos.	..	0	10	0	4	10	0
						per 100.						
6	Date ribs	..	..	..	550 ribs	..	0	4	0	1	6	0
						per 100 ribs.						

RAMANATHAPURAM AREA
PALMYRA LEAF FANCY ARTICLES INDUSTRY
OUTPUT PER FAMILY UNIT PER ANNUM



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Description.	Quantity bought.	Cost per unit.	Total cost.	Percentage to total.
		RS. A. P.	RS. A. P.	
7 Colours (dyes)	31 tolas ..	0 8 0 per tola.	15 8 0	12.3
8 Turmeric	26 palams ..	1 4 0 per viss.	0 13 0	0.3
9 Coloured cloth	2 2/11 yards ..	0 10 0 per yard.	1 6 0	0.7
10 Thread	7 1/2 reels ..	1 2 0 per reel.	8 0 0	6.1
Total		..	130 1 0	100.0

The average expenditure for a family amounted to Rs. 130-1-0 of which palmyra tender leaves formed Rs. 52-1-0 or 40.0 per cent, palmyra tender ribs Rs. 25-13-0 or 19.8 per cent, palmyra leaf stems Rs. 18-12-0 or 14.6 per cent and dyes Rs. 15-8-0 or 11.9 per cent. The other items were relatively insignificant. Out of the total, the cost of the products of the palmyra palm amounted to Rs. 103 or 79.2 per cent.

9. *Fuel*.—Fuel is required for dyeing the leaves and ribs in boiling water. Usually the waste materials got out of the palmyra leaves and stems are used as fuel and no expenditure is incurred. The estimated cost of the fuel is about Rs. 4 per annum.

10. *Tools, machinery and equipment*.—The only tools used by the workers are knives, big and small, the former to do the rough job of cutting the leaves from the palm and cutting the stems and the latter for the more delicate processes of removing ribs, splitting the leaves into small strips, etc. At Chittarkottai, besides these knives, needle and brushes and small hammers are used. The table below shows the number and value of different tools owned by an average family unit :—

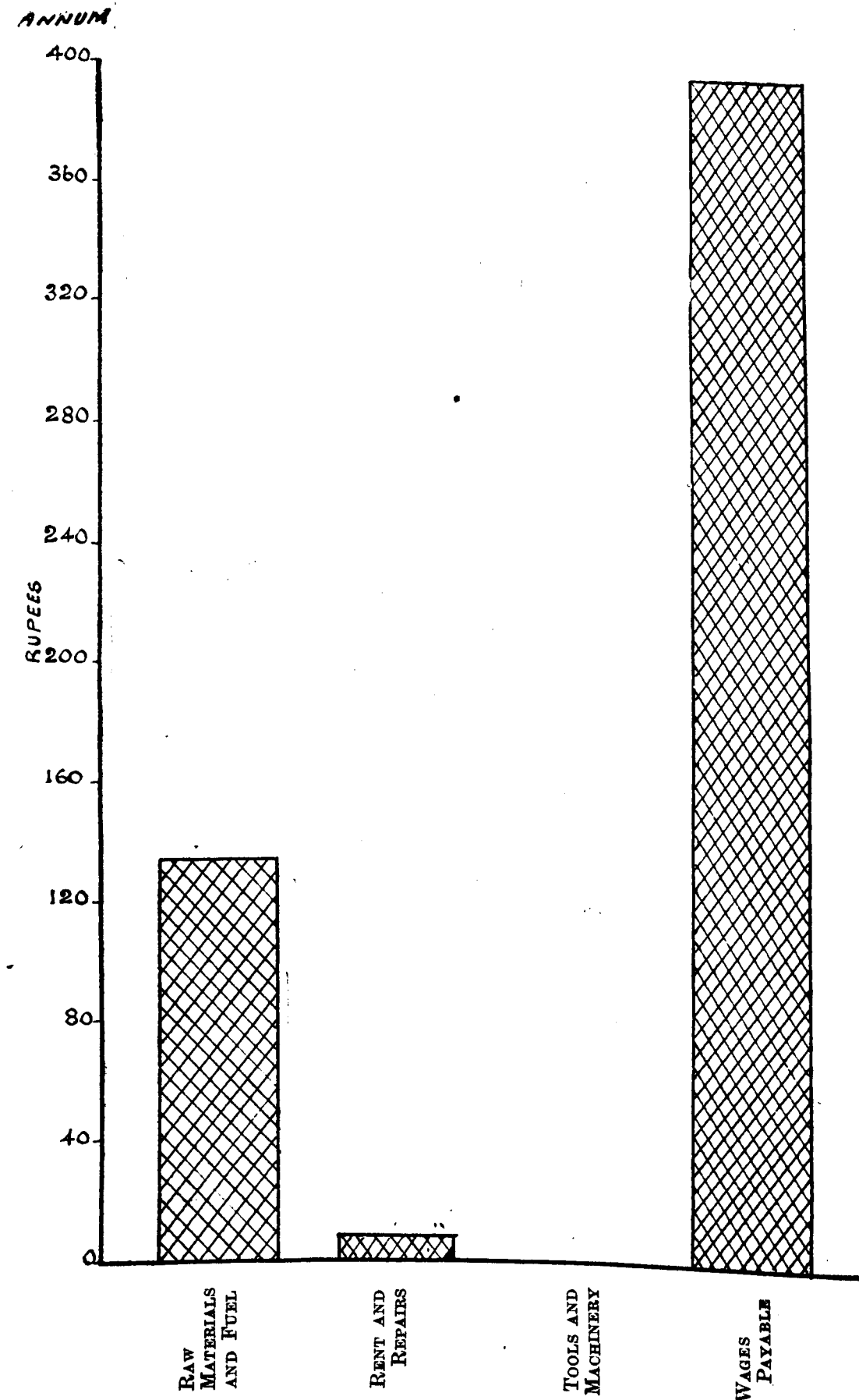
10.1. Tools and machinery per family unit.

Description.	Number available.	Initial cost.	Replacement cost.	Present market value.	Annual maintenance charges.	Depreciation.
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Small knives	2-2	0 14 9	0 15 0	0 8 3	0 3 8	0 2 11
2 Big knives	0-8	0 15 4	0 15 7	0 11 1	0 2 8	0 3 1
3 Grinding stones	0-2	0 8 0	0 10 2	0 7 0	..	0 1 4
4 Needles	1-1	0 0 9	0 0 9	0 0 4	..	0 0 9
5 Scissors	0-2	0 6 6	0 6 6	0 2 10	..	0 1 8
6 Hammers	0-1	0 2 8	0 2 8	0 1 2	..	0 0 5
Total	..	3 0 0	3 2 9	1 14 8	0 6 4	0 10 2

The average initial cost of the tools owned by a family is only the small sum of Rs. 3., their replacement value Rs. 3-2-9 and their present market value Rs. 1-14-8. The annual maintenance charges came to Re. 0-6-4 and depreciation charges Re. 0-10-2.

11. *Manufacturing processes*.—Some of the processes are common for many of the fancy articles. The tender palmyra leaves are first dried in the sun for about two to three hours in the morning before the ribs are removed. Subsequently the leaves are dyed. Turmeric is generally used for yellow colour while for other colours, synthetic dyes are used. The dyed leaves are again dried in the morning sun. They are split into required sizes suited to each article. At Chittarkottai purses and hats are made. To make a purse, for example, tender leaves dyed in different colours are split to the size of 1/6 of an inch, and plaited in the form of purse. The plaiting is done in such a way that artistic designs and striking colour combinations are obtained. Coloured cloth, usually of red, green or blue is used as an inside lining and it is stitched to the purse with cotton thread. For making the

RAMANATHAPURAM AREA
PALMYRA LEAF FANCY ARTICLES INDUSTRY
VARIOUS ITEMS OF COST OF PRODUCTION PER UNIT PER ANNUM



handle, three split leaves of 1/6" size are plaited together into a long rope, smoothened and made even by rolling a stone over it and is inserted in the purse and stitched so that the purse can be hung over the shoulder. To make hats, the leaves are not dyed, as their natural golden colour is well suited. The tender leaves are split into small sizes of one-sixth of an inch and plaited into a rope as in the case of the handle for the money purse. The plaited ropes, after being smoothened and made even, are wound round and round to the shape of a hat. As winding proceeds stitching is also done so that each circular layer is closely knit together to the previous one. Various kinds of flowers are painted on the hats with brushes. Tirupullani is noted for the manufacture of square boxes and hand bags. For the manufacture of square boxes for keeping clothes, dyed tender leaves are used. The leaves are split to the size of one-third of an inch and woven into boxes. These boxes are made of three and sometimes of four different sizes so that one can be kept inside the other. For making hand bags, the same process is adopted as in the case of boxes, the only difference being in the shape of the bag and the provision of two handles to each side to facilitate carrying. Ramanathapuram is noted for the manufacture of winnows, sieves, "*kilukiluppais*", etc. Here the processes are a bit different. Most of the articles produced are of utility type though the artistic element is equally evident. The raw materials used are stems of the leaves and ribs as they are stronger than the leaves. The stems of the leaves are cut to the required sizes and used as rims of winnows and sieves while the body proper is woven with dyed ribs. In the case of "*kilukiluppais*" dyed leaves are used.

Rameswaram is noted for a special type of boxes which look like trunk boxes. Here also coloured leaves and a small quantity of coloured ribs are used.

12. *Production*.—Some families are engaged in the production of one variety and others more than one variety of fancy articles. Out of the 33 families, 12 or 36.4 per cent were engaged in the production of only one variety, 13 families or 39.4 per cent in the production of two varieties, 6 families or 18.2 per cent in the production of four varieties and two families or 6.2 per cent in the production of four varieties.

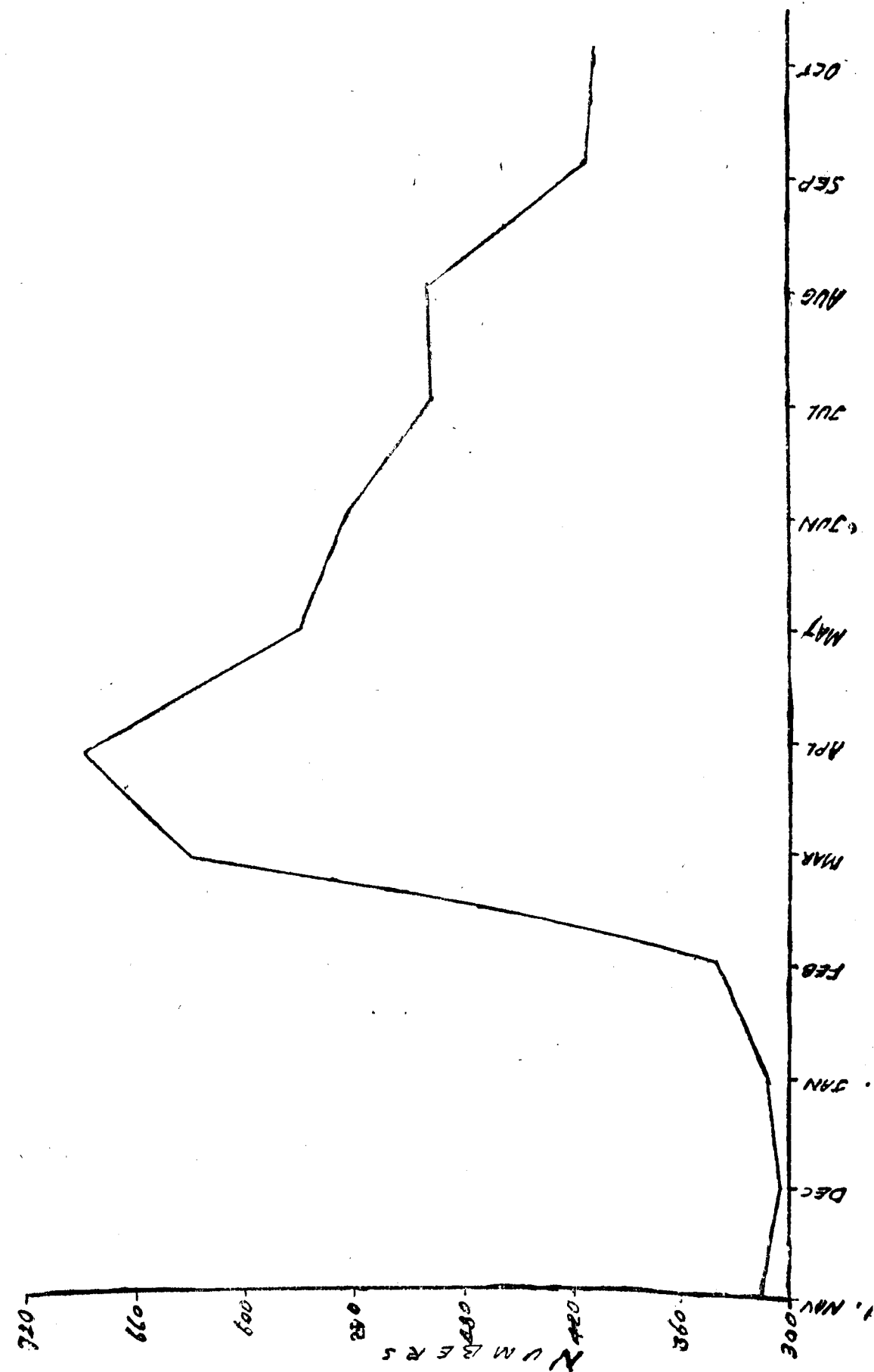
The statement below shows the number and value of output by each family on the average :—

12-1. Output per family unit per annum.

Description.	Output numbers.	Approximate price per unit.			Value.	Percentage to total.
		RS.	A.	P.	RS. A. P.	
I. Main products—						
1 Fancy baskets	1,619	0	1	9	163 0 3	30.5
2 Winnows	673	0	3	0	120 8 3	22.6
3 Square fancy mats	603	0	2	3	68 2 3	12.8
4 Fancy hats	256	0	3	0	47 14 9	8.9
5 Fancy hand bags	121	0	5	6	43 7 0	8.1
6 Set of boxes (each containing three)	107	0	3	6	23 8 3	4.4
7 Fancy trunk boxes	35	0	10	0	21 12 6	4.1
8 Hand fans, Kilukiluppai, etc.	2,004	0	0	4	45 13 3	8.6
Total	5,418				534 2 6	100.0
II. By-products—						
Palmyra ribs	96		0	0	6 3 0 0	..
Grand total					537 2 6	..

Fancy baskets, winnows, square fancy mats, fancy hats, hand bags, boxes and fancy trunk boxes and hand fans are the articles manufactured in the centres in the order of their importance. The average number of articles of all the varieties made by each family was 5,418, valued at Rs. 534-2-6 and the average per adult worker was 2,007 articles valued at

RAMANATHAPURAM AREA
PALMYRA LEAF FANCY ARTICLES INDUSTRY
MONTHLY FLUCTUATIONS OF OUTPUT PER FAMILY UNIT



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Rs. 197-13-6. This should not be taken to mean that each family produced all the articles as there is considerable specialization of production among the families in the different centres. In some centres like Tirupullani no use is made of the palmyra ribs which form a by-product.

13. *Estimated production for the firka.*—On the basis of the average production per family, the total output for the area may be estimated at 2,194,000 articles and 38,900 lb. of ribs valued at Rs. 2,16,300 and Rs. 1,200 respectively.

14. *Fluctuations in output.*—As this formed the main occupation of the female members of the families and as they were engaged on the average for 298 days in the year, there was not much fluctuation in output. A statement showing the monthwar variation in output is given in Appendix 57. Production is slightly higher during the months of February and March when there is a large demand from the rush of pilgrims to Rameswaram and other holy places in the district.

15. *Labour force.*—Both men and women are employed in all the processes while boys and girls help the adult workers. Assuming that a woman's work is equal to that of a man and that of a boy and girl half that of an adult, the adult labour force of an average family was 2.7. A family secured employment for 297.8 days. On the basis of a maximum of 295 working days in a year, an average family may be deemed to have been employed for 101 per cent of the full employment level.

16. *Wages.*—As no outsider is employed by any of the families there is no question of payment of wages. The residuary income from the industry after payment for raw materials etc., forms the wages for the workers. This amounted to Rs. 396-15-6 or Re. 0-7-6 per worker per working day.

17. *Transport.*—No transport charge was incurred by any of the families.

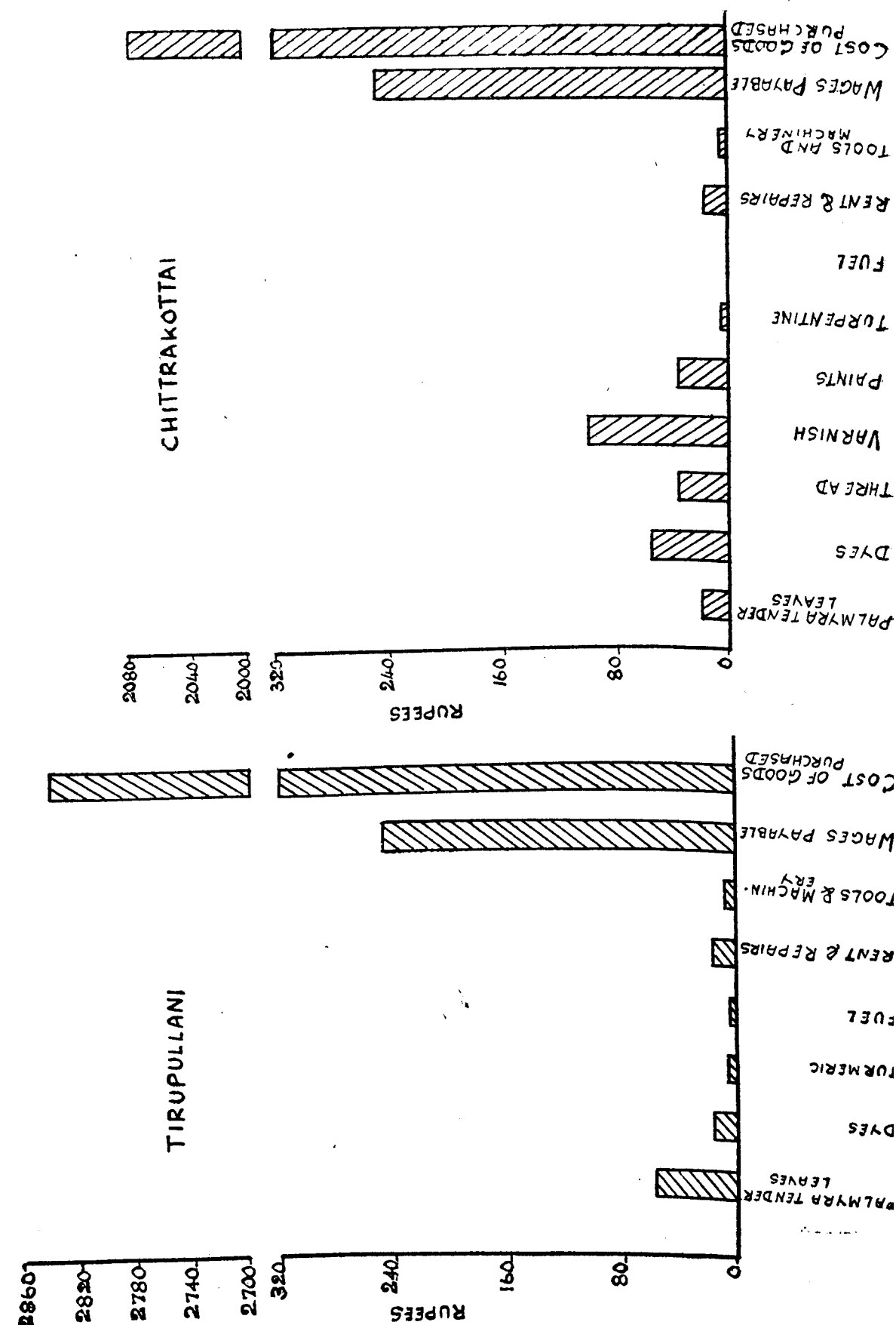
18. *Cost of production.*—Appendix 58 shows the cost of production of various articles and the time taken. The statement below shows the various items that enter into the cost of production :—

18.1. *Components of cost of production per unit per annum.*

Description.	Cost.			Percentage to total.
	RS.	A.	P.	
(1) Raw materials and fuel—				
(a) Raw materials	130	1	0	24.0
(b) Fuel	4	0	0	0.7
(2) Rent and repairs—				
(a) Rent (estimated)	7	0	9	1.3
(b) Repair charges	2	0	9	0.4
(3) Tools and machinery—				
(a) Maintenance	0	6	4	0.1
(b) Depreciation	0	10	2	0.1
(4) Wages payable	396	15	6	73.4
Total cost	541	2	6	100.0
Sale value of output—				
(a) Main product	534	2	6	
(b) By-products (ribs)	3	0	0	
(c) Waste products	4	0	0	
Total	541	2	6	

Of the total cost, raw materials formed 24.0 per cent and the wages payable 73.4 per cent. The average wage received by a family representing the residuary amount was Rs. 396-15-6 per annum.

RAMANATHAPURAM AREA
PALMYRA LEAF FANCY ARTICLES INDUSTRY INCOME FROM THE PALMYRA
LEAF FANCY ARTICLES MANUFACTURED AT TIRUPULLANI AND CHITTARKOTTAI



19. *Profit and loss.*—There is no question of profits as the entire residuary income has been treated as wage payable to the family workers.

20. *Capital.*—The average investment of a family unit was Rs. 270 of which Rs. 257 was on house, Rs. 3 on tools and implements and Rs. 10 on raw materials. Provision has already been made in the cost of production for the investment on industrial portion and tools. As regards the investment on the purchase of raw materials, it was sometimes borrowed on hand loans and no interest was payable on it.

21. *Income from the industry.*—The average annual income from the industry including the imputed items such as rent, depreciation and wages payable amounted to Rs. 404-10-5 or Rs. 86-1-7 per capita. The average income per adult worker per working day was Re. 0-8-2.

22. *Role of merchants.*—There are a few merchants in each centre who specialize in the marketing of these goods. The workers usually sell their daily output to the local merchants who in turn sell them either to other merchants who visit the place from pilgrim centres or export them direct to other places in the State or outside. The workers seldom stock their output against the arrival of outside merchants with a view to get a higher price.

The survey covered the transactions of 4 out of 24 merchants. Of these, two at Tirupullani were themselves workers while the two at Chittarkottai were mainly merchants who gave some finishing touches to the hats they purchased from the workers. As there was some appreciable difference in the working of the two merchants at Tirupullani from that of those at Chittarkottai, their transactions are dealt with separately.

The average size of the family of a merchant unit was 4.3 of whom 2.0 were engaged in the industry, 0.3 in other occupations and 2.0 were dependants. Of the 4 merchant manufacturers, two belonging to Tirupullani lived in thatched huts and the two belonging to Chittarkottai in tiled houses. The average value of a house was Rs. 3,138, the average estimated rent Rs. 48 per annum and the average annual maintenance charges Rs. 17. Assuming one-fourth of the cost to be the share debitable to the industry, rent would amount to Rs. 12 and repairs to Rs. 4-4-0.

The average initial cost of the tools owned by a merchant unit was Rs. 18-15-0, replacement value Rs. 18-15-0, present value Rs. 7, maintenance charges nil and depreciation charges Rs. 5-15-0.

A statement showing the transaction of an average merchant in each of these centres is given in Appendix 59. The transactions cover not merely their own production but also what they purchase from outside. The wages payable has been calculated at Re. 0-7-6 per day per adult worker on the basis of the earnings in the family unit. The gross income of a merchant at Tirupullani including the wages payable and gross profit amounted to Rs. 1,017-13-6 and that of a merchant at Chittarkottai to Rs. 1,699-12-0. To arrive at net profit interest on capital invested has to be deducted. The average investment of a merchant at Tirupullani exclusive of house, tools and machinery was Rs. 475 of which Rs. 250 was own capital and Rs. 225 borrowed capital. The interest for borrowed capital was 12 per cent per annum. The interest at 12 per cent on borrowed capital amounted to Rs. 27 and at 6 per cent on own capital to Rs. 15. The average investment of a merchant unit at Chittarkottai exclusive of house, tools and machinery was Rs. 2,150 of which Rs. 2,000 was own capital and Rs. 150 borrowed. Assuming the same rates of interest, the interest on borrowed capital was Rs. 18 and that on own capital Rs. 120. The net profit in each case was Rs. 725-2-10 and Rs. 1,311-1-4 respectively. The income from the industry including imputed items like wages payable, interest on own capital, depreciation and estimated rent was Rs. 1,008-12-6 for the Tirupullani merchant unit and Rs. 1,699-11-0 for the Chittarkottai merchant. The average income per capita was Rs. 234-9-8 and Rs. 395-4-6 respectively.

23. *Marketing.*—Rameswaram is the chief centre for the marketing of these articles. It is estimated that 60 per cent of the articles are sold at this centre. A certain quantity, about 20 per cent, is sold at Ramanathapuram and 5 per cent at Tirupullani. The remaining 15 per cent is exported outside the district to places such as Madurai, Tiruchirappalli, Madras, Hyderabad, Bombay, Baroda and Delhi. The goods to distant places like Madras, Hyderabad, Bombay, Delhi, etc., are sent by value payable parcel after receipt of some advance.

At Ramanathapuram there are three merchants and a co-operative society who deal in these goods. Two of the merchants and the co-operative society which are near the railway station sell the goods both at their own shops and at the railway station. One of the merchants has a licence for selling the goods at the Mantapam station where the passengers bound for Ceylon halt for sometime and there is a brisk demand for these articles from them.

The usual method is for the merchants to engage some boys who take these goods into the railway station surreptitiously and hawk them to the passengers. The boys work on a daily wage of 4 annas plus commission. The merchants do not give a fixed percentage of commission but fix the minimum price for each article and any excess got over the minimum goes to the boys who sell the articles.

The merchants have to face a number of difficulties in marketing these goods. As already stated, one of the merchants has been given a licence by the railway authorities for the sale of these goods at Mantapam railway station. But in spite of their repeated requests and representations, the merchants have not been given any licence to sell the articles at the Ramanathapuram railway station and the present sales are unauthorized. They represented that permission be given to them to sell the goods in important railway stations such as Rameswaram, Madurai, Tiruchirappalli, etc. Another complaint of the merchants is that they have to incur sometimes heavy losses due to the failure of the merchants at distant centres like Delhi to honour their orders. The articles when they are returned are spoilt. A third difficulty the merchants have to face is that the goods cannot be stocked for more than five months and even less in the rainy season as the colour fades away and the articles become unattractive with the result that they become unsaleable. This makes them sell away the goods even at unremunerative prices to avoid losses. Each merchant has also a certain quantity of such old and unsaleable goods with him. Experiments will have to be conducted into the properties of palmyra leaves to see whether by any treatment they cannot retain the colour for a longer time. These difficulties will have to be overcome if the marketing of these goods is to be properly organized.

24. *Role of co-operation.*—Except at Ramanathapuram, there is no co-operative society for the manufacture and sale of these goods in any of the other five villages where the industry is carried on. At Ramanathapuram, when the present survey was in progress, a Palmyra Products Co-operative Society was started on 22nd October 1952 with a membership of 27 persons for the manufacture and sale of these fancy articles. At the time when the survey of the society was taken up in January 1953, it had been working for about three months. The society had a share capital of Rs. 93 and a working capital of Rs. 50. In view of the paucity of funds, it was not in a position to supply raw materials to all the members and purchase their products. Consequently only four men regularly worked for the society while the other members sold their output to the merchants as they were doing before the starting of the society. Even the women members of the families of these four workers sold their goods to private merchants. The tools used by the four members costing Rs. 2 each were their own and did not belong to the society. The society's capital was used for the purchase of raw materials and the four members worked in the society's premises and paid the rent of Rs. 7 per month. One of the four workers was in charge of selling the articles at Ramanathapuram railway station at the

time of the arrival of the trains. The balance of the sale proceeds after meeting the expenses was divided by the four workers. The following statement shows the transactions of the society during the three months of its working to end of January 1953 :—

24.1. *Working of the Ramanathapuram Palmyra Products Co-operative Society.*

Description.	Quantity.	Value.		
		RS. A. P.		
1 Palmyra tender leaves	84 Nos.	2	10	0
2 Stems	2,103 „	32	13	6
3 Palmyra ribs	1,680 lb.	52	8	0
4 Dyes	21 tolas.	10	8	0
	Total ..	98	7	6
Rent at Rs. 7 per month		21	0	0
	Total cost ..	119	7	6
	Total sale proceeds ..	309	12	0
	Profit ..	190	4	6

As the members worked for 84 days during the period, the average income per worker per working day was Re. 0-9-1. On the above basis, the average annual production of the society may be estimated at Rs. 1,239 and the income per worker at Rs. 190-4-6.

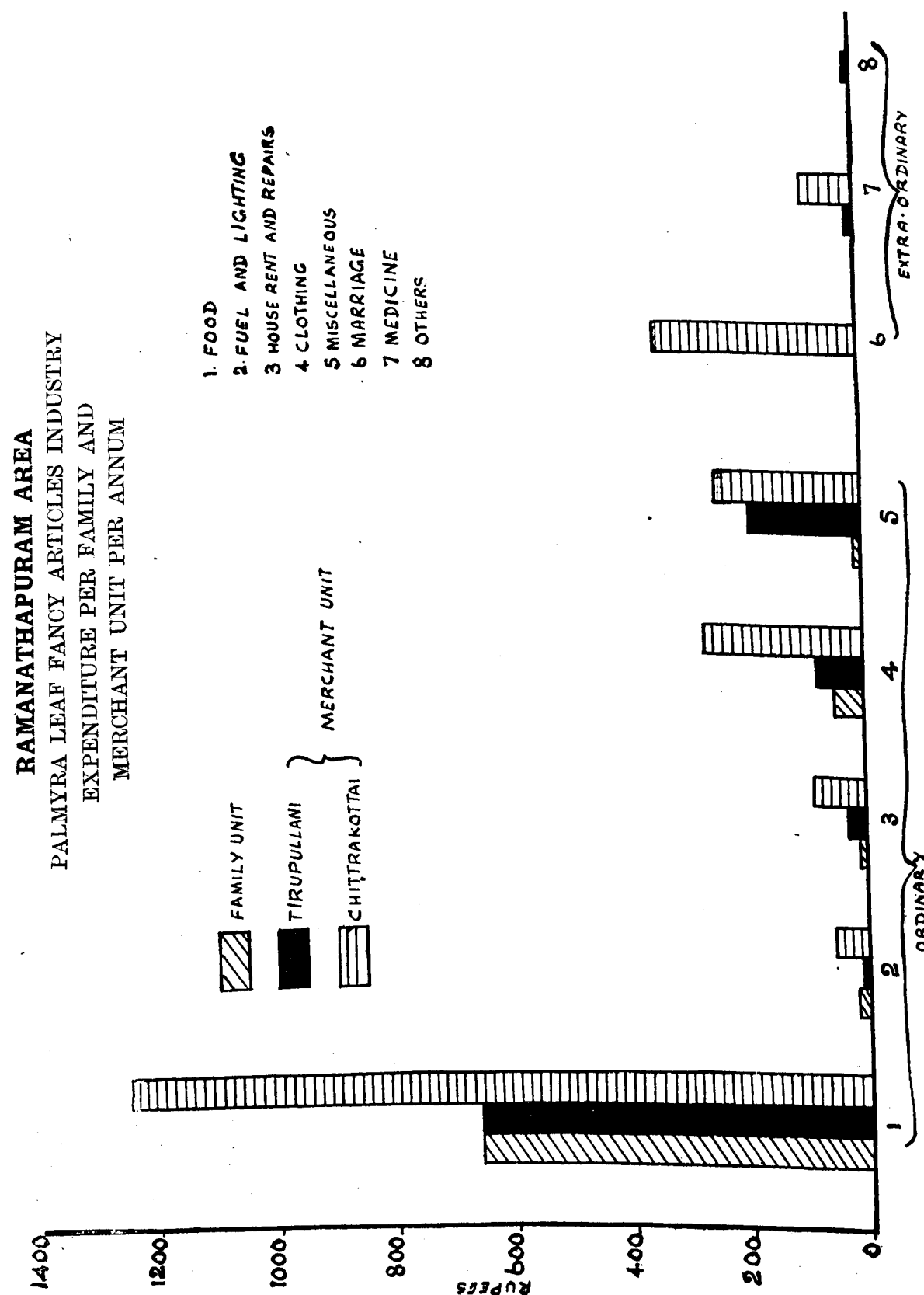
The society was handicapped for want of funds. Its application for a loan of Rs. 500 was awaiting sanction till the end of February 1953 when the field investigation in the centre was completed. With its limited funds, it was not able to comply with the large orders it had received from other places like Tanjore, Dindigul and Vridhachalam. Without adequate capital and marketing facilities for the goods produced, it is not possible for the society to expand its activities to cover all the existing members, much less to bring within its fold all the other workers engaged in this industry in the centre. Besides financial assistance, the society should also be given licence for selling its goods within the railway stations. There should be efficient societies with adequate capital in each of the six centres where the industry is carried on and there must also be a central society to market all the goods purchased by the branch societies.

25. *Income.*—The following statement shows the average income of a family unit and merchant unit :—

25.1. *Income per family and merchant unit per annum.*

Description.	Family unit.		Merchant unit.			
	Amount.	Percentage to total.	Tirupullani.		Chittarkottai.	
			Amount.	Percentage to total.	Amount.	Percentage to total.
	RS.		RS.		RS.	
I. From occupation—						
1 Palmyra leaf fancy articles	405	64.0	1,009	98.6	1,700	42.3
2 Agricultural labour	37	5.8	..	..	..	..
3 Others (remittances from outside, etc.)	183	29.0	..	..	..	..
II. From Assets—						
4 House	7	1.1	..	1.4	78	1.9
5 Land	1	..	..	..	1,500	37.2
6 Others	..	..	..	..	750	18.6
Total ..	633	100.0	1,027	100.0	4,028	100.0

The average income of a family unit was Rs. 633 of which Rs. 405 or 64.0 per cent was derived from this industry. There were few income-yielding assets. The income of a merchant



unit at Tirupullani was Rs. 1,027 per annum and that of a merchant unit at Chittarkottai Rs. 4,028. The percentage of income from this industry was 98.6 per cent in the case of the former compared with 42.3 per cent in the case of the latter. The Chittarkottai merchant units were definitely enjoying a better economic status than those at other centres and they had income yielding assets like lands, etc.

26. *Expenditure*.—Appendix 60 gives the pattern of expenditure per family. The average expenditure of a family unit was Rs. 665 as against an income of Rs. 633 leaving a deficit of Rs. 32 per annum. The expenditure of an average merchant unit at Tirupullani was Rs. 886 as against an income of Rs. 1,027 leaving a surplus of Rs. 141 per annum. The corresponding figures for an average merchant unit at Chittarkottai were Rs. 2,365, Rs. 4,028 and Rs. 1,663.

27. *Assets*.—Appendix 61 gives the assets of the different units. The average asset of a family unit was Rs. 1,255 or nearly two times its income. The chief items are house and jewels. The average asset of a merchant unit at Tirupullani was Rs. 426 as against Rs. 11,315 of a unit at Chittarkottai. The Chittarkottai merchants have big houses and lands and also jewels as their chief assets.

28. *Liabilities*.—Appendix 62 gives the liabilities of the different units. Out of the 33 families surveyed, 19 were indebted, the average debt of an indebted family being Rs. 229 and that for all families Rs. 132. Out of the average debt, Rs. 15 was taken for business purpose and Rs. 117 for domestic expenses. Both the merchant units at Tirupullani were indebted, the average debt being Rs. 225 which was taken for domestic purpose. Of the two merchants at Chittarkottai only one was indebted to the extent of Rs. 300, the average debt for the two families being Rs. 150. The amount was taken for business purpose.

SUMMARY.

The manufacture of fancy articles out of palmyra leaves is a cottage industry which has great potentialities for development as it caters to both the utility and artistic requirements of the people. In the Ramanathapuram area selected for survey, the industry is localized in six villages where it gave employment to 405 families. Four of these centres, Chittarkottai, Rameswaram, Ramanathapuram and Tirupullani were selected for the survey. There was some kind of specialization in each centre in one or more articles. On the whole 38 units, comprising 33 family units, 4 merchant units and one co-operative society were selected for detailed investigation. The average size of a family unit was 4.7 of whom 2.9 were engaged in the industry. The industry was mainly carried on by women. In an average family out of the 2.9 workers engaged in the industry, two were women. With an average annual expenditure of Rs. 130-1-0 on raw materials consisting mainly of palmyra tender leaves, green leaves, ribs and a little of dyes and with simple tools costing no more than Rs. 3 per unit, an average family manufactured in a year as many as 5,418 articles valued at Rs. 534-2-6 and secured an average income of Rs. 404-10-5. This worked out to Rs. 86-1-7 per capita per annum and Re. 0-8-2 per adult worker per working day. The articles manufactured consisted chiefly of fancy baskets, winnows, square fancy mats, fancy hats, hand bags, boxes, fancy trunk boxes and hand fans in attractive colours and appealing to the artistic sense. On the above basis, the production for the area was estimated at Rs. 21,94,000 articles valued at Rs. 2,16,300. The industry provided employment on the average for 298 days in the year.

The merchants play an important role in the industry as they finance production and market the output. Some of the merchant families were themselves workers or gave some finishing touches to the products like painting beautiful designs on them. The average net income of a merchant at Tirupullani was Rs. 1,008-12-6 and that of one at Chittarkottai Rs. 1,699-11-0 nearly 2½ to 4 times that of a family unit.

Rameswaram, the great pilgrim centre in the district, is the chief outlet for these goods. Out of the total production 60 per cent is estimated to be sold at this centre, 20 per cent at Ramanathapuram, 5 per cent at Tirupullani and 15 per cent exported outside the district to places like Madurai, Tiruchirappalli, Madras, Hyderabad, Bombay, Baroda and Delhi. The merchants have to face a number of difficulties in marketing of which the most important are their inability to secure licence for sale of these goods in railway platforms and the liability of the goods to deteriorate in quality in the course of about six months and especially during the rainy and winter months. Only one co-operative society had been organized at Ramanathapuram and even that society was crippled in its activities by want of funds with the result that out of 27 members only four were active members, the others resorting to their usual method of sale through merchants.

The average income of a family unit was Rs. 633 of which Rs. 405 or 64.0 per cent was derived from this industry. The average expenses of a family unit amounted to Rs. 665, the average asset Rs. 1,255 and the average liability Rs. 132. In the case of the merchant units, the income amounted to Rs. 1,027 in the case of a merchant unit at Tirupullani, and Rs. 4,028 of one at Chittarkottai. The expenditure and assets were correspondingly higher and the debts comparatively low.

RECOMMENDATIONS.

The fancy palm leaf articles made in Ramanathapuram Centres do not reach the standard of those produced at Nagore, where a large variety of artistic goods having good demand are manufactured. The workers at Ramanathapuram area should also be taught the technique of making similar articles.

2. The merchants incur some loss due to the unsaleability of old stocks which have faded in colour. Research should be conducted with a view to assist the manufacturer to preserve the dyeing for a long time.

3. The existing co-operative society at Ramanathapuram is not able to expand its activities as it is crippled by inadequacy of funds. Adequate credit facilities should be made available at an early date.

4. The profits of the merchants are out of all proportion to the services rendered by them. The poverty of the worker forces him to sell his daily output to the local merchant who exploits their weakness. The income of the workers can be increased if there is a co-operative society in each of the centres which would purchase and market the finished goods and distribute the profit among the workers. There should be a central society to co-ordinate the activities of the different local societies.

PALMYRA FIBRE INDUSTRY.*

1. The third cottage industry connected with palmyra products surveyed in Ramanathapuram area was the manufacture of palmyra fibre. This is one of the industries which has great potentialities for development. Palmyra fibre is produced on a large scale in the districts of Tirunelveli, Ramanathapuram, West Godavari and Visakhapatnam. Although it ranks only next in importance to coconut fibre, only a small fraction of the total output is used in manufactures in the State. Almost the entire quantity of the fibre is at present exported as raw material to foreign countries, the main port for export trade being Tuticorin.

2. *Distribution of families engaged in cottage industries.*—The extraction of palmyra fibre is a principal cottage industry in four out of the 29 villages in the area. Out of 467 families engaged in cottage industries in these four villages, 95 families or 20.3 per cent were engaged in this industry—vide Appendix 63.

3. *Organization of the industry.*—The extraction of palmyra fibre is a hereditary and subsidiary occupation to the Nadars and Harijans. But during the past few years, due to extreme drought conditions and unemployment in the agricultural sector, other communities have also taken to this industry. The industry is organized mainly on the basis of family unit, each family depending on the labour of its own members. The employer unit engaging outside labour is an exception.

4. *Selection of sample.*—The survey was conducted in two out of the four villages, viz., Kusavangudi and Kudhakottai. There were 65 families engaged in this industry in these two villages of whom 13 were selected for detailed investigation on the principle of random sampling. Among the 13 families, one was an employer unit engaging outside workers on a wage basis while all the other 12 were family units depending solely on the labour of the family members. There was however no real distinction between the two types of units. The industry was a hereditary occupation for all the thirteen families.

5. *Composition of the families.*—The average size of a family was 4.8 persons of whom 1.7 were men, 1.3 women, 1.2 boys and 0.6 girls—vide Appendix 64. Of the total, 3.3 or 69.4 per cent were earners and 1.5 or 30.6 per cent dependants. Among the earners, 3.1 were engaged in the palmyra fibre industry. The average number of adult workers in the family unit was 3 and in the employer unit 3.5. It provided employment to both men and women.

6. *Housing.*—The industry is carried on in the open under the shade of trees and not within the houses. All the families lived in thatched houses, the average estimated value of a house being Rs. 187, the estimated annual rent Rs. 17 and the cost of annual repairs Rs. 7. As the houses are not generally used for industrial purpose, no part of the estimated rent or cost of repairs has been debited to the industry.

7. *Types of articles manufactured.*—The families did not put the fibre to any industrial use. They were merely exported in bundles chiefly to Tuticorin without undergoing any special processes. A small quantity of coarse brooms and brushes is manufactured in Madras and Tuticorin but not in the villages. At Tuticorin some of the fibre is also dyed before export. In foreign countries, the fibre is used for the manufacture of coarse brooms and brushes for cleaning floors.

8. *Raw materials.*—The raw material for the industry is provided by the lower part of the stems of the palmyra leaves. This part, which is semi-circular in shape, is closely attached to the trunk of the palmyra. They are found in large numbers in the young

* The survey extended over an area lying to the east of the road running from Kilakkarai to Devipatnam through Ramanathapuram town.

palms of 6 to 10 years' growth and are usually removed every alternate year. Another advantage in the selection of young palms is that, being less than 10 feet in height, they require less climbing than old palms.

None of the families surveyed owned any palmyra groves but had to purchase their requirements from landlords. Usually the workers lease the trees from the owners with reference to the availability of the leaf stems. The lease rate in 1952 per 100 trees ranged between Rs. 5 and Rs. 6 as against Rs. 2 and Rs. 3 in 1945-46. It is usually paid in advance although some landlords permit payment after sale of the fibre. All the thirteen families surveyed had paid the lease amount in advance. The lessee's right is confined to the stems alone and not to the other parts of the leaves which must be given to the landlord. A family leased on the average 1,400 trees for Rs. 77 out of which it got about 25,700 stems. The average number of stems got from each tree was about 18 and the average price per 100 stems was about 5 annas. All the trees are not taken on lease at a time. Usually some 200 trees would be taken on lease for which Rs. 10—Rs. 12 would be paid as advance and only after selling the fibre, another batch of trees would be taken on lease.

9. *Tools, machinery and equipment.*—The principal tools are knives to cut the stems and wooden hammers to beat them. The knife is of local make and is purchased from the blacksmiths of Kilakkarai or Vannangundu villages while the hammer is made by the workers themselves. Each family had at least one knife while some had two and others three, the average number per family being two. The initial and replacement cost was the same amounting to Rs. 3-8-0 and their present market value Rs. 2-1-0. A knife would last from 5 to 7 years. There was no maintenance charge. Taking six years as the average life, the depreciation charge would amount to 9 annas. In view of the smallness of the depreciation charge and as they are used for other purposes also, it is not proposed to debit any amount to the cost of production.

10. *Manufacturing processes.*—No elaborate processes are involved in the extraction of palmyra fibre. The stems of the palmyra leaves are removed from the trees and the semi-circular lower part of the stem is chopped off with a big knife. The lower parts of the stems are again cut into even sizes of 9 inches, 10 inches or 12 inches in length. The number of stems cut each day depends on the daily productive capacity of the family. The stems are not stored as it will be difficult to beat them when dry. These processes are done solely by men. They are then gathered and kept under the shade of a nearby tree. Each stem is placed on a stone and beaten with a wooden hammer. After beating about 15 to 20 times, the stem is completely crushed. It is then shaken to remove the pith attaching to the fibre. The fibre which is dark in colour is tied into small bundles 12 inches in circumference. These processes are done both by men and women. Boys and girls assist their parents in gathering and beating the stems. They are sold to the local merchant in the village or in the neighbouring village. The merchant dries the fibre well, removes the small quantity of pith they may still adhere, ties them into bigger bundles each weighing an imperial maund (82-2/7 lb.) and sends them by lorry or train to the exporting merchants at Tuticorin. Usually 100 small bundles suffice to make up a big bundle weighing an imperial maund. The Tuticorin merchant cuts them into even sizes of 9 inches, 10 inches and 12 inches and export them to foreign countries. A small quantity is dyed before export.

11. *Production.*—The total output of the single employer unit was 16,480 bundles (164.8 maunds) of fibre valued at Rs. 1,030. The unit had worked for 160 days, and had also employed 12 outside workers (5 men, 4 women and 3 girls) for a period of 115 days. The average production per adult worker per working day was 9 bundles or 0.09 maund.

On the other hand, an average family unit produced 4,210 bundles (42.1 maunds) of fibre valued at Rs. 263-3-0. As each family worked on the average for 156 days and consisted of 3 adult workers, production per worker per working day was 0.09 maund. There

PALMYRA FIBRE INDUSTRY.

LOWER PART OF THE PALMYRA STEMS FROM WHICH PALMYRA FIBRE IS EXTRACTED.



BUNDLES OF PALMYRA FIBRE.



DIFFERENT PROCESSES INVOLVED IN THE MANUFACTURE OF PALMYRA FIBRE.

was no difference in the daily output per worker as between the two types of units. Taking all the units together, the average annual production per unit was 5,154 bundles (51.5 maunds) valued at Rs. 322-3-0 and per adult worker 1,696 bundles (17.0 maunds) valued at Rs. 106. The average production per adult worker per working day was 0.09 maund valued at 7 annas.

12. *Estimated production for the area.*—On the basis of the above average production per unit the total production of palmyra fibre for the area by the 95 families may be estimated at 4,890 maunds valued at Rs. 30,600.

13. *Fluctuations in output.*—Although demand for the fibre from the export markets is fairly constant, production is not continuous. The families go in for agricultural labour during the agricultural season and take up this work only in the off season, i.e., during the period January to June. The table below shows the fluctuations in output during these months :—

13.1. *Fluctuations in output per unit per annum.*

Month.							Quantity (bundles).	Percentage to total.
1952—								
January	..	..	..	..	..	..	505	9.8
February	..	..	..	..	..	..	987	19.2
March	..	..	..	..	..	..	1,141	22.1
April	..	..	..	..	..	..	1,251	24.3
May	..	..	..	..	..	..	1,025	19.9
June	..	..	..	..	..	..	245	4.7
Total ..							5,154	100.0

100 bundles = 1 maund of 82-2/7 lb.

Production begins to rise from January till peak production is attained in the month of April. Thereafter it falls off a little in May and sharply in June.

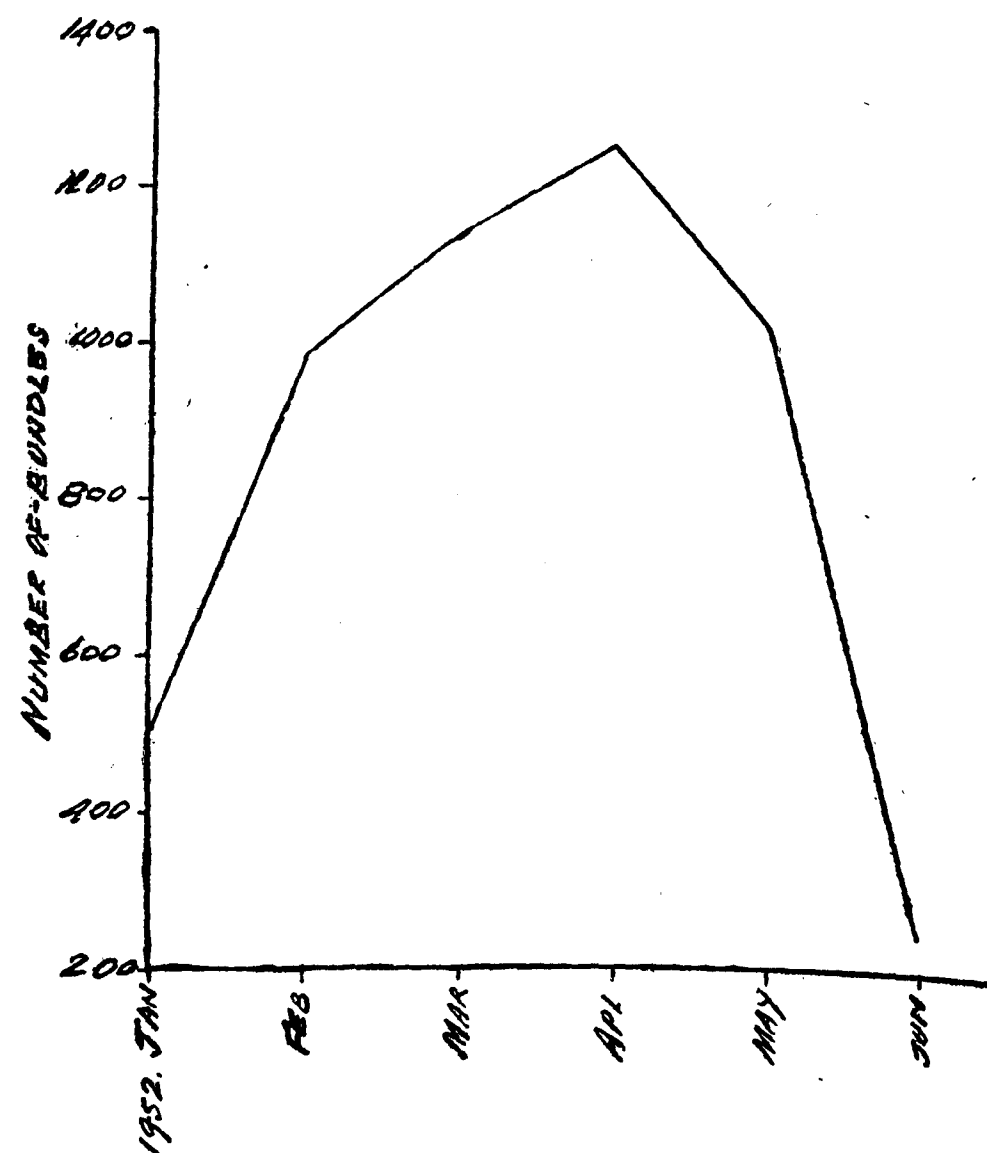
14. *Labour force and employment potential.*—The average number of workers in the family unit was 3 made up of 1.7 men and 1.3 women while that in the employer unit was 4 composed of 2 men, 1 woman and 1 girl and for all units 3.1. Assuming the work of a woman to be equal to that of a man and that of a girl to be half that of an adult, the adult labour force in the family unit was 3 and in the employer unit 3.5 and for all units nearly 3. The family units were employed on the average for 156 days in the year and the employer unit 160 days and for all units 156.3. On the basis of 295 days as the period of full employment the families had secured employment for 53 per cent of the full employment level. The employer unit had engaged 12 workers from outside (5 men, 4 women and 3 girls) on a wage basis for 115 days in the year.

15. *Wages.*—Usually each family carries on work with the help of the family members and there is no question of payment of wages. If outsiders were employed, the daily wage rate for a man was 8 annas and for a woman or girl 6 annas. The employer unit paid a sum of Rs. 590 towards wages for outside labour.

16. *Transport.*—No expenditure was incurred towards transport as the raw materials and finished products were carried by the members of the families themselves.

17. *Cost of production and income from industry.*—The only item that enters into the cost of production is the lease amount. The employer unit paid a sum of Rs. 90 towards lease of the palm trees and Rs. 590 towards wages. Deducting these amounts from its gross receipt of Rs. 1,030 the net receipt was Rs. 350. The average income per working day was Rs. 2-3-0 and per adult family worker per working day 10 annas.

RAMANATHAPURAM AREA
PALMYRA FIBRE INDUSTRY
FLUCTUATIONS IN OUT PUT PER UNIT PER ANNUM



The average expenditure incurred by a family unit for lease of the palm trees amounted to Rs. 75-13-0 while its average gross receipt was Rs. 263-3-0 and net receipt Rs. 187-6-0. The average income per family per day was Re. 1-3-3 and per adult worker per working day As. 6-5.

Taking all the units together, the average income per family per annum was Rs. 199-14-0 and per working day Re. 1-4-6 and per adult worker per working day, As. 6-10.

18. *Capital*.—Very little capital is required to carry on the industry. The initial investment on knives per family was only Rs. 3-8-0 and that for leasing the trees Rs. 10 to Rs. 12. No difficulty was experienced by any of the families in raising this sum.

19. *Marketing and export*.—There is one intermediary between the producer and the exporter. The fibre produced by the families is sold to a local merchant either in the village or in a neighbouring village. The merchant deals not only in fibre but in other palmyra products like mats, ribs, palm-gur, etc. He runs a grocery store as well. He gives small loans of Rs. 5 to Rs. 10 to the families in cash or in kind in return for which they should sell the fibre exclusively to him. All the families have taken such loans. No interest is charged on this loan. The merchant purchases at the rate of 1 anna per bundle and after drying them and rebundling them into bundles of 82-2/7 lb. (Imperial maund) he exports them to Tuticorin. The following statement shows the net profit got by a merchant per imperial maund of fibre exported:—

19.1. *Marketing charges.*

Description.	Amount.		
	RS.	A.	P.
1 Cost price of 100 small bundles at 1 anna per bundle.	6	4	0
2 Drying charges at 8 annas per 200 bundles ..	0	4	0
3 Packing charges (two old gunny bags at 2 annas per bag).	0	4	0
4 Railway freight	2	3	0
Total cost	8	15	0
Selling price	12	0	0
Profit per maund	3	1	0

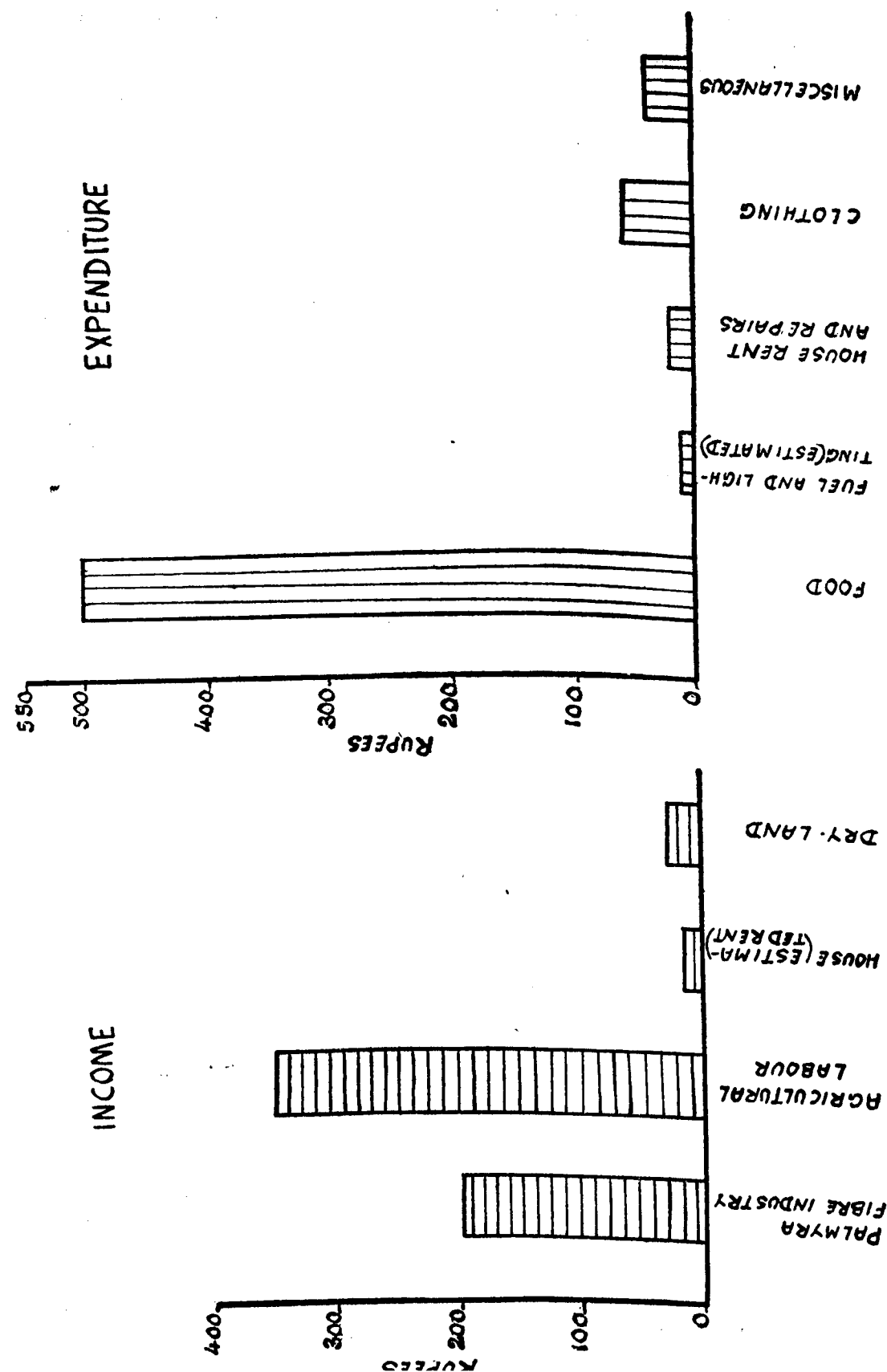
The merchant's profit works out to Rs. 3-1-0 per maund or 34.3 per cent of the total cost. He always takes care to get this amount of profit per maund. If the price falls slightly, the price of a small bundle is not reduced but the workers will have to give him slightly bigger bundles. When this method will not suffice, he reduces the price to 9 pies per bundle. The local merchants are not aware of the importing countries. In the villages surveyed there were four merchants dealing in palmyra fibre and groceries.

20. *Co-operation*.—There is no industrial co-operative in the centre for this industry. A co-operative society, if organized, can eliminate the middle man and organize production and marketing on better lines. Only a small quantity is used at Madras and Tuticorin for making brushes and brooms. Most of the fibre is exported without undergoing any process. There are potentialities for developing the industry in the locality but this requires further investigation. It may be useful if the Industries and Co-operative Departments were to explore the possibilities of organizing production of brushes and brooms locally, on a co-operative basis, using small-scale machinery, if any, available. This will give more employment to the workers.

21. *Income*.—A statement showing the income of an average family is enclosed—vide Appendix 65.

The average income per family was Rs. 598 of which the income from the palmyra fibre industry was Rs. 200 or 33.4 per cent and from agricultural labour Rs. 352 or 58.9 per cent. Average income from assets was only Rs. 46 or 7.7 per cent. The main source of income was agricultural labour. The average per capita income was Rs. 125.

RAMANATHAPURAM AREA
PALMYRA FIBRE INDUSTRY
INCOME AND EXPENDITURE PER FAMILY PER UNIT



22. *Expenditure*.—A statement showing the expenditure incurred by an average family is enclosed—vide Appendix 66.

The average expenditure per family amounted to Rs. 638 against an average income of Rs. 598, leaving a deficit of Rs. 840. Of the 13 families 11 had deficit budgets and 2 surplus budgets. Of the total expenditure, food formed the major item amounting to 78.5 per cent, clothing 9.4 per cent, fuel and lighting 2.1 per cent, house-rent and repairs 3.8 per cent and miscellaneous items 6.2 per cent.

23. *Assets*.—Appendix 67 gives the average asset of a family.

The average asset of a family was Rs. 577 which is less than the average annual income indicating the poverty of the families. Of the different items of assets, land formed 58.0 per cent and house 32.4 per cent, the other items such as livestock, industrial equipment and loans given forming 9.6 per cent. Twelve families owned altogether 20 acres of dry lands. The industrial equipment formed a very insignificant part of the assets.

24. *Liabilities*.—Appendix 68 shows the liabilities of an average family and the security on which they were borrowed. All the 13 families were indebted, the average debt of a family being Rs. 180. Of the total debt, 27.8 per cent was borrowed on mortgage with possession, 38.8 per cent on pro-notes and 33.4 per cent on hand loans. Interest was paid only for loans taken on pro-note. The rate of interest is 15 per cent per annum. The average amount of interest paid by the indebted family was Rs. 14, and by all the families Rs. 12. All the families had taken small hand loans from the local palmyra fibre merchants and were therefore bound to sell their fibre to those merchants.

SUMMARY.

The extraction of palmyra fibre forms the principal cottage industry in some of the villages in Ramanathapuram area. It gives employment to both men and women in the agricultural off season for an average number of 156 days. The usual type of organization is the family unit, the employer unit being the exception. The industry requires little investment both on raw materials and tools. The average annual production per family was 51.5 maunds of fibre valued at Rs. 322-3-0. The average annual income per family from the industry was Rs. 200, that per family per working day Re. 1-4-6 and that per adult worker per working day 7 annas. Marketing charges formed a considerable proportion of the total cost, amounting to Rs. 5-12-0 per imperial maund or 92 per cent of the producer's cost. The profit of the merchant was Rs. 3-1-0 per maund or 34.3 per cent. Out of the average annual income of Rs. 598 the palmyra fibre industry contributed Rs. 200 or nearly one-third. Most of the families had deficit budgets. The average asset of a family was Rs. 577. Almost all the families were indebted, the average debt per family being Rs. 180.

RECOMMENDATIONS.

At present palmyra fibre is exported purely as a raw material without any processing, only a small fraction of the total output being manufactured into brushes and brooms. Steps should be taken to convert them into finished products. This will require small-scale machinery and training for workers. The Industries Department should explore possibilities of introducing such machinery in select villages where there is large production of palmyra fibre and also give training to workers.

2. The survey has shown that the local merchants make nearly 34 per cent profit. They have their hold over the producers by means of small loans of Rs. 5 to Rs. 10. It is necessary that the merchant's hold over these poor people should be removed if their condition is to improve. An industrial co-operative to organize production and marketing may be started in any of the villages centrally situated.

4. PALM GUR INDUSTRY.*

Introduction.—The manufacture of gur out of the sweet juice of the palmyra is one of the important cottage industries in Ramanathapuram area. It is significant from more than one point of view. The preliminary survey of the centre showed that the industry was widespread having been found in as many as 20 out of the 29 villages. From the point of view of employment, it stood second among the palmyra products industries in the area, as many as 797 families being employed in it against 989 in palmyra mat-making, 405 in palmyra leaf fancy products and 95 in palmyra fibre manufacture. The development of this industry is also important from the point of view of food production and improvement of health. It has been acknowledged by food and medical experts that palmyra jaggery is superior to cane jaggery or sugar in its nutritive value. By substituting palm gur for cane jaggery or sugar, not only is it possible to improve our health but large number of acres now devoted to sugarcane cultivation can be diverted for raising food crops like rice. In the Madras (composite) State, the area under sugarcane in 1951-52, was nearly 3 lakhs of acres. While the cultivation of sugarcane is costly, there is practically no expenditure for cultivation of palmyra which, in some regions of this State, grows almost wild. The area under palmyra in the composite Madras State in 1951-52 was nearly 74,000 acres with about 73 lakhs of palmyra trees. Of this about 34 lakhs or 46.6 per cent are being tapped. The importance of the development of this industry as an indirect method of tackling the food and health problems has not been sufficiently appreciated. The industry is also the easiest method of utilizing the skill and experience of ex-toddy tappers, who have been thrown out of employment by the introduction of prohibition. Being one of the oldest cottage industries in the State dating back perhaps to thousands of years and being a hereditary occupation of certain castes and communities, it is easier to revive than many other industries. If in spite of these obvious advantages, it has not expanded as rapidly as one would expect, the blame should lie with the higher classes of society who, by their preference to white sugar have set up a wall of prejudice against its use.

2. *Organization of the industry.*—The industry is one of the hereditary occupations of the Nadar community. After the introduction of prohibition, many of the tappers were thrown out of employment, some migrated to Ceylon and Malaya in search of work while many had to fall back upon agriculture. When Government gave permission to tap sweet juice under the system of licence, some of the ex-tappers took to this industry. Palm juice is available for about six months (March to August) in the year while the production in the other six months is too meagre to be economical. Very few of the tappers own the trees. They take them on lease from landlords after paying a tree rent either in advance or at the end of the year. The rent varies according to the yield of the trees, their accessibility to the village and the competition among the tappers. Generally the trees are let out to the same tenant year after year in the interest of proper maintenance. The landlords are aware that too frequent changes of tenancy will result in the destruction or spoiling of the trees. The usual rent is 8 annas per tree per annum. In some villages, the crop sharing system prevails under which the tenant gives the landlord yield of the palmyra juice on alternate days. While the men are engaged in tapping the juice, women are engaged in boiling and preparing palm gur. Boys and girls assist their parents by collecting fuel for boiling, etc. The industry is run usually as a family unit and the output of palm gur is sold to the village merchants who are also grocery dealers. These in their turn take the palm gur to the bigger dealers at Ramanathapuram. If the family is too poor, the day's output is sold the same night to the grocery merchant in return for the family requirements; if the position of the family is better, a week's output is sold to the bigger merchants. The merchants play

* The survey extended over an area lying to the east of the road running from Kilakkarai to Devipattanam through Ramanathapuram town.

a vital part both as financiers and marketing agents. They sometimes advance money to the tappers on condition that the palm gur produced by them should be sold exclusively to them at prevailing market price or a little less. In times of keen demand, the merchants from Ramanathapuram send their agents to the villages and advance money to the tappers so as to ensure a steady supply of palm gur to them.

3. *Selection of sample.*—Out of the 20 villages in which the industry was found, three were selected for detailed survey, viz., Kilakkarai, Kanjirangudi and Kudhakottai. There were 421 families engaged in the industry, 217 at Kilakkarai, 104 at Kanjirangudi and 100 at Kudhakottai out of which 22 families, 12 from the first, five each from the second and the third villages were selected for survey by random sampling method. The percentage of families selected to the total in the three villages engaged in the industry was 5.2.

4. *Composition of families.*—Appendix 69 gives the composition of an average family. The average size of a family was 5.9 being made up of 1.5 men, 2.1 women, 1.6 boys and 0.7 girl. Each family consisted of 3.7 earners and 2.2 dependents. Of the earners, 3.4 were engaged in palm gur industry for a part of the year and 0.3 in other industries. Both male and female members of the family find employment in the industry. Generally boys and girls assist their parents in fuel collection.

5. *Housing.*—All the processes connected with the manufacture of palm gur is carried on in the open air. There is therefore no question of rent or repairs to buildings being debited to cost of production. Of the 22 families surveyed 19 lived in thatched huts and 3 in tiled houses.

6. *Types of articles manufactured.*—All the families produce only palm gur, although a few families manufacture palm gur crystals. There are differences in the quality of palm gur produced as between the villages depending on the care and attention paid to its preparation, the gur produced at Kilakkarai being of superior quality.

7. *Raw materials and fuel.*—(i) *Raw materials.*—The principal raw material for the industry is the sweet juice of the palmyra palm. The palmyra throws spathes when it is in inflorescence. There are two varieties of palmyra palms, male and female, of which the latter throw out larger and thicker spathes yielding comparatively larger quantity of sap than the former. This juice is collected daily and converted into gur by boiling.

Of the three villages surveyed, in two villages, Kanjirangudi and Kudhakottai, the tappers pay tree rent at an average rate of 8 annas per tree per annum. Usually a grove is taken on lease consisting of nearly 80 to 100 trees of which the tapper selects nearly 40 to 50 trees for tapping. The principles governing selection are (1) the trees should have been tapped in the previous years, (2) they should be robust and (3) they should have rich foliage. Rent is paid for all the trees leased and not merely for those tapped. In Kilakkarai, the third village, besides the leasing of trees, the crop sharing system is also prevalent to a small extent. But this is not economical and only those who cannot afford to lease trees resort to this practice. There is also the practice of purchase of sweet juice by the tappers and others who are engaged in manufacturing palm gur. But the common practice is to pay tree rent rather than sharing the yield or purchasing the juice.

Another raw material required is lime which is available locally. Lime is obtained from the village Ramatheerthakarai which lies five miles from Kilakkarai and four miles from the other two villages. The lime produced at Ramatheerthakarai is sold by hawkers in the neighbouring villages, the price per Madras Measure ranging from 1½ annas to 2 annas. There is no question of shortage of its supply. Moreover lime forms a very small part of the cost of manufacture. One measure of lime is used for coating about 90 pots and one coating lasts for two days. Usually three pots will be tied to a tree. As a tree yields almost one measure of juice per day on the average, one Madras Measure of lime can be used for nearly 60 Madras measures of palm juice. Castor seed powder is used by some families in Kilakkarai to prevent the juice from overflowing when boiling.

The table below shows the quantity and value of raw materials consumed by an average family :—

7.1. Raw materials per unit per annum.

Description.	Quantity (M.M.).*	Value.			Percentage to total value.
		RS.	A.	P.	
1 Palm juice—					
(i) Palm juice obtained by leasing the palm trees	8,298	47	0	0	26.7
(ii) Palm juice purchased	387	49	9	0	28.2
(iii) Palm juice obtained on the sharing method	606	64	0	0	36.3
Total ..	9,291	160	9	0	91.2
2 Lime	101	12	8	0	7.1
3 Castor seed powder	1.1 viss	2	13	0	1.7
Grand total ..	..	175	14	0	100.0

* M.M. = Madras Measure.

An average family consumed during the year 9,291 Madras measures palm juice costing Rs. 160-9-0, 101 measures of lime costing Rs. 12-8-0 and castor seed powder costing Rs. 2-13-0, the total cost of raw materials being Rs. 175-14-0. The average cost of one Madras measure of palm juice obtained by leasing was 1.1 pie as against Re. 0-2-1 per measure for the quantity purchased and Re. 0-1-8 for the quantity got under the share cropping system. The first and last methods involved climbing the trees and collection of juice. Of the total quantity consumed, 89.3 per cent was obtained by leasing the trees, 6.5 per cent by sharing and 4.2 per cent by purchase.

(ii) *Fuel*.—Large quantities of fuel are required by the palm gur manufacturers. The dry parts of the palmyra trees like leaves, stems, stalk, etc., are used as fuel. The twigs from the thorny trees growing in this area locally called 'Odai' are also used. The fuel is collected by the boys and girls and by the women either from their own gardens including those leased or from poramboke lands. Some of the tapper families felt difficulty in getting an adequate quantity of fuel and this is stated to be one of the causes for selling the sweet juice as such. None of the families purchased fuel. The average quantity of fuel consumed per family was 9 tons estimated to cost Rs. 72.

8. *Tools, machinery and equipment*.—The principal tools and equipment consisted of knives, "Kadippus" or squeezers, earthen pots, ladder, laddle and tins. The knives are of local make and last for about six years. The "Kadippu" or squeezer consists of two long pieces of wood hinged at one end. There are four sizes of these instruments to suit the varying sizes of the spathes. The use of this tool is to give a massage to the spathes so that the juice may flow freely. They are made in Tirunelveli district and are sold by a pedlar who visits the villages every year. They last for about five years and cost from Re. 0-12-0 to Rs. 5 each. The earthen pots and ladders are made locally while the laddles are either purchased or made by the tappers themselves. A statement showing the number of tools and equipment owned by an average family is given in Appendix 70. The average initial cost of the tools and equipment per family was Rs. 28-6-9, their replacement cost Rs. 28-7-10 and their present market value Rs. 8-10-10. The knives require to be sharpened once a month and the pots and laddles have to be replaced once a year. The average maintenance charges amounted to Rs. 14-7-9. The average cost of depreciation of tools based on the life of each amounted to Rs. 3-2-11.

There has been no change in the type of tools and equipment used in spite of the fact that the Co-operative department has been actively advocating their adoption of improved tools and equipment.

9. *Manufacturing processes*.—The technique connected with the manufacture of palmyra gur, though simple, calls for much care and attention. First the juice has to be collected from the palmyra palm. This work which is of an arduous nature is attended to by men. The straight and cylindrical shape of the palmyra tree facilitates climbing. In some parts of Ramanathapuram area, ladder is also used to climb up to a certain portion. As soon as a tapper reaches the top of the palm, he removes some of the stems of the leaves enclosing the spathes so that they can be conveniently tapped. Then the spathes are squeezed between two long pieces of wood hinged at one end locally known as "Kadippu". The tips of the spathes are sliced off a little. An earthen pot is tied either to the spathe or to the leaf stalk and the sliced tip is bent into the mouth of the pot. The pots are tied very tightly so that they may not oscillate or shake in the wind. The inside of the pot is coated with a certain quantity of lime to prevent the juice from fermenting. Each morning the tapper collects the juice from the small pots into a bigger pot which he carries tied to his girdle. The sweet juice from the different palms are collected in big pots in a central place of the palmyra grove where the furnace is erected. The furnace is either made of brick or mud. The preparation of palm gur is attended to by women while men tap the juice.

The juice is first filtered once or twice using thick cotton cloth to remove dust or dirt. It is then boiled in big mud pots. Scums which come to the surface are carefully removed. In order to conserve fuel, two or three pots of juice are placed in the same furnace with equal number of mouths. To prevent the juice from boiling over, a small quantity of castor seed powder is put into it. When boiled to 110° to 115° C, it becomes a thick fluid. Experience has taught the women when boiling should be stopped. The pot is then removed from the furnace. The viscous mass is continually stirred with a laddle so that the palm gur may not get charred at the bottom. It is then poured into earthen moulds of different sizes where they become solid and hard. These small blocks are the palm gur. The sugar content of palm juice varies from month to month and usually 8 Madras measures of juice are required to produce one viss of gur. The quality of the gur depends on a number of factors such as the use of adequate quantity of lime, proper methods of filtration, use of clean vessels for boiling, care in boiling, etc. Cleanliness and skill are the prime needs.

10. *Production*.—The statement below shows the average production per family :—

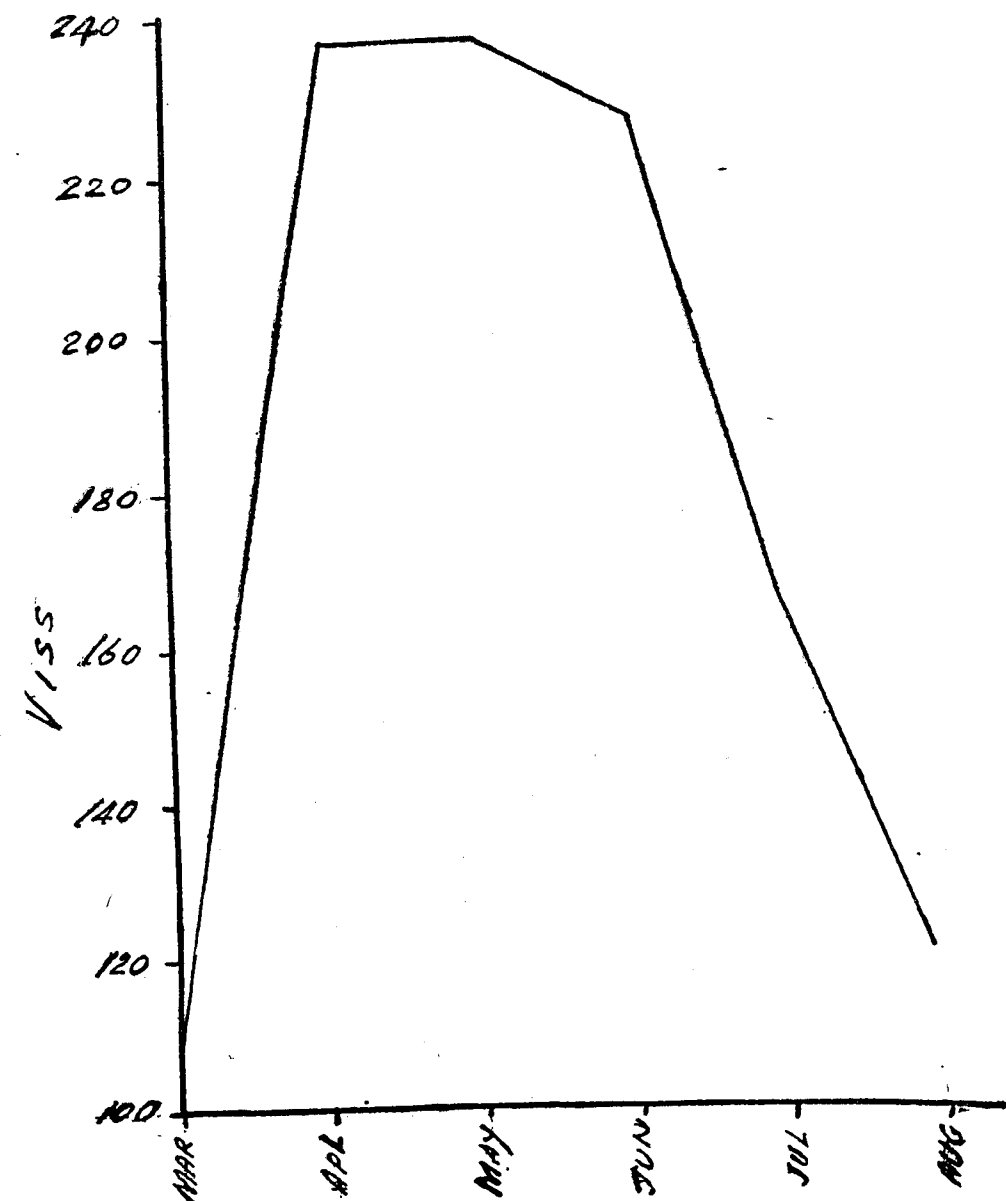
10.1. Average production per family per annum.

Description.	Unit.	Quantity.	Cost per unit.			Value.
			RS.	A.	P.	RS. A. P.
1 Estimated own consumption Madras measure ..	..	192	0	1	6	18 0 0
of juice.						
2 Sold as neera	Do.	286	0	3	7	66 14 0
3 Converted into palm gur	Viss	1,102	0	9	7	649 10 0
Total ..						734 8 0

Out of 9,291 Madras measures of palm juice consumed by an average family, 192 Madras measures or 2.1 per cent were utilized for domestic consumption, 286 Madras measures or 3.1 per cent were sold direct to consumers as neera and the rest 8,813 Madras measures or 94.8 per cent were used for palm gur manufacture. The average quantity of palm gur manufactured by a family was 1,102 viss valued at Rs. 649-10-0. The total value of output was Rs. 734-8-0. As the family was employed for 192 days on the average, the average production of palm gur per working day was 5.7 viss valued at Rs. 3-6-0. Out of 22 families surveyed, 15 or 68.2 per cent produced less than 1,000 visses per annum.

The quantity of palm gur depends on the cleanliness of the methods of production. In Kilakkarai, the tappers filter the juice properly and boil them to the required heat. In the other two villages, filtering the sweet juice is done in a perfunctory manner with the result that quality suffers.

RAMANATHAPURAM AREA
PALM GUR INDUSTRY
FLUCTUATION IN OUTPUT OF PALM GUR PER UNIT



11. *Estimated production for the area.*—On the basis of the average output per family the production for the area surveyed consisting of 797 families engaged in the industry may be estimated at 3.78 lakhs of viss (33,350 imperial maunds) valued at Rs. 5.18 lakhs.

12. *Fluctuations in output.*—Palm gur is manufactured during the six months from March to August. No juice is available in October, November, December and January while in February and September the quantity of juice is so meagre that it is not economical to convert it into gur. The juice is also sold as neera for drinking. A statement showing the fluctuation in output is enclosed—vide Appendix 71. April, May and June are the months when the palms yield largest quantity of juice and correspondingly production is high being 63.8 per cent of the total.

13. *Labour force and employment potential.*—The average number of workers per family engaged in the industry was 3.4 of whom 1.3 were men, 1.8 women, 0.1 boy and 0.2 girl. Assuming that the work of women and children is half that of an adult, the total adult labour force per family was 2.3. The average number of man-days actually worked was 192. On the basis of a maximum of 295 days per year available under full employment, an average family was employed for 65 per cent of the full employment level.

14. *Wages.*—As outside labour is not employed by the families, the question of payment of wage does not arise. The wage rate for ordinary agricultural labour in the locality was Re. 0-12-0 for men and Re. 0-6-0 for women, boys and girls. On this basis the wages payable per family is Rs. 337.

15. *Transport.*—No transport charges were incurred as the family members themselves attended to it.

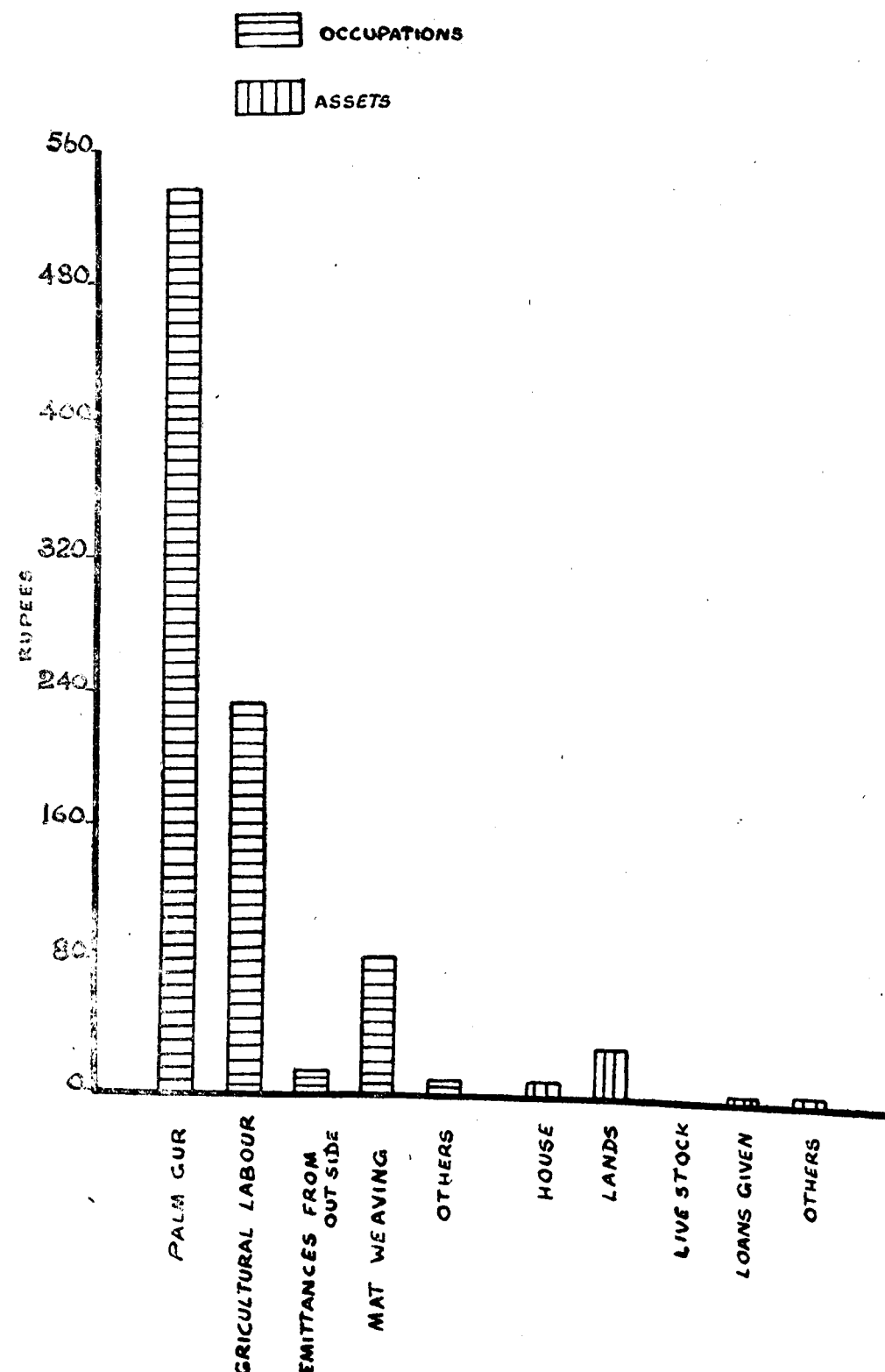
16. *Cost of production.*—The table below shows the cost of production of plam gur incurred by an average family :—

16.1. *Components of cost of production per unit per annum.*

<i>Description.</i>	<i>Cost.</i>	<i>Percent age to total.</i>
	RS. A. P.	
1 Raw materials and fuel—		
(a) Raw materials	175 4 0	29.2
(b) Fuel (estimated)	72 0 0	11.9
2 Tools and machinery—		
(a) Maintenance	14 7 9	} 2.9
(b) Depreciation (estimated)	3 2 11	
3 Wages payable (estimated)	337 0 0	56.0
Total	602 8 8	100.0
Sale value—		
(a) Value of palm gur	649 10 0	
(b) Value of juice sold as neera	66 14 0	
(c) Value of neera used for domestic consumption.	18 0 0	
Total	734 8 0	
Profit	132 0 0	

The profit from the industry amounted to Rs. 132 or 22 per cent of the cost of production.

RAMANATHAPURAM AREA
PALM GUR INDUSTRY
INCOME PER FAMILY



17. *Capital*.—The average investment of a family on the industry amounted to Rs. 189 of which Rs. 28 was on tools and machinery and Rs. 161 on getting palm juice. A sum of Rs. 45 was borrowed during the year on the average for leasing the palm trees, etc., and the interest on this amount which varied from 12 per cent to 18 per cent amounted to Rs. 7-8-0. As depreciation has been allowed on the capital invested on tools, interest is to be calculated on the balance of Rs. 116 being own capital. At 6 per cent per annum the interest would amount to Rs. 7. The net profit per family would then amount to Rs. 117-8-0.

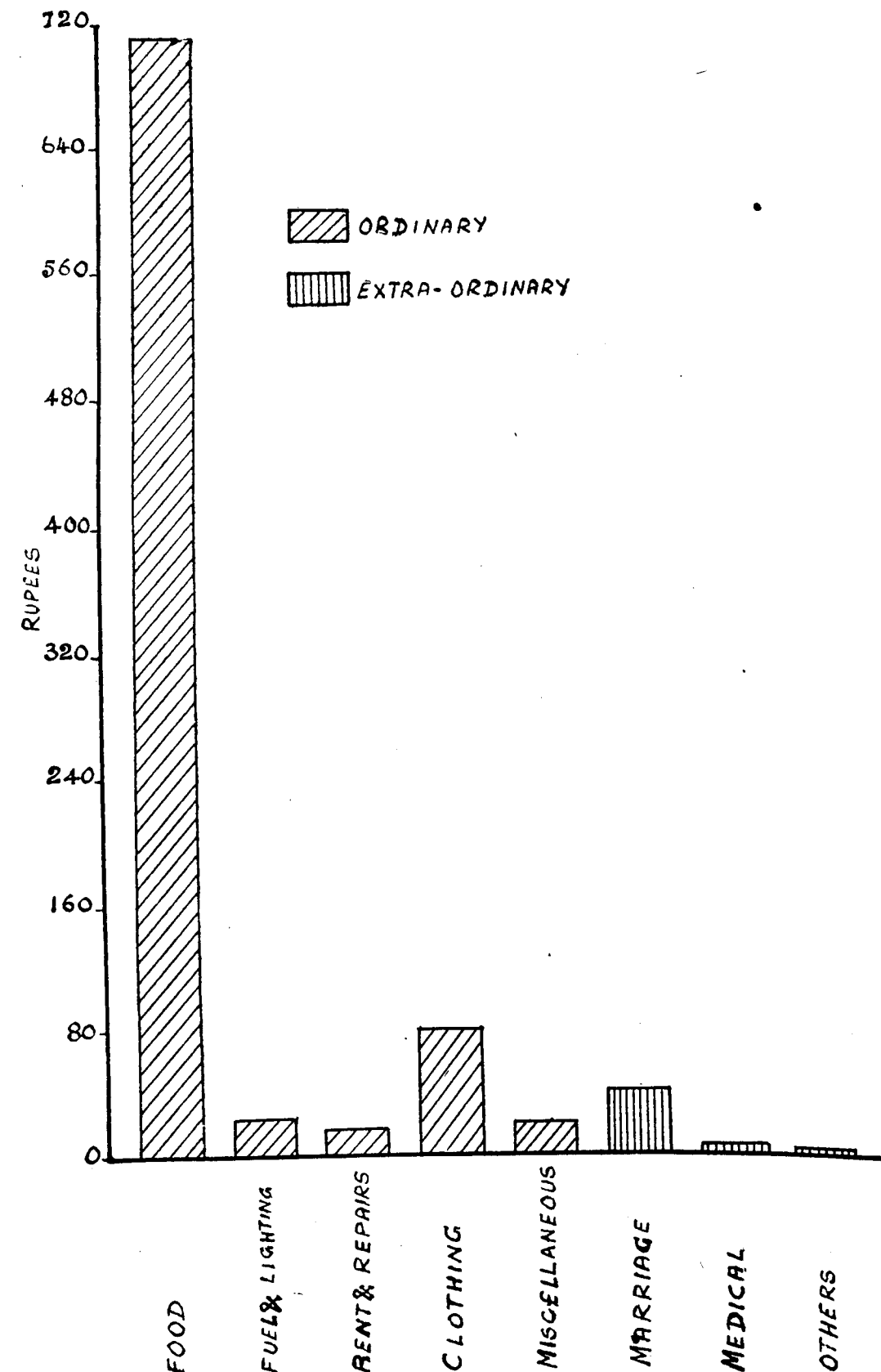
18. *Income from the industry*.—The income from the industry made up of net profit and estimated items in the cost of production amounted to Rs. 537 per family and Rs. 91 per capita. The income per adult worker per annum amounted to Rs. 233-8-0 and per adult worker per working day to Re. 1-3-0. The income derived from the industry by an adult worker was higher than that secured by him in agricultural labour by 7 annas per day.

19. *Marketing*.—The local merchant is the pivot of the entire organization. It is to him that the indigent tapper turns for any financial assistance he may require. The local merchant, by his position as dealer in palm gur and seller of grocery and as money-lender, lays many roles. These families many of whom belong to the landless labour class get little income from land. Their position became precarious by the continued failure of rains during the past six years in the district. This has made the tappers borrow from the merchants to purchase their daily requirements on the promise that the debt will be repaid by the sale of palm gur. Besides this, the tapper has to seek the financial help of the merchant for payment of advance tree rent. This naturally binds the tapper to sell the palm gur manufactured by him to the merchant, either at the prevailing market rate or half anna less per viss, i.e., 6½ per cent less. Out of 22 families, 12 families or 54.5 per cent had taken such advances. The average amount thus received was Rs. 34-2-0. per family. The majority of tappers being poor, cannot store their output even if they have not borrowed from the merchant and have therefore to sell it daily to purchase their necessities. As the merchant combines grocery business with palm gur, he is able to supply them with their daily requirements in return for palm gur. The disadvantage of this method lies in the fact that palm gur usually sells at a lower rate during the season and its price rises in the off-season. For example, the price of palm gur in the months of April, May and June 1952 was as low as 8 annas per viss while it rose to Rs. 1-2-0 per viss in October, November and December 1952. Thus there was a difference of nearly 125 per cent between the prices during the two periods which was pocketed by the merchant. If the tapper had adequate capital, he could avoid such distress sales. Prices also vary a little according to quality. The palm gur produced at Kilakkarai commanded a higher price (one to one and half annas per viss) than that produced in the other two villages.

All the quantity produced by the 22 families surveyed were sold to the local merchants who stored a portion for selling at a higher price during the off-season. The difference between the price at Ramanathapuram and at the villages during the season was about 1½ to 2 annas per viss. The cost of transport would be 3 pies per viss and profit to the merchant would be from Re. 0-1-3 to 0-1-9 per viss or 12.5 per cent to 17.5 per cent. But the major portion of the profit was derived by sale during the off-season.

20. *Role of co-operation*.—The Co-operative Department has been showing considerable interest in the development of this industry. There were 172 palm gur manufacturing co-operative societies in June 1953 in the district catering to the needs of the tappers. The co-operative societies have done much to improve the quality of the palm gur by introducing improved equipment and technique in manufacture. They have also advanced loans to the tappers and have organized the marketing of the output of the members. But there were no co-operative societies in any of the three villages surveyed. The tappers

RAMANATHAPURAM AREA
PALM GUR INDUSTRY
EXPENDITURE PER FAMILY



have not taken to any of the improved methods; they have been carrying on their production only in the traditional way. The organization of co-operative societies is a prerequisite for the improvement of the palm gur industry and for the uplift of the tappers.

21. *Income*.—Appendix 72 gives the sources of income of an average tapper family. The average income of a family was Rs. 917 of which income from palm gur industry was Rs. 537 or 58.6 per cent. Other industries connected with palmyra yielded Rs. 79 or 8.6 per cent. Of the other sources, agricultural labour contributed Rs. 233 or 25 per cent. The families owned few income yielding assets; the average income from this source amounted to Rs. 45 or 4.9 per cent, of which house and lands were the more important contributing Rs. 9 and Rs. 28 respectively.

22. *Expenditure*.—Appendix 73 gives the expenditure incurred by an average family. The average expenditure amounted to Rs. 909 against an average income of Rs. 917. Of the total expenditure ordinary items amounted to Rs. 855 or 93.8 per cent and extra-ordinary items Rs. 54 or 6.2 per cent. Of the former, expenditure on food was Rs. 713 or 78.3 per cent. Among the other items, clothing formed the biggest, amounting to Rs. 80 or 8.2 per cent. Among extraordinary items, marriage accounted for Rs. 43 or 4.8 per cent.

23. *Assets*.—An average tapper family had assets valued at Rs. 777—vide Appendix 74. It represented 84.7 per cent of the average income. Of the assets, land formed the major item amounting to Rs. 348 or 45.1 per cent of the total. The value of the house was Rs. 260 or 33.5 per cent, that of jewels Rs. 91 or 11.8 per cent and that of others like live-stock, industrial equipment, loans given, etc., Rs. 78 or 9.6 per cent. Each family owned a house. Of the 22 families, 10 families owned $31\frac{1}{2}$ acres of lands and 7 families had jewels.

24. *Liabilities*.—A statement showing the liabilities of an average family is given in Appendix 75. Of the 22 families, 18 were indebted, the average debt for an indebted family being Rs. 292 and for all families Rs. 238. Of the average debt, a sum of Rs. 52 was borrowed for business purpose and Rs. 186 for domestic purposes. Of the total debt, 15.6 per cent was secured on mortgage with possession, 4.5 per cent on simple mortgage, 26.5 per cent on pro-note and 53.4 per cent on handloans. The rate of interest varied from 10 per cent to 18 per cent. The average liability formed 30.7 per cent of the assets and 26.0 per cent of the income.

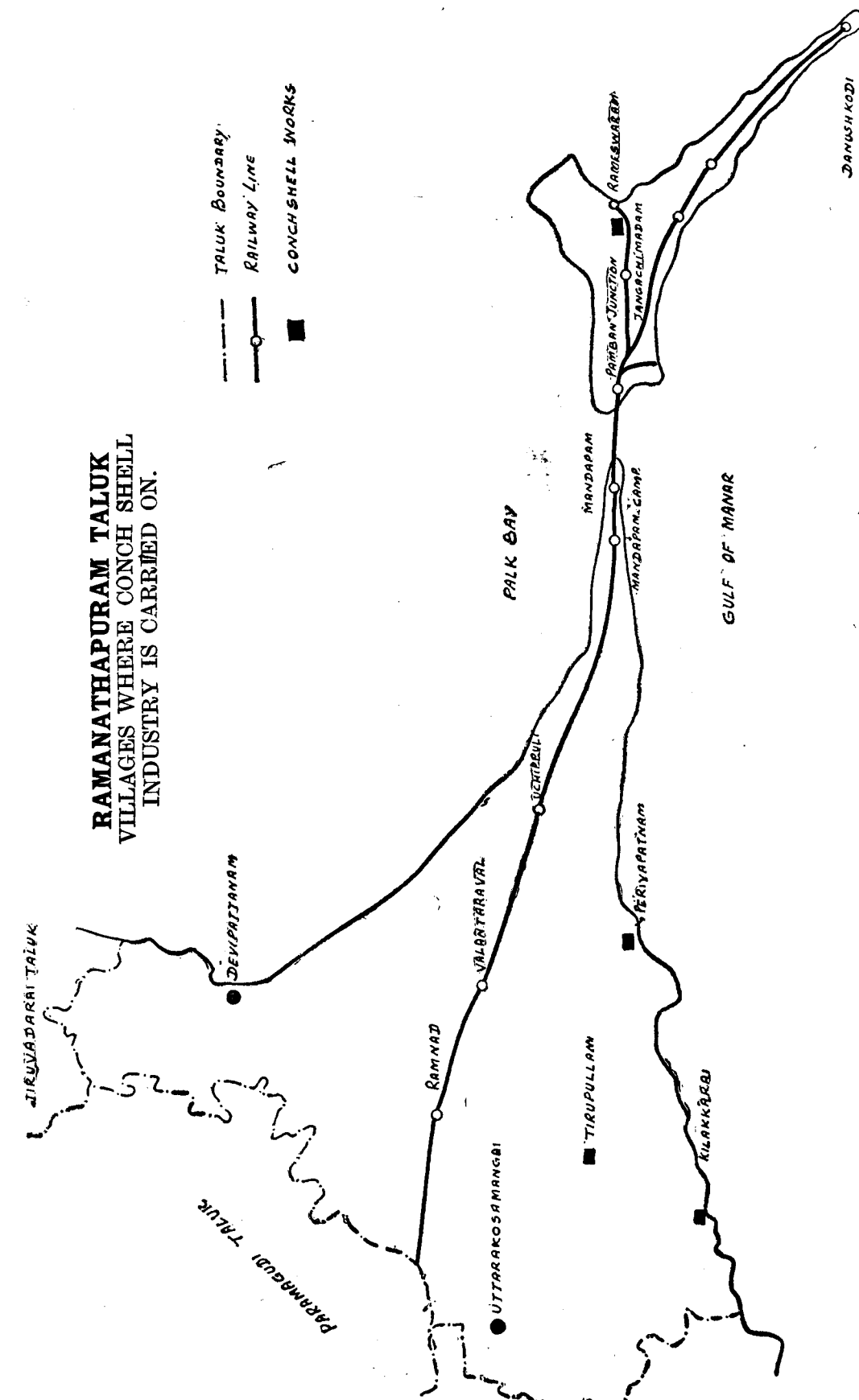
SUMMARY.

The palm gur industry, properly organized, offers a wide scope for employment of ex-tappers on productive lines. It offers employment to both male and female population for nearly six months in the year. The industry is run mainly by the Nadars and a few Muslims as a hereditary occupation. The size of an average family was 5.9 of whom 3.4 were engaged in this industry. The raw material for the industry is available locally and very little investment on tools and machinery is required. An average family consumed 9,291 Madras measures of palm juice and manufactured 1,102 viss of palm gur valued at Rs. 649-10-0 per annum. An average family secured employment for 192 days and the industry provided an annual income of Rs. 537 which formed 58.6 per cent of the total family income. Most of the families belonged to the landless class. The average asset of a family was Rs. 777 and average liability Rs. 238. Most of the families were indebted. The importance of the industry to the ex-tappers cannot be exaggerated as it constitutes the major source of the family income. The survey has shown the defects now existing in the organization of the industry and the lines on which improvements should be affected. The major defects are—(1) ignorance of the improved methods of manufacturing palm gur, (2) lack of capital on the part of the workers which makes them indebted to the petty merchants of the village and (3) lack of an efficient organization for marketing the palm

gur so as to prevent distress sales by producers. It has also shown how co-operation has not yet spread to any of the villages surveyed. If these major defects can be rectified, the industry is bound to have a bright future and would certainly help solve the problem of unemployment for ex-tappers in the area. In this connexion the importance of the industry in solving the problem of self-sufficiency in sugar for the State and indirectly of food should not be overlooked.

RECOMMENDATIONS.

Co-operative societies should be formed for each village or group of villages under an efficient manager, preferably paid by the Government in the initial stages. The society should look after all the needs of the members such as leasing of palm trees, introduction of improved appliances and technique in the manufacture of palm gur, financing of the workers and marketing of the finished product. Its first aim should be to release the workers from the grip of the petty merchants by taking over the debts which the members now owe to them. As the members lose most of the profits of manufacture by disposing of their output during the season itself and even the same day, the society should have adequate capital to purchase and stock the goods and sell them at a later date when prices rise.



CONCH SHELL INDUSTRY.*

1. Rameswaram firka in Ramanathapuram district was selected for a survey of the Conch Shell Industry mainly because the coast of the district is renowned as one of the richest conch fisheries in the State and Rameswaram is an important centre for conch products. The survey was later extended to cover a few other important centres of Conch Shell Industry like Kilakkarai, Periapatnam and Tirupullani.

South India has been famous from very ancient times for the beautiful white conches obtained from her seas. Archaeological excavations at Korkai and Kayal and references in ancient Tamil literature bear ample testimony to the existence of a flourishing conch cutting industry in the ancient Pandya kingdom and to the common practice of wearing conch bangles. The causes for the disappearance of this prosperous industry from South India and its migration to the distant shores of Bengal are not known but they have been attributed to the great social upheaval that followed in the wake of the Muslim invasion of the South in the fourteenth century.

At present conch is used for a variety of purposes in the State—the chief of which is for religious and ceremonial purposes, conch being considered as one of the symbols of Lord Vishnu. It is used as a blowing wind instrument in all the Hindu temples and is also used in temples and houses during worship. There are many other minor uses of conch. In certain parts of Tamilnad, bits of conches are tied in the “*Thali*,” in the door lintels, around the neck of cattle and children as talisman to bring prosperity or ward off evil. Conch rings are worn in the regions bordering the Gulf of Mannar while women of South Arcot use necklaces of conch beads. Another common use of conch is as a feeding spout for giving milk to children. It is also used in the preparation of indigenous medicines and incense sticks. Lime made out of it is used for white-washing buildings, especially newly built houses and temples. Inside the shell lives a soft-bodied animal which is boiled, sliced and dried and sold as “*Sangu Meat*.” All these minor uses of conch have helped the survival of a very small industry in the State.

2. *Distribution of families engaged in the industry.*—The preliminary survey of the area revealed that the conch shell industry is carried on in four centres, Kilakkarai, Periapatnam, Rameswaram and Tirupullani in the order of their importance. A statement showing the number of families engaged in the conch shell industry and the number engaged in all the cottage industries in these four centres is given in Appendix 76. Out of 791 families engaged in cottage industries, 67 families or 8·5 per cent were engaged in conch shell industry. In Kilakkarai, Periapatnam and Rameswaram, the units are engaged in cleaning, carving and polishing the conches while at Tirupullani, they manufacture conch bead garlands out of broken conch shells. The problems facing these two industries are not identical and hence they are dealt with separately.

(i) CONCH SHELL INDUSTRY.

3. *Organization of the industry.*—The right of conch fishing in Ramanathapuram coast had been given in auction to a private person. This means that all divers must deliver the conches picked up by them to him on pain of criminal prosecution. From the lessee, other merchants and workers must purchase their requirements. This places the lessee in a peculiar position of monopoly in relation to other merchants and workers. He is not interested in the development of the conch shell industry in the area as he is satisfied with getting his profit by exporting them to Bengal as raw conches. The best conches, commanding good price, are invariably exported so that the local craftsman have to be content with whatever is left or must pay very high prices for securing them. The lessee does not however enjoy complete monopoly as there are a few

* The survey extended over an area lying to the east of the road running from Kilakkarai to Devipatnam through Ramanathapuram town.

other big merchants at Kilakkarai dealing in conches. They get their stock by bidding at auctions held by the Government Fisheries Department at Tuticorin. But they are also not interested in the development of the local industry being satisfied with exporting the conches. The result is the local cottage industry is either starved of the essential raw material in adequate quantity and quality or has to be satisfied with second-grade materials. The development of the local industry is thus handicapped even at the outset by insufficient raw material, even though it is available in plenty in the area. This has been the burden of complaint of all the workers in this cottage industry and any reorganization of the industry should aim at satisfying this need.

At the bottom of the organization, there are a large number of hereditary workers mainly muslim women. Many of the male members of these families have gone to Ceylon, Burma and Malaya in search of employment and till recently used regularly to send money to their families. The women were engaged in the conch shell industry as a subsidiary occupation. But due to the exchange regulations imposed by the Ceylon and Burma Governments, the families are not now receiving as much remittances as before and are in a bad way. They work in their own homes with simple tools. Due to their poverty and ignorance they are unable to buy either the raw materials direct or market the finished goods. Their position is merely that of wage-earners.

This situation has led to the emergence of a set of intermediaries who are small scale businessmen. They purchase the raw conches from the lessee or other big merchants at Kilakkarai, distribute them to the workers and after they are cleaned and polished, sell them to merchants who visit the places from such centres as Rameswaram, Madurai, Tiruchirappalli, etc.

4. *Selection of sample.*—The statement below shows the distribution of the families engaged in conch shell industry in the three centres:—

4.1. *Distribution of families among the centres.*

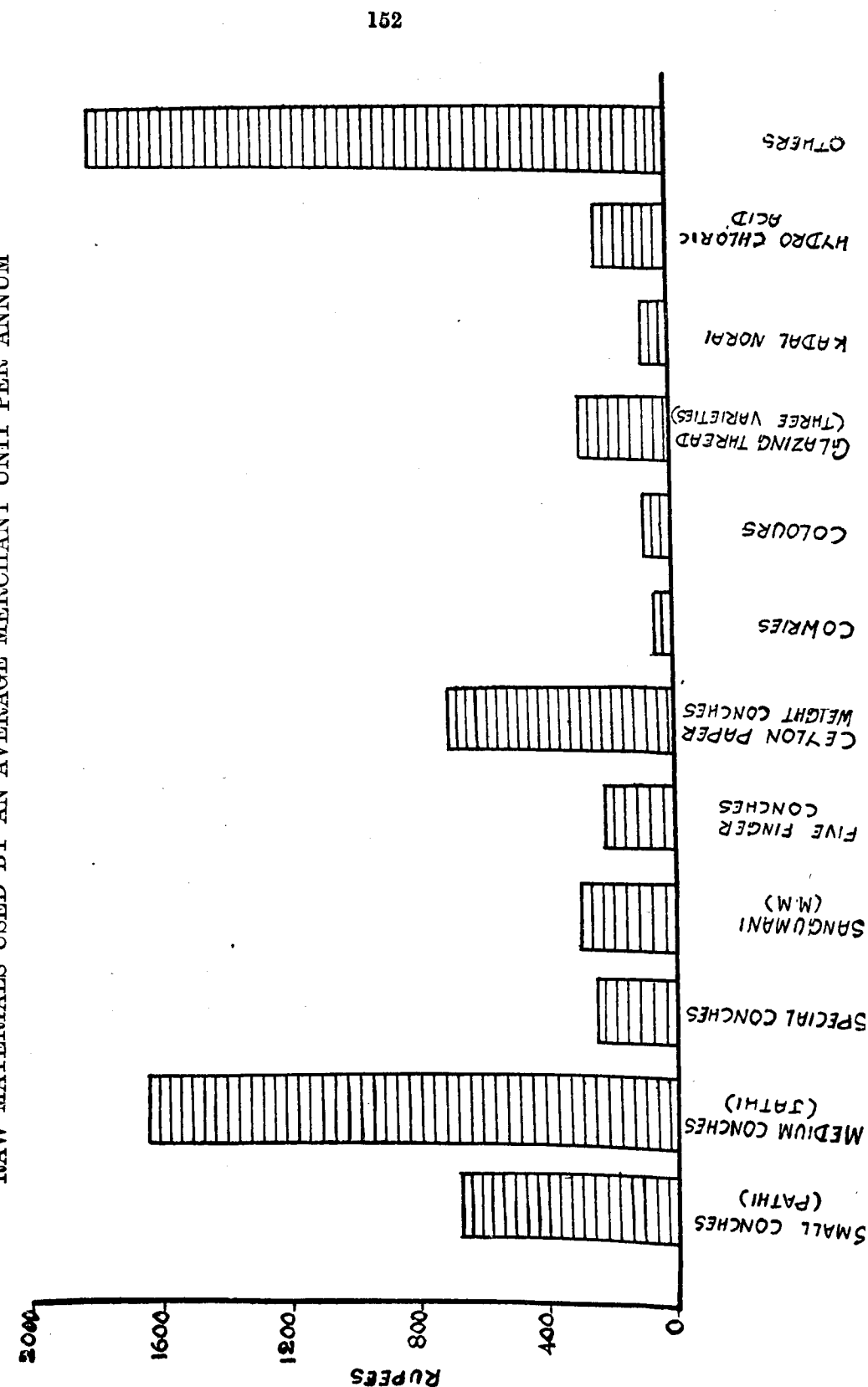
Name of centre.	Total number of units.			Number of units selected.		
	F.U.	M.M.	Total.	F.U.	M.M.	Total.
1 Kilakkarai	24	6	30	14	2	16
2 Periapatnam	22	3	25	8	2	10
3 Rameswaram	..	6	6	..	3	3
Total	46	15	61	22	7	29

F.U. = Family units.
M.M. = Merchant-manufacturer.

Out of a total of 61 units 29 or 47·5 per cent were selected for detailed investigation. Of the sample selected, 22 were family units and 7 merchant-manufacturers. The family units work for wages on the raw materials supplied by the merchant-manufacturers. The latter do not engage themselves in direct manufacture but act mainly as financing and marketing agents. The problems of the two being different they are dealt with separately.

5. *Composition of the family.*—Excluding the male members who have migrated to Ceylon for employment, the average size of a family unit was 4·5 of whom 0·6 were men, 1·9 women, 1·3 boys and 0·7 girl. In the 22 families surveyed, 7 men or 0·3 per family on the average had migrated to Ceylon. The average number of workers residing in the village per family was 2·6 and dependents 1·9. Among the workers, men formed 19·2 per cent, women 65·4 per cent, boys 7·7 per cent and girls 7·7 per cent. All the workers in the families were engaged in conch shell industry.

RAMANATHAPURAM AREA
CONCH SHELL INDUSTRY
RAW MATERIALS USED BY AN AVERAGE MERCHANT UNIT PER ANNUM



6. *Housing.*—All the 22 families lived in their own houses, 17 of which were thatched and 5 tiled. The average area of a house was 224 square feet. The estimated rent of the house amounted to Rs. 37-0-8 per unit and the cost of annual repairs, Rs. 8-3-6. As the women observe gosha, work is carried on usually in the inner court yard.

7. *Types of articles manufactured.*—Conches found in the coasts of Ramanathapuram and Tirunelveli are milk-white in colour, bright and shining like ivory. They are specially suited for cutting, carving, lacquering and painting. There are three varieties of conches locally designated as Patti, Jathi and special. The special variety consists of those having a diameter of more than $3\frac{1}{4}$ inches. All conches below this size are grouped into two classes Patti (small) and Jathi (medium). These varieties are available in plenty, while special variety is rare. The conches picked from the sea have to undergo certain processes before they become milk-white in colour or before they can be used in the bangle industry.

The local industry cannot lay claim to any artistic excellence unlike that in Bengal. The families are engaged merely in cleaning the conches and not in making beautiful articles. The only artistic feature discernible in the workmanship is the drawing of a few lines or designs of flowers on the surface of the conches. There is plenty of scope for the development of a flourishing cottage industry in view of the abundance of raw materials and hereditary skill of the workers. But the first requisite is that the workers should be given necessary training by the experienced craftsmen of Bengal in the modern technique of conch cutting and carving.

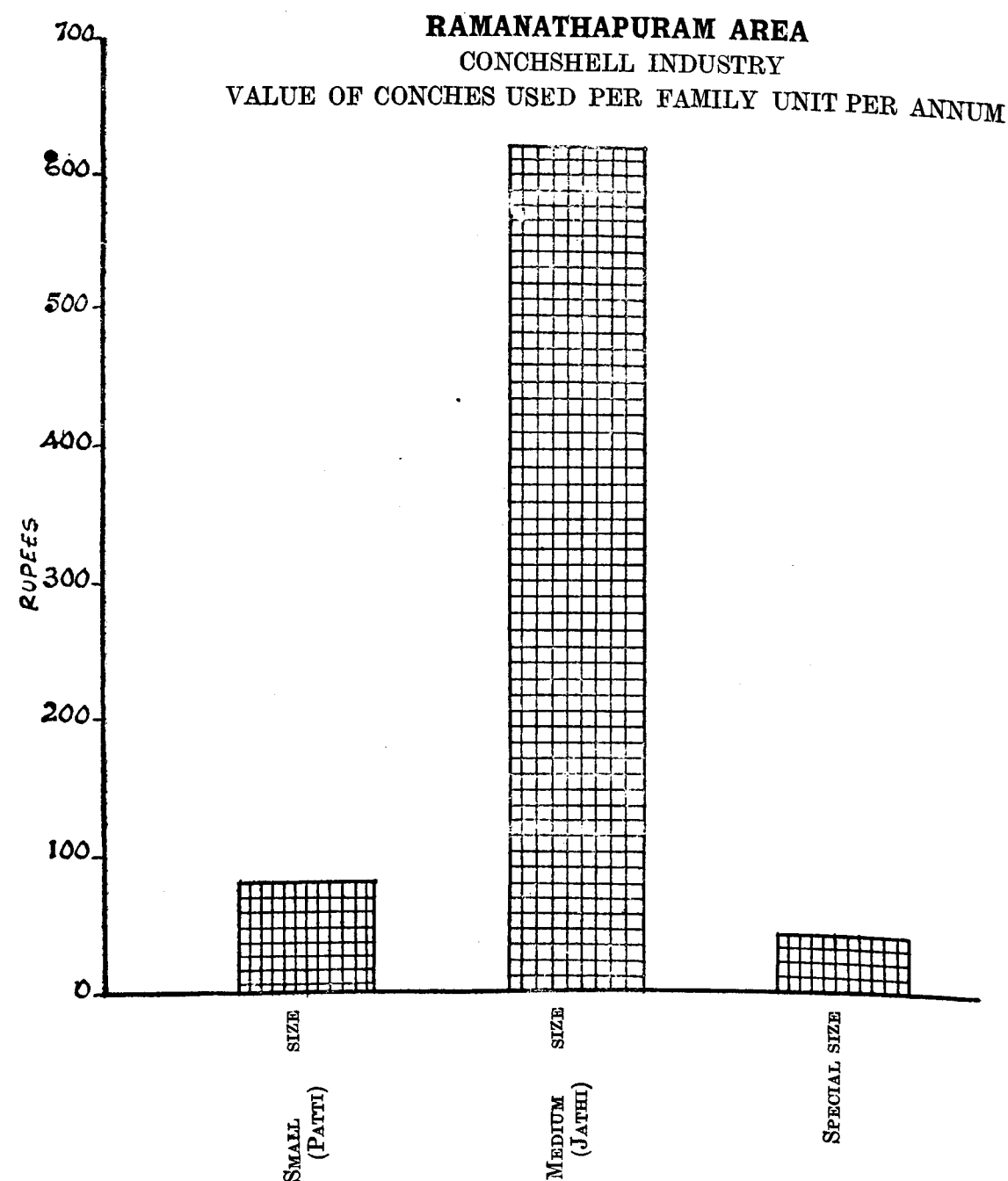
8. *Raw materials.*—Conches form the only raw material used by these wage-earning units. The table below shows the average quantity and value of conches used by a family :—

8.1. *Quantity and value of conches used per family unit per annum.*

Description.	Number of conches.	Percentage to total.	Cost per 100 conches.	Value.	Percentage to total value.
(1)	(2)	(3)	(4)	(5)	(6)
			RS.	RS. A. P.	
Conch shells—					
1 Small size (patti)	653	11.0	12	78 5 0	10.7
2 Medium (jathi)	5,163	88.4	12	619 10 0	84.7
3 Special size	27	0.6	125	33 12 0	4.6
Total	5,843	100.0	..	731 11 0	100.0

The average annual consumption per family was 5,843 conches valued at Rs. 731-11-0. The average consumption per adult worker was 2,337 conches per annum valued at Rs. 292-10-9. Of the total conches 11 per cent was of small size, 88.4 per cent of medium size and 0.6 per cent of the special size. The price of the first two varieties was Rs. 12 per 100 or a little less than 2 annas each while that of the special variety was Rs. 125 per 100 or Re. 1-4-0 each.

There was no difficulty in securing the small and medium size conches but in regard to the special variety, the merchant-manufacturers complained that they were not able to get as much as they required and at reasonable prices. As the monopolist lessee is not interested in the development of the local industry, it would be necessary either to stipulate in the condition of lease that a certain specified quantity should be made available to the local manufacturers or the Government should allot them sufficient quantity from their own fisheries at Tuticorin. So far as the workers are concerned, they have not to face any problem relating to the supply of raw materials as they merely work on the materials supplied to them.



9. *Tools, machinery and equipment.*—The principal tools and implements used in the industry are files, big and small, chisels, hammers, rubbing stones (sand stones) and “pandadai” or cushion. The statement below shows the number and value of tools owned by each family unit:—

9.1. *Tools and equipment per family unit.*

Description.	Number available.	Initial cost.	Replace-ment cost.	Present market value.	Annual main-tenance charges.	Depre-ciation.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
Big files	2.6	3 1 6	3 6 10	2 0 2	1 14 5	4 0 0
Small files	0.4	0 5 10	0 5 10	0 3 10	0 5 9	
Chisels	4.5	1 2 6	1 10 7	0 12 7	0 11 10	
Hammers	2.1	1 10 3	2 1 1	1 2 9	..	
Rubbing stones	1.2	1 12 0	2 2 6	0 11 10	..	
“Pandadai” or cushion, etc. ..	1.0	0 1 6	0 3 11	0 1 2	..	
Total	..	8 1 7	9 14 9	5 0 4	3 0 0	4 0 0

The average initial cost of the tools and equipment owned by a unit was Rs. 8. their replacement cost Rs. 10 and their present value Rs. 5. The annual maintenance charges amounted to Rs. 3 and depreciation charges Rs. 4. Of the total initial cost, the cost of files formed 42.6 per cent, rubbing stones 21.4 per cent, hammers 20.5 per cent, chisels 14.3 per cent and other items 1.2 per cent. Maintenance expenditure was incurred only in respect of files and chisels. All the tools were made locally. The annual depreciation charges amounted to Rs. 4 per family unit.

10. *Manufacturing processes.*—Before we study the process of cleaning and carving the conches, it may be interesting to note how the conches are obtained. Conch fishing industry has all the romance of a perilous adventure with the prospect of getting a prize. Conch, the raw material for the industry has to be gathered from the bottom of the sea. The conch fish is generally found to frequent certain parts of the sea where there are sandy beds with plenty of worms to feed upon. It is found at a depth up to 11 fathoms (66 feet). In India it is found in the coasts of Tirunelveli, Ramanathapuram, Tanjore, South Arcot, Chingleput and Nellore districts, Travancore-Cochin State and Kathiawar. Tuticorin coast is the most famous among the conch fisheries closely followed by Ramanathapuram. The coast of Ramanathapuram is divided into two sections by the local people, viz., the “Then Kadal” or South Sea representing the Gulf of Mannar and the “Vada Kadal” or North Sea representing Palk Bay. The South Sea coast has the following five villages: (1) Kanikarajapuram, (2) Kilakkarai, (3) Periapatnam, (4) Vedalai and (5) Rameswaram while the North Sea coast has (1) Pasipatnam, (2) Karakkad, (3) Pulimunai, (4) Tirupalakundu, (5) Devipatnam, (6) Meediverranapatnam and (7) Emmeri. The main occupation of the people of these villages is either ordinary fishing or conch fishing. Conch fishing can be carried on only under certain favourable conditions. As it involves diving, a calm sea and bright sun shine are essential. The “South Sea” is favourable for diving during the months from November to February while the “North Sea” is favourable from April to July. The diver’s is a risky job demanding skill, powers of endurance and wise judgment. He has to descend up to a depth of 11 fathoms into the sea, crawl on the sea bed, locate the conches, collect them in a bag tied to his waist and come to the surface, all the time holding his breath. He should guard himself against attacks from sharks and should not overstretch his capacity to hold his breath. For the present survey, it is not necessary to go into the details of the conch fishing industry. Besides being a means of livelihood, conch fishing has all the fascination of exploration, adventure and gamble for the divers. The men move from one area

to another according to the season and even go to the Ceylon coasts in serach of employment. If the diver is exceptionally lucky, he may earn even as much as Rs. 100 a day. Usually a man works for about 20 days a month during the season and his catches amount to about 208 conches per month on the average for which he gets about Rs. 91 at the rate of Re. 0-7-0 per conch.

Seven distinct processes may be noticed before a conch is ready for the market. They are (1) soaking, (2) removing the dead conch animal, (3) widening the mouth, (4) removing the outer shell, (5) smoothening the surface, (6) carving and (7) soaking in acid solution. The different processes are briefly described below :—

The unclean conch shell is first soaked in warm water for about half an hour so that the hard dark substance covering the surface becomes soft and easily removable. Next with the help of a sharp knife, the dead conch animal inside the shell is removed, if it has not already been done by the divers. The mouth of the conch is then widened by chiselling. The superfluous outer covering is also removed by chiselling. These two processes should be done with great care lest the conch gets broken. It is therefore placed on a small cushion made of waste cloth, locally called (pandadai). After chiselling, it is again soaked in cold water for about 15 minutes to remove the dust particles. It is then rubbed against a sand stone over which sand is sprinkled as and when necessary till the outer surface of the conch becomes very smooth. Any unevenness still found is removed by filing. The conch is placed over the “pandadai” when it is filed. Then carvings are made with the sharp edges of the files. The usual carving is only drawing of two or three lines round the surface. Sometimes designs of flowers are also engraved. All these operations are done by the wage earners. When the conches are received back by the merchant, he polishes them further by putting them in hydrochloric acid or nitric acid. This is done in the merchant’s own house either by himself or any of the family members or hired labour.

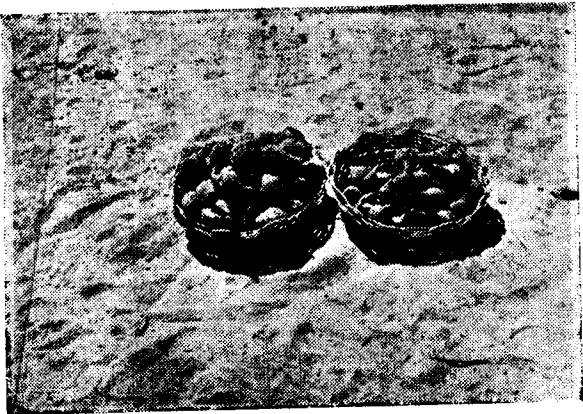
Out of 5,843 conches supplied to a unit, 58 conches were broken and the rest (5,785) were returned to the merchant-manufacturers. The average output of different varieties per family is given below :—

10.1. Average output per family per annum.

Description.	Quantity supplied.	Number broken.	Number of finished conches.	Rate (100 conches).	Value.
(1)	(2)	(3)	(4)	(5)	(6)
				RS.	RS. A. P.
1 Small conches	653	7	646	20	129 3 0
2 Medium conches	5,163	51	5,112	22	1,124 10 0
3 Special conches	27	..	27	200	54 0 0
Total	5,843	58	5,785	..	1,307 13 0

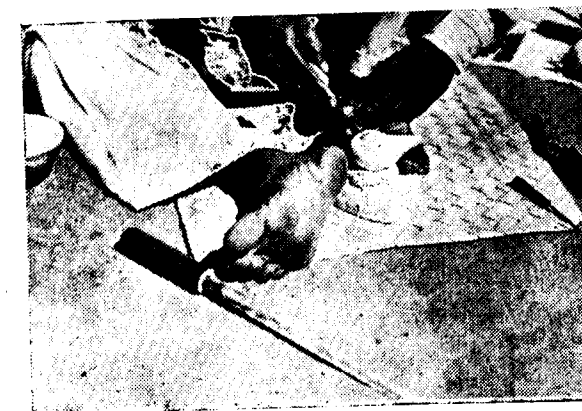
The average annual output per family was 5,785 conches and per adult worker 2,314 conches and per adult worker per working day 7.7 conches. The percentage of broken conches to the total supplied was 1. The loss was borne by the merchant-manufacturers and no reduction was made in the wage paid to workers. The outer covering and other broken pieces constituting the waste materials are not required to be returned to the suppliers. The average quantity of waste materials obtained by a unit amounted to 87.2 Madras measures and at Re. 0-1-3 per measure, they were valued at Rs. 6-13-0 per unit.

RAW CONCH SHELLS.



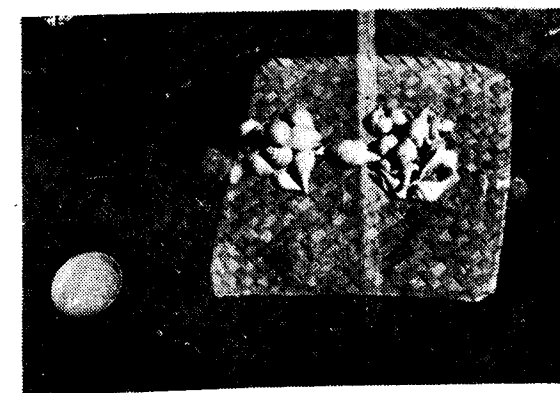
INSTRUMENTS FOR CLEANING CONCHES

RAW CONCH SHELLS—*cont.*



POLISHING CONCH SHELLS.

CLEANING CONCH SHELLS.



CLEANING THE CONCHES.

CONCH BEADS.



CONCH BEADS.

value of the work portion was estimated at Rs. 221-5-10 per family. None of the family paid any rent, the estimated annual rent for the work portion being Rs. 13-6-0 per unit. The cost of annual maintenance was Rs. 8-5-0.

7. *Types of articles manufactured.*—The rearing of silk worms is a task calling for patience and industry. In the first place, the families have to be assured of an adequate supply of mulberry leaves. Each family has set apart a portion of its lands for the growing of mulberry according to its capacity to rear the worms. Hosur having been declared a seed area, the families are engaged in the production of local race seed cocoons and not cocoons intended for reeking raw silk. They are supplied with disease-free egg layings by the Government Farm and after rearing the cocoons, they hand them over to the Government Farm at a fixed price. They do not reel them into yarn nor do they sell them to any outsider.

8. *Raw materials.*—The chief raw materials required by the families are mulberry leaves and disease-free egg layings. All the families selected for the survey were agriculturists and out of the average area of 11.15 acres owned by a family, 0.41 acre was set apart for mulberry cultivation. A statement showing the frequency distribution of the families cultivating mulberry is given in Appendix 84. Most of the families constituting 72.7 per cent of the total were cultivating between 21 and 40 cents. The statement below shows the cost of cultivation incurred by an average family and the cost of cultivation per acre :—

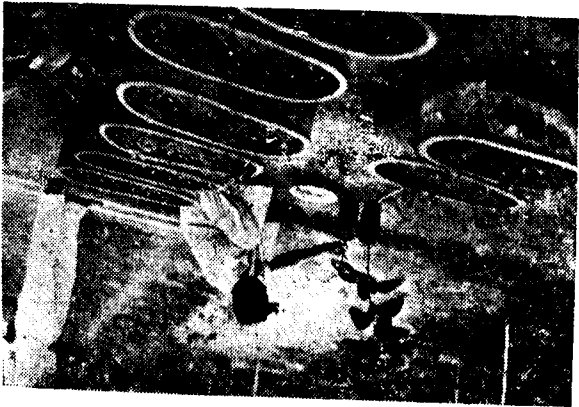
8.1. Cost of cultivation of mulberry.

Description.	Cost of cultivation per family.	Cost of cultivation per acre.
1 Land assessment	0 8 3	1 4 0
2 Ploughing	6 13 2	16 7 11
3 Other cultivation charges	0 13 3	1 15 10
4 Making rows	1 0 7	2 8 0
5 Manure	8 7 8	20 8 1
6 Spreading the cuttings	0 8 3	1 4 0
7 Replanting the cuttings	0 6 7	0 15 10
8 Planting	1 14 10	4 10 6
9 Weeding	5 12 1	13 14 8
10 Replanting failed pits	0 8 11	1 5 7
Total cost	26 13 7	64 14 5
RS. A. P.		RS. A. P.

The average cost of cultivation incurred by a family was Rs. 26-13-7 and Rs. 64-14-5 per acre. As each family obtained on the average 859.2 lb. of leaves, the cost per lb. of leaves worked out to Re. 0-0-6. On the average a family completed 6.6 rearings and the average number of layings reared was 172 costing Rs. 3-7-0.

As seed campaign work has been intensified only during the past two to three years, there were very few cultivators who had mulberry gardens of more than one and a half years' standing. Being in the infant stage, the ryots have to be induced to take up the industry and, if, by any chance, a few of their rearings fail, they immediately uproot the mulberry and divert the land for other dry crops. The Department of Industries and Commerce is therefore giving them incentives in a number of ways. Mulberry cuttings are supplied free at their doors and a loan up to Rs. 50 per rearer is given for cultivation of mulberry and purchase of rearing equipments with facilities for repayment in easy instalments. Local race egg-layings are supplied at the rate of Rs. 2 per 100 layings as against Rs. 4 per 100 cross-breed egg-layings in Kollegal area. A much higher rate than in Kollegal area is also assured for a pound of seed cocoon. While the rate for a pound of cocoon is Re. 1 to Re. 1-4-0 in Kollegal, the price per lb. of seed cocoon in Hosur varies from Rs. 2-4-0 to Rs. 2-8-0.

GRAFTING MULBERRY PLANTS.



PLUCKING MULBERRY LEAVES.



<i>Description.</i>	<i>Quantity.</i>	<i>Cost (per unit of 100).</i>	<i>Value.</i>
(1)	(2)	(3)	(4)
		RS.	RS.
1 Small size conches	29,700	20	5,940
2 Medium size conches	235,200	22	51,740
3 Special size conches	1,240	200	2,480
Total	266,140	..	60,160

13. *Labour force and employment potential.*—The average number of workers per family engaged in the industry was 2.6 made up of 0.5 men, 1.7 women, 0.2 boy and 0.2 girl. There is no difference in the nature of work done by men and women in this industry while boys and girls generally assist the members of the family in the easier types of work such as soaking, rubbing, etc. Assuming that a woman's work is equal to that of a man, and that of a boy and girl equal to half that of an adult, the average adult labour per family was 2.5. The average number of days worked per family was 300. On the basis of a maximum of 295 working days per year, the families may be said to have secured employment for 101.5 per cent of the maximum.

15. *Transport*.—No transport charges were incurred by the family units as they got their raw materials from the merchant-manufacturers in the same village.

17. *Income from the industry.*—The average income of a wage unit from the industry comprised the wage received by it and the value of the waste materials sold by it. This amounted to Rs. 368-2-0 per annum. Deducting the cost of maintenance of tools (Rs. 3) the net income received by a unit was Rs. 365-2-0 per annum, and Rs. 81-2-3 per capita. The average income was Re. 1 per day.

C.I.—22

5. *Composition of the family.*—Appendix 83 gives details of the composition of an average family. The average size of a family was 6.3 of whom 4.2 were workers and 2.1 dependents. Of the workers, 2.6 were employed in sericulture and the rest in other occupations. The workers in sericulture consisted of 1.4 men, 0.5 woman, 0.3 boy and 0.4 girl. Boys and girls assist the adult members in plucking mulberry leaves and chopping them into small pieces to be fed to the silk worm. Rearing of silk worms is attended to by the adult members. The rearing operations are adjusted in such a way as not to interfere with the regular agricultural operations.

In view of the differences in the organization of the industry in the two areas, it would be advantageous to deal with the condition of the industry in the two areas separately.

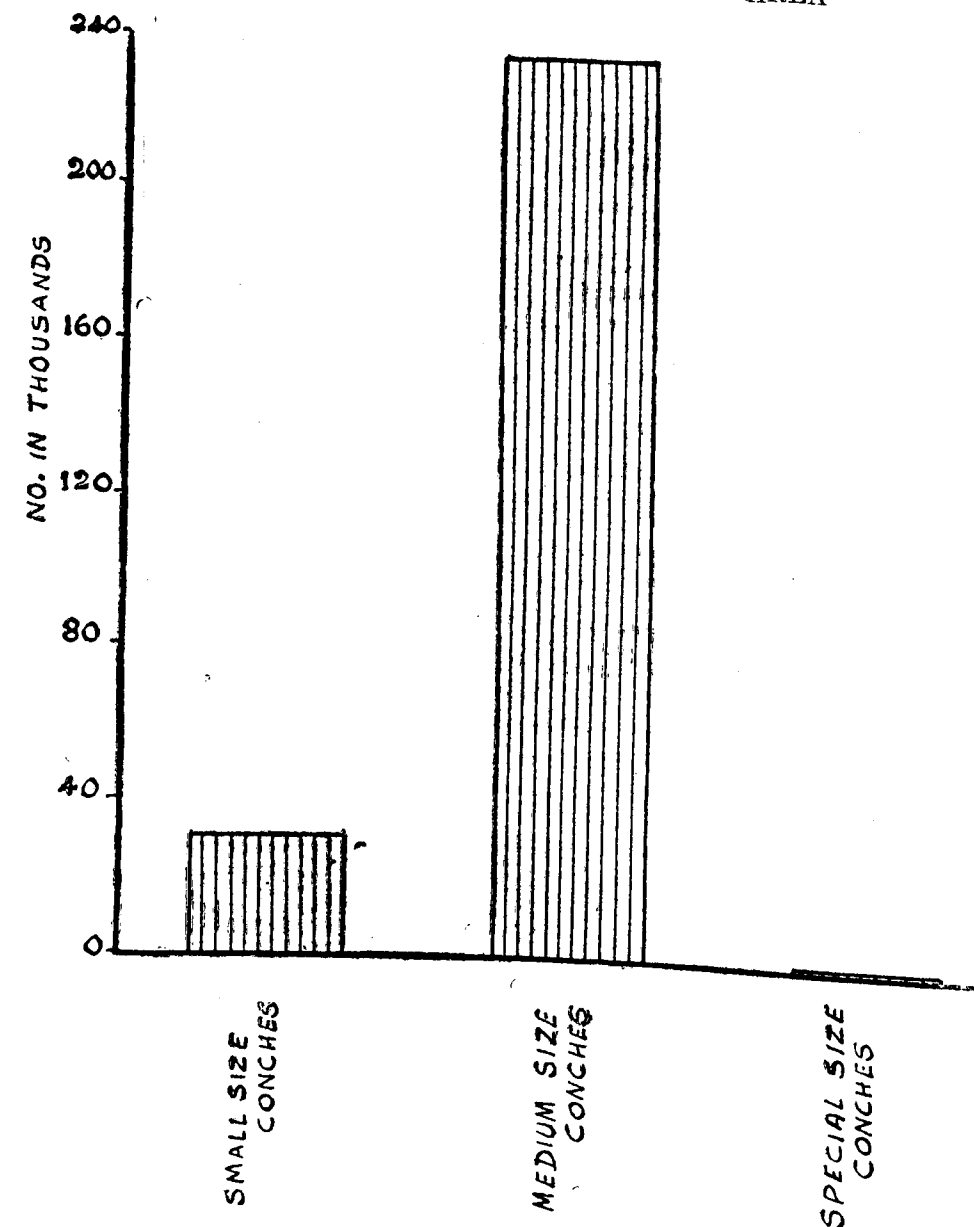
In Hosur area sericulture has been introduced only recently and it is not a hereditary occupation. The entire Hosur taluk has been treated as a seed area for the production of local race seed cocoons to be used for the production of cross-bred egg-laying at Kollegal. In Kollegal, on the other hand, it has been in existence for some decades and the industry is the hereditary occupation of many families. The survey in the two talukas covered both the important aspects of the industry, one relating to production of seed cocoons and the other to the production of raw silk on a commercial scale. The survey of both areas was thus complementary to one another.

Kollegal firka consists of 21 villages of which three are uninhabited and two have no sericulture. The number of families engaged in sericulture in the remaining 16 villages was 1,185 and they formed 16.6 per cent of the total number of families in the villages. Out of these 16 villages, six villages were selected for detailed survey. There were on the whole 2,275 families in the six villages, of whom 934 families or 41 per cent were engaged in sericulture. According to the preliminary survey, there were 1,203 families engaged in cottage industries in these six villages and the percentage of families engaged in sericulture to those engaged in cottage industries was 77.6. Thus sericulture formed the single major cottage industry in these six villages of Kollegal firka.

2. *Distribution of families engaged in the industry.*—The preliminary survey revealed that there were 43 families in Hosur tirka and 1,185 families in Kollegal tirkas engaged in the sericulture industry. Appendix 82 shows the distribution of the families engaged in the industry village-wise and their proportion to the total number of families in the tirkas and to those engaged in cottage industry.

Hosur tirka is composed of 32 villages of which sericulture is carried on only in 15 villages. The percentage of families engaged in sericulture in these 15 villages to the total number of families in those villages was only 0.95 per cent. According to the preliminary survey, there were 247 families engaged in cottage industries in these 15 villages of whom 43 or 17.4 per cent were engaged in sericulture. The sericulture industry is still in the infant stage in Hosur tirka.

RAMANATHAPURAM AREA
CONCH SHELL INDUSTRY
ESTIMATED PRODUCTION FOR THE AREA



back gave a final polish by dipping them in acid solution. Besides polishing and cleaning and marketing of white conches, they also dealt in other varieties of conches and in the manufacture of prayer beads out of rock plantain seed, lotus seed, sandal wood, rudraksha seed, etc.

19. *Composition of the family of the merchant units.*—The average size of a family was 6.7 consisting of 1.8 men, 3.1 women, 0.9 boy and 0.9 girl. This does not include the men (0.2 per family) who had migrated to Ceylon for employment. Of these, 4.8 persons (1.8 men and 3 women) were engaged in the industry and the rest were dependents. The workers formed 71.6 per cent and dependents 28.4 per cent. The men were engaged in purchasing the raw materials, polishing the conches and marketing the finished products while the women were engaged in distributing the conches to the women in the wage earning families, collecting them, and distributing the wages. Two of the seven merchant units employed three outsiders to help them in cleaning and polishing the conches and the workers were paid daily wages.

20. *Housing.*—Of the seven merchant units, five lived in terraced houses and two in tiled houses, the average area per house being 657 sq. feet. No rent was paid, the estimated rent per unit being Rs. 78 per annum. The cost of annual repairs amounted to Rs. 15 per unit. As the houses were used both for living as well as for industry and the merchants were carrying on other business also, no portion of the estimated rent and repairs is debited towards cost of production.

21. *Raw materials.*—A statement showing the quantity and value of raw materials used by an average merchant-manufacturer unit per annum is given in Appendix 77. Besides the ordinary white conches, the merchants dealt in a large number of other varieties such as five finger conches, pine apple (Ceylon paper weight) conches, cowries, etc. The white conches formed 40.6 per cent of the total cost of raw materials. The cost of raw materials relating to white conch shell industry is as shown below :—

21.1. *Raw materials used by a merchant unit per annum.*

Description.	Quantity purchased.	Value.	Percentage to total.
(1)	(2)	(3)	(4)
	NOS.	RS.	
1 Small conches	5,714	686	25.8
2 Medium size conches	13,729	1,647	61.9
3 Special size conches	170	213	8.0
	19,613	2,546	95.7
4 Hydrochloric acid cwt.	1 cwt. 27 lb.	115	4.3
Total		2,661	100.0

The conches were purchased for cash from the monopolist for the Ramanathapuram Coast (Messrs. S.V.M. & Co.) and from other big merchants.

22. *Tools, machinery and equipment.*—The statement below shows the average number and value of tools and equipment owned by a unit :—

22.1. *Tools, machinery and equipment per merchant unit.*

Description.	Number avail- able.	Initial cost.	Replace- ment cost.	Present market value.	Annual main- tenance.	Deprecia- tion.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
Big files	4	3 14 3	5 5 9	3 1 2	3 1 9	0 13 1
Small files	1	2 9 2	1 9 1	0 8 7		0 10 0
Chisels	4	0 7 9	0 7 9	0 5 1	0 9 1	0 2 0
Hammers	2.5	1 14 10	1 10 6	1 4 7		0 3 1
Rubbing stones	1	1 4 7	1 4 7	0 11 5		0 6 10
Total		10 2 7	10 5 8	5 14 10	3 10 10	2 3 0

The average initial cost of tools and equipment owned by a unit was Rs. 10-2-7 the maintenance charges Rs. 3-10-10 and depreciation charges Rs. 2-3-0.

23. *Production.*—The statement below shows the average annual output of conches per unit :—

23.1. *Output of merchant-manufacturer unit per annum.*

Description.	Number.	Rate per 100.	Value.
(1)	(2)	(3)	(4)
		RS.	RS.
1 Small size conch (pathi)	5,657	20	1,131
2 Medium size (jathi)	13,591	22	2,989
3 Special	168	200	336
Total	19,416		4,456

After making allowance for the broken conches, the average output per unit of white conches was 19,416 valued at Rs. 4,456.

24. *Wages.*—The average amount of wage paid for cleaning white conches and polishing them by dipping in acid solution by a unit amounted to Rs. 1,231-4-0. As the family was not solely engaged in conch shell works, the rate of wages payable to them may be assumed at half the rate received by an adult worker. On the basis of Re. 0-4-0 per day, the wage payable to 4.8 adult workers for 300 days would come to Rs. 360.

25. *Cost of production.*—A statement showing the cost of cleaning a dozen conches of medium and special variety and the time taken is given in Appendix 78. The following statement shows the cost of production incurred by a unit :—

25.1. *Cost of production per merchant unit per annum.*

Description.	Amount.	Percentage to total.
(1)	(2)	(3)
	RS.	
1 Raw materials	2,661	62.5
2 Tools and machinery—		
(a) Maintenance	4	0.1
(b) Depreciation	2	..
3 Wages paid	1,231	28.9
Wages payable	360	8.5
Total	4,258	100.0
Total sale value	4,456	..
Profit	198	..

Of the total cost, the cost of raw materials formed 62.5 per cent and wages paid 28.9 per cent. The average cost of production amounted to Rs. 4,258 while the sale value amounted to Rs. 4,456 leaving a profit of Rs. 198 per unit per annum.

26. *Investment.*—The average investment of a unit amounted to Rs. 10 on tools and machinery and Rs. 2,661 on raw materials. The families depended mainly on their own capital. The average amount of borrowed capital for which interest was paid was only a sum of Rs. 300 and at 12 per cent per annum, the interest charges amounted to Rs. 36. The interest on own capital of Rs. 1,700 at 6 per cent would be Rs. 102. The average working capital of a unit was about Rs. 2,000.

27. *Net profit.*—Allowing interest on capital invested, the net profit from the industry would amount to Rs. 60 per annum.

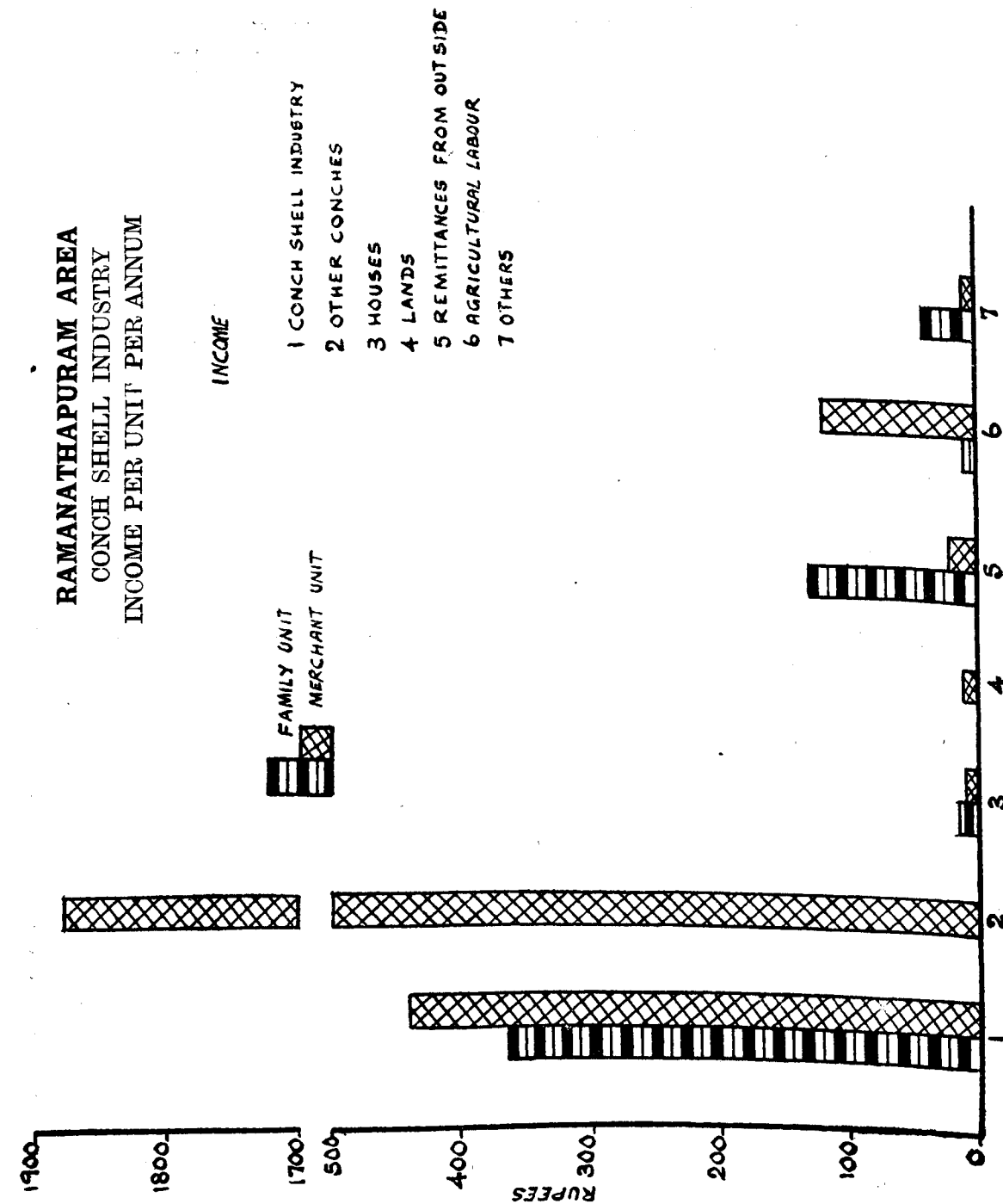
28. *Income from the industry.*—The income from the industry made up of net profit interest on own capital, wages payable to family members and depreciation charges would thus amount to Rs. 524 per annum and Rs. 78-3-4 per capita.

29. *Marketing.*—Usually, merchants from Rameswaram, Ramanathapuram and Madurai visit the production centres and purchase the conches. This is done especially before the festival seasons. Sometimes, the manufacturers themselves go to these places and dispose of their stock. A certain quantity is also exported to centres like Bombay, Calcutta and Delhi. It is estimated that nearly 75 per cent of the total production is sold in Rameswaram, 15 per cent in other centres in the State and 10 per cent exported direct to North Indian centres. Rameswaram is the biggest centre for the disposal of these goods as large crowds of pilgrims visit the place throughout the year. On ordinary days, at least about 200 pilgrims visit the place while on festival occasions they run into thousands.

30. *Financing of the industry.*—Merchants are the main financiers of the industry and there are no banking facilities. They have to depend either on their own resources or borrow from private money-lenders. They require capital not only for purchase of raw materials but also to pay advance wages to the workers.

31. *Role of co-operation.*—There is no co-operative organization either among the workers or among the merchants.

32. *Income of the families.*—Appendix 79 gives the income of the wage units and merchant manufacturer units. The annual income of a wage unit amounted to Rs. 553 or Rs. 122-14-0 per capita of which the conch shell industry contributed Rs. 365 or 66.0 per cent and remittances from outside members Rs. 129 or 23.3 per cent. In the case of the



merchant unit, the average income amounted to Rs. 2,569 or Rs. 383-7-0 per capita and it formed nearly five times that of a wage unit. Of the total, the contribution of conch shell industry was Rs. 2,404 or 93.6 per cent and from agriculture Rs. 122 or 4.8 per cent. The average income for all the units was Rs. 1,040 and Rs. 208 per capita.

33. *Expenditure.*—Appendix 80 gives the pattern of expenditure of these families. The average expenditure of a wage unit was Rs. 570 against an income of Rs. 553 leaving a deficit of Rs. 17 per annum. The average annual expenditure of a merchant unit was Rs. 2,187 against an income of Rs. 2,569 leaving a surplus of Rs. 382. The per capita expenditure in the case of each type of unit was Rs. 126-10-9 and Rs. 326-6-9 respectively. The average expenditure per unit for the sample as a whole was Rs. 960 and Rs. 190-12-0 per capita.

34. *Assets.*—Appendix 81 gives the average asset of each type of unit. The average asset of a wage unit was Rs. 964 of which houses amounted to Rs. 593 or 61.5 per cent, land Rs. 150 or 15.6 per cent and jewels Rs. 212 or 22.0 per cent.

The average asset of a merchant manufacturer unit was Rs. 8,092 of which houses amounted to Rs. 3,136 or 38.8 per cent, raw materials in stock Rs. 3,583 or 44.3 per cent, lands Rs. 757 or 9.4 per cent and jewels Rs. 544 or 6.7 per cent. Other items were insignificant. The average asset of all the families was Rs. 2,685 and Rs. 533 per capita.

35. *Liabilities.*—Of the 22 family units, all but two were indebted, the average debt per indebted family being Rs. 188 and for all families Rs. 171. The entire amount was borrowed for domestic purposes. On the average, a sum of Rs. 32 was secured by mortgage with possession, Rs. 87 by a simple mortgage, Rs. 18 by pro-note and Rs. 34 by hand-loans. At Kilakkarai no interest was charged as the loans were taken from the conch shell merchants or wealthy Muslims. At Periapattanam, loans were taken from private money-lenders at Ramanathapuram for which interest was paid at 20 per cent per annum. The average liability of a unit formed 39.2 per cent of its income and 17.7 per cent of its assets.

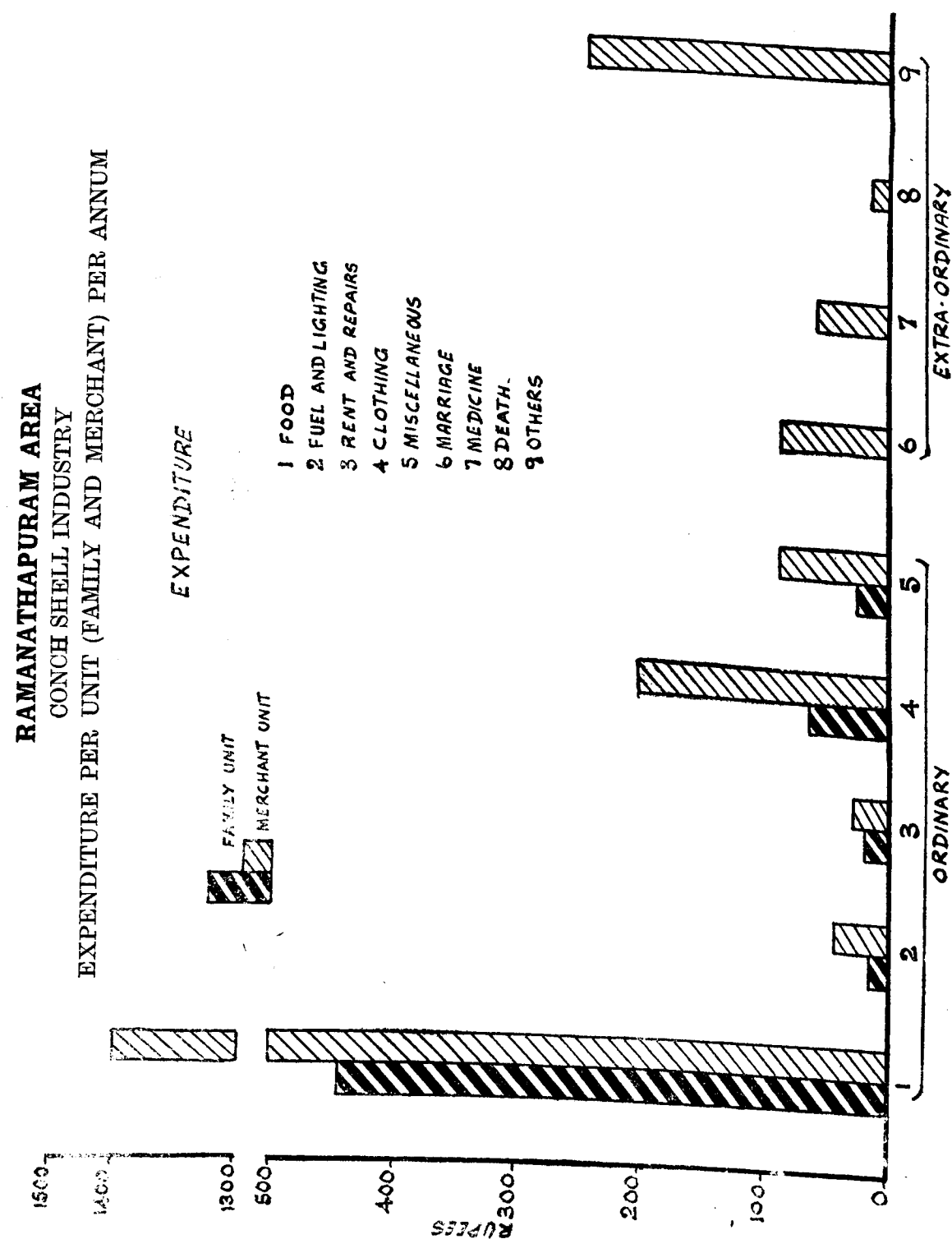
Of the seven merchant units all but two were indebted. The average liability of an indebted family was Rs. 1,708 and for all families Rs. 1,220. Of the total debt a sum of Rs. 300 was borrowed at 12 per cent and Rs. 714 without interest for business purposes and Rs. 206 for domestic purposes. Of the total a sum of Rs. 57 was secured on simple mortgage, Rs. 21 on pro-note and Rs. 1,142 on hand-loans. Interest was payable only on a sum of Rs. 506 at 12 per cent per annum. The average liability of a unit formed 47.4 per cent of its average income and 15.1 per cent of its assets. For the sample as a whole, the average liability amounted to Rs. 424.

(ii) MANUFACTURE OF CONCH BEAD GARLANDS.

36. *Introduction.*—Out of the by-products of the conch industry, a subsidiary industry has sprung up at Tiruppullani, a village lying between Ramanathapuram and Kilakkarai. Here the broken conches and the conch shells available at Kilakkarai and Periapattanam are used for making beads. These beads commanded a good market in Bombay till a few months before the enquiry but due to the decline in demand, the industry was not being carried on with the old enthusiasm.

37. *Selection of sample.*—There were six families engaged in the industry, five family units and one merchant-manufacturer unit of whom two were taken for detailed study. Making of conch bead garlands is a hereditary occupation for all these families.

38. *Composition of families.*—The average size of a family was 6.5 of which two were men, three women, 0.5 boy and one girl. The average number of workers per family was six and only one girl in a family was not employed. Among the workers 3.5 were engaged in Conch Bead Making Industry and 2.5 in other occupations. The workers in Conch Bead Making Industry consisted on the average of one man, 1.5 women, 0.5 boy and 0.5 girl.



39. *Housing.*—Of the two families one lived in a tiled house and the other in a thatched hut. No portion of the house was set apart exclusively for carrying on the work. The average area of a house was 390 square feet. The estimated rent amounted to Rs. 36 per annum and the annual repairs and maintenance charges to Rs. 16-8-0.

40. *Types of articles manufactured.*—Only garlands made out of broken conch shell pieces were manufactured. Each garland contained two strings and each string 75 beads.

41. *Raw materials and fuel.*—The principal raw materials are conch shell pieces and thread. On the average, a family purchased 187.5 Madras measures of conch shell pieces valued at Rs. 23-8-0 and thread valued at Rs. 8-8-0 per annum. The total annual cost of raw materials per family was Rs. 32.

42. *Tools, machinery and equipment.*—The tools consisted of hammers, scissors, grinding stones and drilling machines. The average number of tools per family was six and their initial cost Rs. 26, replacement value Rs. 26 and present market value Rs. 13-8-0. No maintenance charges were incurred. The depreciation charges amounted to Rs. 4-5-0 per annum. All the tools were of local make.

43. *Manufacturing processes.*—Broken conch shell pieces are obtained from the conch shell workers of Kilakkarai and Periapattanam. They are cut into smaller pieces and polished by grinding them in a grind stone. With the help of a locally made drill, a hole is made in each bead and they are strung with ordinary cotton thread by a needle. One garland consists of 75 beads. Two such garlands are tied together to form a “mala”. The work is done entirely by family labour. The cost of manufacturing four “malas” is as follows: The cost of raw material consisting of one measure of conch shell pieces at Re. 0-1-6 per measure and that of thread costing Re. 0-0-6, amount to As. 2. The work can be finished by one person in about three days. The selling price of a mala is Re. 0-14-0 and the four “malas” will fetch Rs. 3-8-0. Deducting the cost of raw materials, the labour charges for three days will be Rs. 3-6-0, i.e., Re. 1-2-0 per day.

44. *Production.*—During the year under review, the average production per family was 780 garlands valued at Rs. 682-8-0 at Re. 0-14-0 per garland. Of the total garlands, only 280 were sold for Rs. 245-4-0 and the average number of surplus garlands with each family was 500 valued at Rs. 437-4-0. The average annual production per adult worker was 260 garlands valued at Rs. 227-8-0 and per adult worker per working day 1.7 garlands valued at Rs. 1-8-3.

45. *Estimated production for the area.*—On the basis of average production per family of 780 garlands valued at Rs. 682-8-0, the total production for the area surveyed may be estimated at nearly 4,700 garlands valued at Rs. 4,000.

46. *Fluctuations in output.*—There was some slight fluctuation in output as noted below:—

46.1. *Fluctuations in output per family unit per annum.*

Month. (1)	Quantity. (2)	Month. (1)	Quantity. (2)
November 1951	18	May 1952	138
December 1951	18	June 1952	78
January 1952	78	July 1952	18
February 1952	138	August 1952	18
March 1952	138	September 1952	..
April 1952	138	October 1952	..
		Total	780

Peak production was attained during the months, February to May.

47. *Labour force and employment potential.*—The total labour force engaged in the industry was one man, 1.5 women, 0.5 boy and 0.5 girl or 3.5 per family. Assuming that a woman's work is equal to that of a man, and that of a child half that of an adult, the total adult labour force may be calculated at three. The families were employed on the average for 150 days in a year and on the assumption of 295 days to be the maximum number of days available for employment, the families were employed for 50.8 per cent of the total working days available.

48. *Wages.*—There was no question of wages as outsiders were not employed.

49. *Transport.*—The families did not incur any transport charges.

50. *Cost of production.*—Against an outlay of Rs. 32 on raw materials, the total value of garlands amounted to Rs. 682-8-0 leaving a sum of Rs. 650-8-0 which included the wages for the family members.

51. *Income from the industry.*—The average income from the industry per family was Rs. 650-8-0, per capita Rs. 100-1-3 and per adult worker per working day Re. 1-6-8. If the value of garlands unsold (Rs. 437-4-0) was deducted, the income from the industry during the year was only Rs. 213-4-0 per family.

52. *Capital.*—The families required very little capital as the investment on tools amounted to Rs. 26 and the raw materials were purchased as and when necessary.

53. *Marketing.*—There is little local demand for these garlands. They were all exported to Bombay and Goa where it was stated there was a good demand for them. During the year under survey the families were in difficulties as there was a sudden stoppage of orders from Bombay and Goa. Reason for the stoppage was not known.

54. *Co-operation.*—There was no co-operative society for these workers.

55. *Income.*—The average annual income of a family amounted to Rs. 714 or 109-14-0 per capita. Of the total income, Conch Bead Making Industry contributed Rs. 213 or 29.8 per cent, agricultural labour Rs. 425 or 59.6 per cent and lands Rs. 40 or 5.6 per cent and house (estimated rent) Rs. 36 or 5.0 per cent. If the value of the conch beads on stock is also added, the income would be Rs. 1,151.

56. *Expenditure.*—The average annual expenditure of a family amounted to Rs. 1,178 or Rs. 181 per capita. Of the total expenditure, food accounted for Rs. 958 or 81.3 per cent, fuel and lighting Rs. 18 or 1.5 per cent, house rent and repairs Rs. 52 or 4.5 per cent, clothing Rs. 110 or 9.3 per cent and miscellaneous items Rs. 40 or 3.4 per cent. There was a deficit of Rs. 464-4-0 which was due to the fact that conch garlands worth Rs. 437-4-0 were left unsold due to sudden stoppage of orders.

57. *Assets and liabilities.*—The average asset of a family amounted to Rs. 1,513 of which the value of houses amounted to Rs. 1,125 or 74.3 per cent, dry land Rs. 375 or 24.8 per cent and industrial equipment (present value) Rs. 13 or 0.9 per cent.

The liabilities of a family amounted to Rs. 525 of which a sum of Rs. 300 was secured by pro-note and Rs. 225 was borrowed on hand-loans. The rate of interest was 18 per cent per annum for the loan secured by pro-note and a sum of Rs. 54 was due towards interest.

SUMMARY.

The conch shell industry is one of the oldest surviving handicrafts of South India. The survey has revealed that in Ramanathapuram Area, it is confined to four villages—Kilakkarai, Periapattanam, Rameswaram and Tirupullani and gives employment to 67 families excluding a large number of those engaged in conch fishing. Started as a subsidiary occupation for some Muslim families whose male members had gone out for employ-

ment in Ceylon, Malaya and Burma, it has now become their mainstay. In the first three centres, conch cleaning and carving is carried on while at Tirupullani conch bead garlands are made out of broken conches. The local conch cleaning industry cannot lay claim to any artistic excellence unlike that in Bengal as the families are engaged merely in cleaning them.

Out of 61 families engaged in conch cleaning and carving industry, 29 were selected for detailed survey of whom 22 were family units and 7 merchant-manufacturer units. The family units were all wage earners depending on the merchant units for supply of raw materials and payment of wages. The average size of a family unit was 4.5 of whom 2.6 were workers and 1.9 dependents. Among the workers, women pre-dominated forming 65.4 per cent of the total. The average annual consumption of raw materials per family was 5,843 conches valued at Rs. 731-11-0 and the initial cost of tools and machinery Rs. 8-1-7. After making allowances for breakages, the average annual output of cleaned conches per family was 5,785 valued at Rs. 1,307-13-0. On this basis, the total output of cleaned conches for the area per annum was estimated at 2,66,000 valued at Rs. 60,000. The families secured employment in the industry for 300 days in the year. They worked on piece-rate basis and the average wage secured by a unit per annum was Rs. 361-5-0, which worked out to Rs. 144-8-3 per adult worker per annum and Re. 0-7-9 per adult worker per working day. The income of an average family from the industry inclusive of the value of waste materials amounted to Rs. 365-2-0 or Rs. 81-2-3 per capita and Re. 1 per day.

The merchant manufacturers were the real organizers of the industry as they supplied the raw materials, financed production and marketed the finished goods. Besides the ordinary white conches, they dealt in a large number of other varieties of conches and beads, the average value of all the raw materials purchased by a unit amounting to Rs. 6,313 per annum. An average merchant unit purchased 19,613 white conches valued at Rs. 2,546 and invested on tools and machines a sum of Rs. 10-2-7. The units found difficulty in securing an adequate number of good white conches of the special variety. Allowing for breakages, the average annual output of cleaned conches per unit was 19,416 valued at Rs. 4,456. The average income per unit was Rs. 524 per annum from the white conch industry and Rs. 1,880 from other conches and beads. The average investment of a merchant unit on this industry was Rs. 2,000.

The principal market for the conch products was the great pilgrim centre of Rameswaram. Out of the total production, 75 per cent was sold at Rameswaram, 15 per cent in other centres of the State and 10 per cent exported to North Indian centres like Bombay, Calcutta and Delhi.

The average income of a wage unit was Rs. 553 or Rs. 122-14-0 per capita of which, the conch shell industry contributed 66 per cent. The average expenditure of a family unit amounted to Rs. 570 leaving a net deficit of Rs. 17 per annum. As against an average asset of Rs. 964, the average debt was Rs. 171. All but 2 of the 22 families were indebted.

The position of an average merchant unit was definitely better than that of an average wage unit. The average income of a family was Rs. 2,569 or Rs. 383-7-0 per capita of which the conch shell industry contributed 93.6 per cent. The average expenditure amounted to Rs. 2,187 which left a surplus of Rs. 382 per annum. Against an average asset of Rs. 8,092, the average liability was Rs. 1,220. Of the seven merchant units, all but two were indebted.

Conch bead garland industry.—The conch bead garland industry at Tirupullani formed a subsidiary occupation to six families. The average size of a family was 6.5 of whom 6 were workers. The number of workers engaged in conch bead industry was 3.5 per family. The average amount of investment on raw materials consisting mainly of broken conch shell pieces was Rs. 32 per annum and that on tools and machinery Rs. 26. The families secured employment for 150 days in a year. The average production per

family was 780 garlands valued at Rs. 682-8-0 or 1.7 garlands valued at Rs. 1-8-3 per adult worker per working day. On the above basis, the total estimated production for the area surveyed may be estimated at 4,700 garlands valued at Rs. 4,000. The average income from the industry per family was Rs. 650-8-0 per annum, Rs. 100-1-3 per capita or Rs. 1-6-8 per adult worker per working day. There is little local demand for these garlands which are exported to Bombay and Goa. During the year, there was a sudden stoppage of orders from these centres causing accumulation of stocks worth Rs. 437-4-0 which caused a large deficit in the family budget. The average income of a family was Rs. 714 or Rs. 109-14-0 per capita of which 29.8 per cent was contributed by the conch bead industry. The average expenditure per family during the year amounted to Rs. 1,178 leaving a deficit of Rs. 464-4-0. Against an average asset of Rs. 1,513, the average liability amounted to Rs. 525.

RECOMMENDATIONS.

Government should take over the conch fishing industry in the Ramanathapuram seas as they have done in Tirunelveli so that the divers may get adequate remuneration for their work commensurate with the risk.

2. The industry is at present handicapped for want of sufficient quantity of conches of good quality as the monopolist of the conch shell fishing has no interest in the promotion of the conch shell industry or in the welfare of the workers. Government monopoly will also enable the workers in conch shell industry to get raw conches of sufficient quantity and of good quality.

3. At present almost all the conches, especially the bigger and better varieties, are exported to Bengal without undergoing any processes. It is desirable that the export of raw conches should be minimised so that cleaning and polishing may be done locally so as to increase employment in the area.

4. There is very little of artistic work in the present process of cleaning and carving. It is possible to promote a flourishing industry in conch cutting and carving if the local people are given adequate training. A few of the local artisans may be trained in the manufacturing centres in Bengal so that they can teach other local people later. In the alternative, a few skilled artisans of Bengal may be engaged for a short period and asked to train local workers. The necessary machinery required by the workers should also be supplied to them.

5. The success of such experiments will depend on finding an adequate market for the manufactures. There is a religious significance attached to the use of conches. There is evidence also that conch ornaments were used by South Indians in ancient days. As the practice of wearing bangles either of glass, silver or gold is universal in the South, it will be possible to create a demand provided the conch bangles are produced at competitive rates. It is worthwhile taking steps to revive the local industry which holds out vast potentialities for development.

6. Some of the conches like pine-apple conches and garland materials like rock plantain seeds, which were hitherto obtained without any difficulty from Ceylon are not now easily available. This is due to the export restrictions placed by the Ceylon Government. Steps may be taken to have these restrictions relaxed.

CHAPTER IV.

SILK WORM REARING AND SPINNING INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS.

Introduction.—Hosur firka in Salem district and Kollegal firka in Coimbatore district were selected for a survey of the silk spinning and weaving industry. The problems connected with the silk weaving industry were not investigated as they do not differ in essentials from those of the cotton handloom industry. The problems of the handloom industry have already been investigated on an all-India scale in 1942 by the Fact Finding Committee and in this State by a Court of Enquiry in 1947. The recent deterioration in the plight of the handloom weavers has made it an all-India problem, and a Special Committee has been appointed by the Government of India to go into its problems. In the circumstances, the present survey was confined to a study of the silk spinning industry.

Of the two firkas selected for survey Kollegal is noted for sericulture in the State while in Hosur taluk it is still in an infant stage, being carried on in and around five centres on a small scale purely for the production of local race seed cocoons on Government account.

India is one of the important countries of the world producing raw silk, her production being estimated at one-tenth of the world production. Among the Indian States Mysore, Madras, West Bengal, Madhya Pradesh and Kashmir are the more important, while production in other states being either insignificant or only in an experimental stage. Against an estimated requirement of about 4 million lb. the total production of raw silk in India is about 2½ million lb. of which Mysore State alone produces 1.5 million lb., West Bengal 0.4 million lb., Madras 0.3 million lb., Madhya Pradesh 0.16 million lb. and Kashmir 0.16 million lb. Out of the total production, 72 per cent is from Mysore and Madras.

The history of the discovery of the silk worm and the spread of the sericulture industry from its original home of China where it was in existence as a closely guarded secret thousands of years before the beginning of the Christian era is well known. It took long for the secret to spread to Japan, India and Persia. It finally reached Europe by the sixth century A.D.

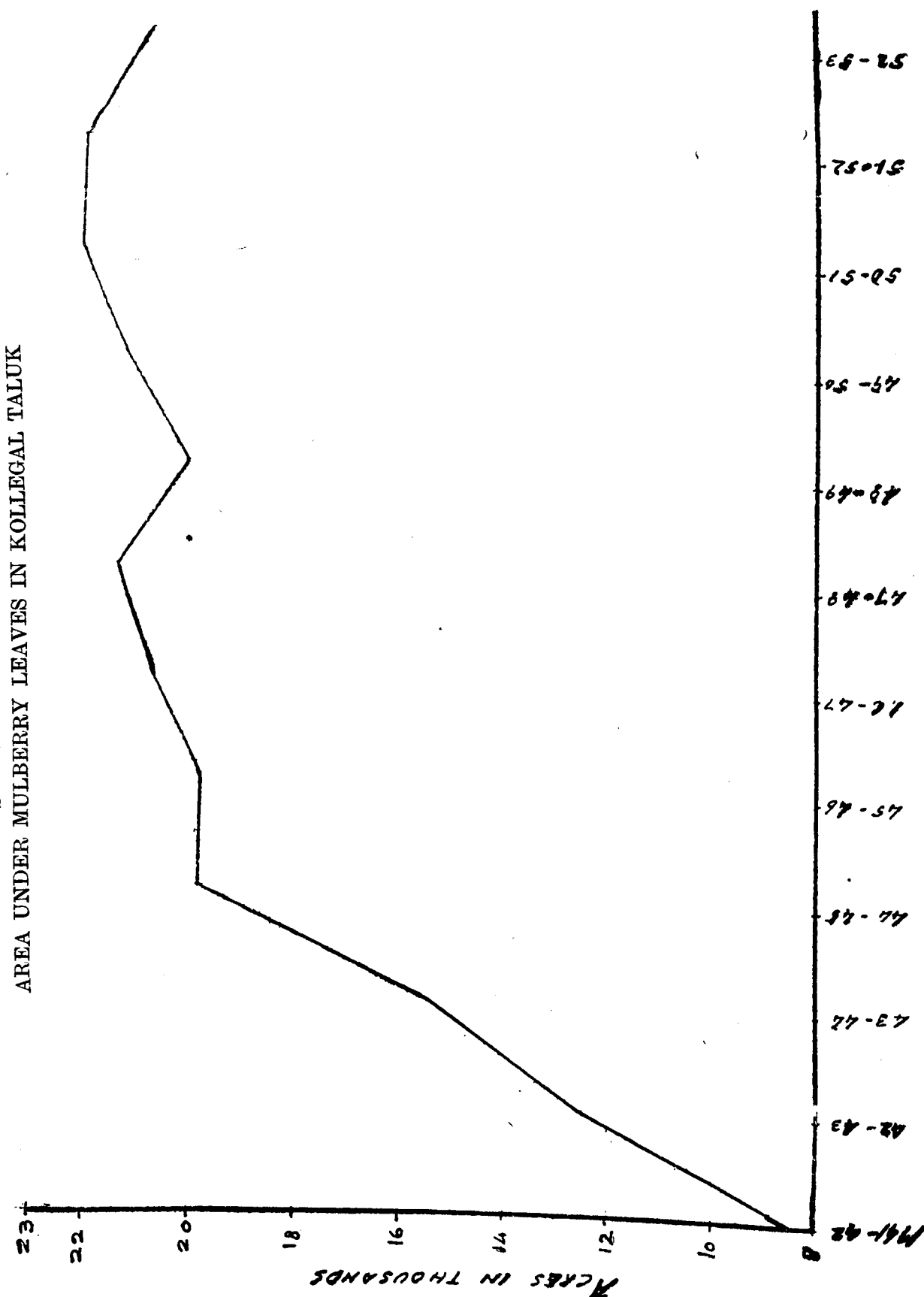
The introduction of silk industry into Kollegal was only in the latter half of the 18th century at the time of Tippu Sultan when Kollegal formed part of the Mysore State. Despite various vicissitudes in the early stages, the industry has taken deep root in Kollegal taluk and has spread to places like Hosur taluk in Salem district, Palmaner, Madanapalle and Kuppam taluks in Chittoor district, Coonoor taluk in the Nilgiri district and Talavadi area in the Gobichettipalayam taluk of the Coimbatore district. But the progress in these places is only sporadic and on a very limited scale.

Development of sericulture industry requires a number of favourable factors, such as, (1) suitable climate, (2) abundance of mulberry leaves and (3) a large supply of under-employed agricultural or semi-agricultural labour. Kollegal is situated at an altitude of 2,000 to 2,500 feet above sea level and has a very agreeable temperature varying from 70° to 90° F.H. with an average rainfall of 30 to 32 inches per annum. It is ideally situated for the growing of mulberry. The area under mulberry in Kollegal taluk which was less than 500 acres in 1878 increased to 15,387 acres in 1924-25, but declined in the depression years till it touched 5,684 acres in 1935-36. There has been marked growth since then. It rose to 7,060 acres in 1937-38 and to 21,226 acres in 1952-53. The development of mulberry cultivation during the decade ending 1952-53 can be seen from the following table:—

Acreage under mulberry—Kollegal taluk.

Year.	Acreage.	Year.	Acreage.	Year.	Acreage.
1941-42	8,479-00	1945-46	19,931-55	1949-50	21,535-00
1942-43	12,576-00	1946-47	20,910-48	1950-51	22,397-00
1943-44	15,500-00	1947-48	21,633-18	1951-52	22,397-00
1944-45	19,896-00	1948-49	20,278-00	1952-53	21,226-00

HOSUR AND KOLLEGAL FIRKAS
SERICULTURE INDUSTRY
AREA UNDER MULBERRY LEAVES IN KOLLEGAL TALUK



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9. *Fuel and lighting.*—As the silk worms must be fed throughout day and night and as they should be protected from rats which may feed on them, lights will have to be kept burning throughout the night during the rearing period. The average expenditure on kerosene oil incurred by a family per annum for this purpose was Rs. 3-12-0.

10. *Tools, machinery and equipment.*—The chief items of equipment consist of rearing stands, trays, “Chandrikais”, knives and ant-well stones. The statement below shows the number and value of the equipment owned by an average unit and the cost of the maintenance :—

10.1. *Tools and equipment owned by an average family unit in Hosur firka.*

Description.	Number owned.	Initial cost.	Replacement cost.	Present market value.	Cost of maintenance.	Depreciation charges.	Cost of a new equipment.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		RS.	RS.	RS.	RS. A. P.	RS. A. P.	RS. A. P.
1 Rearing stands ..	1.1	22	23	20	1 6 0	0 15 0	22 0 0
2 Trays ..	11.2	13	14	12	4 5 0	1 6 6	1 4 0
3 “Chandrikais” ..	4.2	16	17	13	4 0 0	1 1 0	4 0 0
4 Knives ..	1.3	3	3	2	..	0 4 0	2 0 0
5 Ant-well stones ..	4.2	3	3	2	..	0 2 6	0 12 0
Total ..	22.0	57	60	49	9 11 0	3 13 0	30 0 0

The average initial cost of the equipment per family was Rs. 57, their replacement value Rs. 60 and present market value Rs. 49. Of the total initial cost, the cost of rearing stands formed 38.3 per cent, that of trays 23.5 per cent and that of other items 38.2 per cent. The average annual cost of maintenance was Rs. 9-11-0 per family and that of depreciation Rs. 3-13-0.

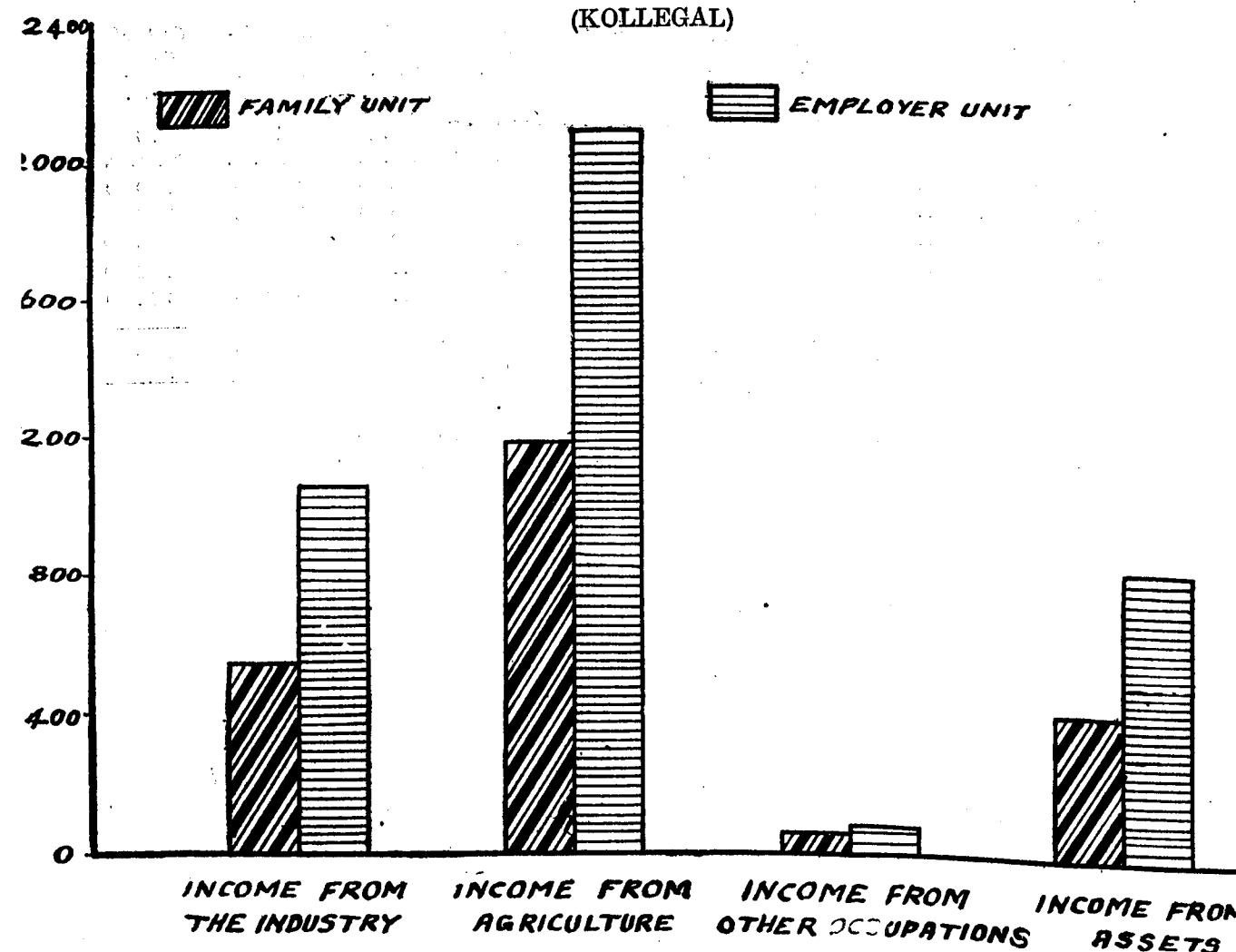
11. *Manufacturing processes.*—The success of the sericulture industry depends on the close co-ordination of a number of inter-dependent functions carried out by different agencies. As the early history of the industry in Kollegal area has amply shown, failure of any one of these agencies will spell disaster to the whole industry. The major items of work connected with the sericulture may be grouped under the following nine heads :—

- Mulberry cultivation.
- Preparation of seed cocoon.
- Supply of disease-free cross-breed layings.
- Commercial rearing of silk worms and production of cross-breed cocoons.
- Marketing of cocoons.
- Reeling of cocoons into raw silk.
- Twisting and doubling of raw silk into yarn fit for weaving.
- Dyeing.
- Weaving.

A note on the different processes and the assistance rendered by the Department of Industries and Commerce to the development of sericulture is given in Appendix 25.

HOSUR AND KOLLEGAL FIRKAS

SILK SPINNING INDUSTRY INCOME OF THE FAMILIES (KOLLEGAL)



12. *Production.*—A family in Hosur firka completed on the average 6.6 rearings during the year, the total number of layings reared during the period being 172 or 26.1 layings per rearing. Generally each laying contains 200 eggs. The average production per family per annum was 34,400 cocoons or 68.8 lb. valued at Rs. 129. (500 cocoons = 1 lb.)

13. *Estimated production for the firka.*—On the above basis, the estimated production of cocoons for the entire Hosur firka would be 15 lakhs of cocoons or 3,000 lb. valued at Rs. 6,000.

14. *Fluctuations in production.*—Appendix 86 gives the month-wise distribution of production. Production is carried on throughout the year according to the requirements of the Government Silk Farm, Hosur. It is at its height in May which corresponds to the heavy demand for layings in Kollegal area for the "Mungari" season. During this season (April-May) the Kollegal area receives plenty of showers and all the mulberry gardens are in full flush and the cocoons produced command good price.

15. *Labour force and employment potential.*—The average number of workers per family engaged in the industry was 2.6 made up of 1.4 men, 0.5 woman, 0.3 boy and 0.4 girl. As men and women do the same kind of work, a woman's work in this industry may be deemed to be equal to that of a man. As the boys and girls only assist the elder members of the family, the work of each may be treated as equivalent to half that of an adult. The total adult equivalent of the labour force of a family may then be computed at 2.3. The average number of days per adult worker was 117.75 and per family 51.2 as shown below :—

15.1. Level of employment.

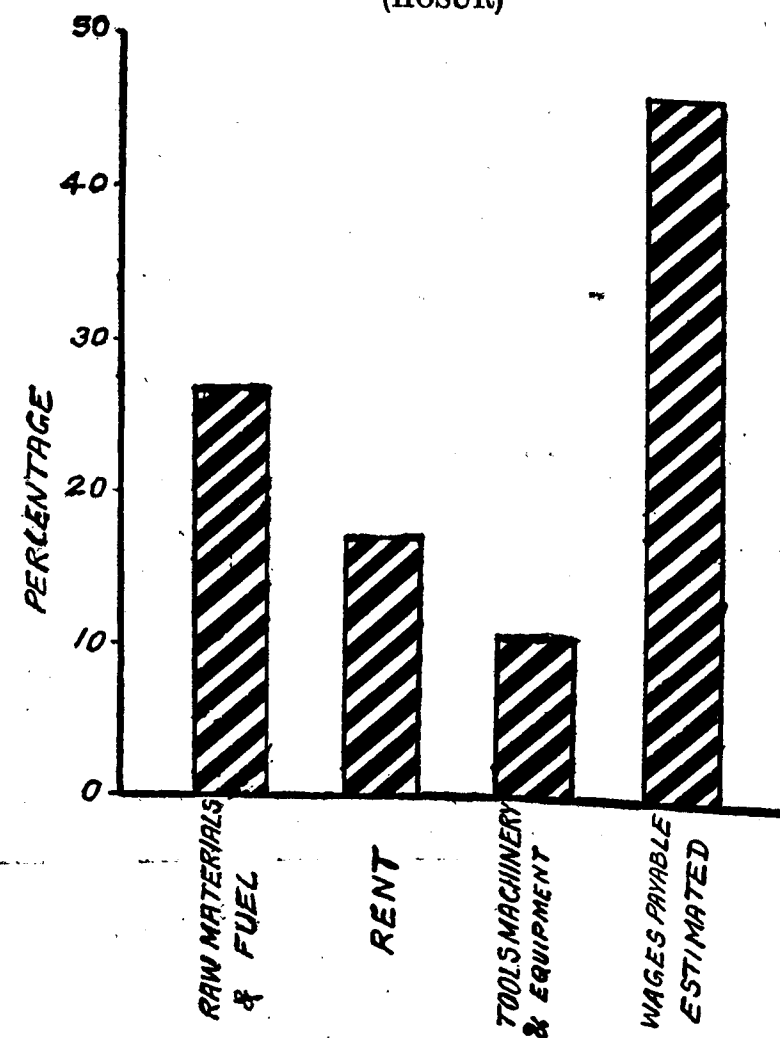
Description,	Number of days.	Number of hours per day.	Total number of hours.	Number of man-days at 8 hours per day.	Percentage to total.
(1)	(2)	(3)	(4)	(5)	(6)
1 Leaf picking	318	2	636	79.50	67.5
2 Chopping and feeding	121	2	242	30.25	25.7
3 Transport of cocoons to Hosur Farm and purchase of egg layings.	32	2	64	8.00	6.8
Total ..	471	6	942	117.75	100.0

Of the total number of man-days, leaf picking formed 67.5 per cent, chopping and feeding 25.7 per cent and transport of cocoons 6.8 per cent.

16. *Wages.*—There was no question of payment of wages as all the families depended only on family labour and the residuary income formed the wages payable to family members.

17. *Transport.*—Transport charges are incurred by the families for going to Hosur to get egg layings and for the sale of cocoons. But the people go to Hosur not merely for this work but mostly for attending to other private work as well; hence, no cost of transport is debited to the industry.

HOSUR AND KOLLEGAL FIRKAS
SILK SPINNING INDUSTRY
COMPONENTS OF COST OF PRODUCTION OF
AN AVERAGE FAMILY UNIT PER ANNUM
(HOSUR)



18. *Cost of production.*—The statement below shows the cost of production for an average family unit per annum :—

18.1. *Components of cost of production per family unit per annum.*

Description.	Cost per unit.	Quantity.	Total cost.	Percentage to total.
	RS. A. P.		RS. A. P.	
1 Raw material and fuel—				
(i) Local race egg layings	2 0 0	172	3 7 0	26.6
(ii) Mulberry leaves	per 100 0 0 6	859	26 13 6	
(iii) Fuel for lighting	per lb. ..	..	3 12 0	
2 Rent—				
(i) Rent paid	..	..	13 6 0	16.9
(ii) Rent payable (estimated)	..	..	8 5 0	
(iii) Repairs	..	..	..	
3 Tools, machinery and equipment—				
(i) Maintenance charges	..	..	9 11 0	10.5
(ii) Depreciation	..	..	3 13 0	
4 Wages payable (estimated)	0 8 0	118	59 0 0	46.0
	per man-day.	days.		
Total cost ..			128 3 6	100.0
Quantity produced 34,400 cocoons ..			129 0 0	
Profit ..			0 12 6	

Of the total cost, raw materials and fuel formed 26.6 per cent, wages payable to family members 46 per cent and the other items 27.4 per cent.

19. *Investment.*—The investment in the industry consists of the value of lands, buildings and machinery. Allowance has been made in the cost of production for rent of buildings and depreciation for tools and equipment. As regards land, mulberry cultivation forms only a part of the usual agricultural operations. Very little working capital is required as the cost of layings for the whole year was only Rs. 3-7-0.

20. *Profit and income from the industry.*—There is no question of a separate amount of profit from the industry. The wages payable and other estimated items form the income. Including imputed items in the cost of production such as wages payable, depreciation and rent and the profit, the total income from the industry amounted to Rs. 76-15-6 or Rs. 77 roundly per annum or Rs. 12-3-6 per capita.

21. *Marketing.*—The seed cocoon rearers had no problem of marketing to face as they had a Government guaranteed market. All the seed cocoons produced by them were sold to the silk farm at prescribed rates. The Sericulture Department is also assisting the rearers with technical advice and finance.

22. *Income and expenditure.*—The Sericulture industry formed a subsidiary source of income to these families of agriculturists. Appendix 87 gives the income of an average family according to the different sources. The average income per family was Rs. 2,229 or Rs. 354 per capita. Income from sericulture industry formed only 3.5 per cent of the total.

Appendix 88 gives the average annual expenditure per family. It amounted to Rs. 1,922 against an income of Rs. 2,229 leaving a net surplus of Rs. 307 per annum. Among the several items of expenditure, ordinary items formed 94.1 per cent and extraordinary items 5.9 per cent. Of the ordinary items food alone accounted for 71.2 per cent.

23. *Assets and liabilities.*—Appendix 89 gives the average asset of a family. Against an average asset of Rs. 6,757, the average liability was Rs. 242 per indebted family and Rs. 143 for all families. Of the 22 families, 13 were indebted. Among the assets, land

formed 50.9 per cent, house 15.3 per cent and livestock 15.4 per cent. The other items were insignificant. Of the liabilities, Rs. 77 or Rs. 53.8 per cent was on pro-note, Rs. 59 or 41.3 per cent on simple mortgage and Rs. 7 or 4.9 per cent on hand loans.

SUMMARY.

24. The survey has shown that the sericulture industry occupies only a subordinate place in the agricultural economy of Hosur firka and that it is still in its infant stage of growth. It gave subsidiary employment to 43 families in the firka. The average number of members in a family engaged in the industry was 2.6 and the adult labour force 2.3. The family was engaged in the industry for 51.2 man-days in the year. All the families engaged in the industry were agriculturists who set apart on the average 0.41 acre for mulberry cultivation and invested Rs. 57 on tools and equipment. The egg layings were supplied by the Hosur Silk Farm and the seed cocoons reared by the families were purchased by the Government farm itself at stipulated prices. An average family completed 6.6 rearings in a year and 172 layings which yielded 34,400 cocoons or 68.8 lb. valued at Rs. 129. On this basis, the total estimated production for the firka was 15 lakhs of cocoons (3,000 lb.) valued at Rs. 6,000. The average annual income from the industry per family was Rs. 77 or Rs. 12-3-6 per capita. The average annual income of a family was Rs. 2,229 of which the income from sericulture formed only 3.5 per cent. The average annual expenditure of a family was Rs. 1,992. Against an average asset of Rs. 6,756, the average liability was only 143 for all families.

SERICULTURE INDUSTRY OF KOLLEGAL FIRKA.

25. *Introduction.*—The condition of the Sericulture industry in Kollegal firka may be regarded as representative of that in the rest of the taluk. Unlike the case in Hosur firka, sericulture is carried on in Kollegal firka on a commercial scale and as an important subsidiary industry to agriculture. Appendix I-A gives the number of families engaged in sericulture in the firka.

26. *Selection of sample.*—The detailed survey of the industry in the firka covered 47 families of silk worm rearers of whom 27 were family units, i.e., those depending solely on the labour of the family members and 20 employer units, i.e., those who employed outside labour to assist family members. Out of the 47 units, 46 were hereditary silk worm rearers and only one had taken up the industry two years back.

27. *Composition of the family.*—A statement showing the composition of an average family unit and employer unit is given in Appendix 90. There was some variation both in size and the number of workers and dependents between the two types of units. The average strength of a family unit was 6.2 of whom 3 were mainly engaged in sericulture, 1.4 solely in agriculture and other occupations and 1.8 dependents. The workers in sericulture consisted of 1.7 men, 1.0 woman, 0.2 boy and 0.1 girl. The average strength of an employer unit was 7.9 of whom 1.5 were mainly engaged in sericulture, 1.4 solely in agriculture and other occupations and 5.0 dependents. The workers in sericulture consisted of 1.4 men and 0.1 woman. The smaller number of workers per family engaged in sericulture or in other occupations among the employer units is due to the fact that they belonged to the well-to-do class among whom women, boys and girls do not work.

Taking all the families together, the average size of a family was 7 of whom 3.8 were workers and 3.2 dependents. Of the workers 2.3 were engaged in sericulture and they consisted of 1.6 men, 0.6 woman and 0.1 boy.

In addition to casual female labour which was employed by both family units and employer units for cultivation and picking of mulberry leaves, the latter engaged one male worker on the average for silk worm rearing and other agricultural operations.

28. *Housing.*—Much care and attention is devoted to the selection of work place for rearing silk worms. Usually the best portion of the house, viz., inside hall or one side of the court-yard having good ventilation is chosen. Of the 27 family units, 26 had tiled work places and one thatched, the average area per family being 272 sq. ft. and per worker 89.5 sq. ft. Of the 20 employer units, 19 had tiled work places and one thatched, the average area per family being 334.9 sq. ft. and 139.5 sq. ft. per worker. On the whole, the average space of a work-shed was 298.7 sq. ft. and that per worker 108 sq. ft.

The average value of the industrial portion of a family unit was Rs. 609-4-0 and that of an employer unit Rs. 1,012-8-0 and the average for the entire sample Rs. 780-13-7. The average expenditure on maintenance of the work portion was Rs. 10-11-10 for a family unit and Rs. 13-2-5 for an employer unit and Rs. 11-12-2 for the whole sample. None of the families paid any rent. The estimated rent of the work-place for a family unit was Rupees 4-14-3, for an employer unit Rs. 5-3-2 and for all units Rs. 5-0-4.

29. *Raw materials and fuel.*—The principal raw materials were cross breed egg layings and mulberry leaves. The statement below gives the quantity and value of the raw materials consumed by an average industrial unit of the two types per annum:—

29-1. *Raw materials per industrial unit per annum.*

Description.	Rate.	Family unit.		Employer unit.		All units.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			RS. A. P.		RS. A. P.		RS. A. P.
1 Cross breed egg layings.	Rs. 4 to Rs. 5 per 100 layings.	1,730	81 4 9	3,760	155 1 7	2,594	112 11 3
2 Mulberry leaves.	Rs. 0-0-4 per lb.	13,746	286 5 11	48,468	622 0 0	20,599	429 2 4
Total ..			367 10 8		777 1 7		541 13 7

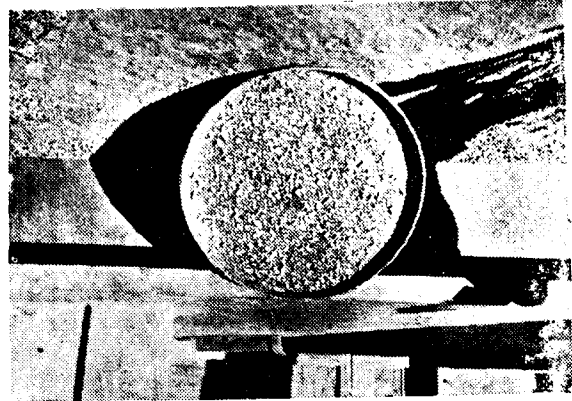
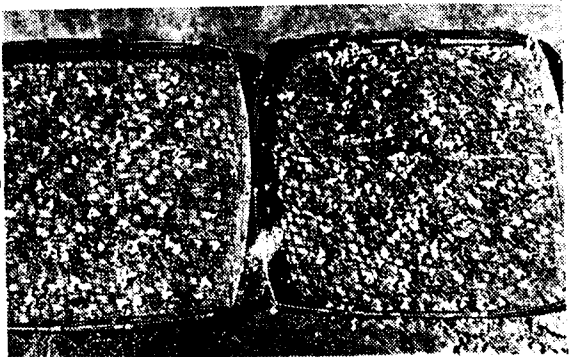
The average cost of raw materials per family unit was Rs. 367-10-8 as against Rupees 777-1-7 for an employer unit and Rs. 541-13-7 for the sample as a whole. Cost of cross breed layings formed 20-8 per cent and that of mulberry leaves 79-2 per cent.

The average number of layings reared by a family unit was 1,730 as against 3,760 by an employer unit and 2,594 by an average unit for the whole sample. A statement showing the frequency distribution of the families according to the number of layings reared is given in Appendix 91. Among the family units the largest number reared between 501 to 1,000 while among employer units the range was between 4,001 to 4,500. Nearly 50 per cent of the family units reared less than 1,500 layings and very few above 3,500 while 50 per cent of the employer units reared between 1,001 and 3,500 and the rest over 3,500. The average quantity of leaves consumed per 100 layings was 794-1 lb. Out of the 47 industrial units surveyed only two units purchased 3,000 lb. of mulberry leaves, the average for the sample being 64 lb. The families depended mainly on their own gardens for the supply of mulberry leaves. The average extent of area cultivated per family was 6-4 acres and the average production per acre was 3,118 lb.

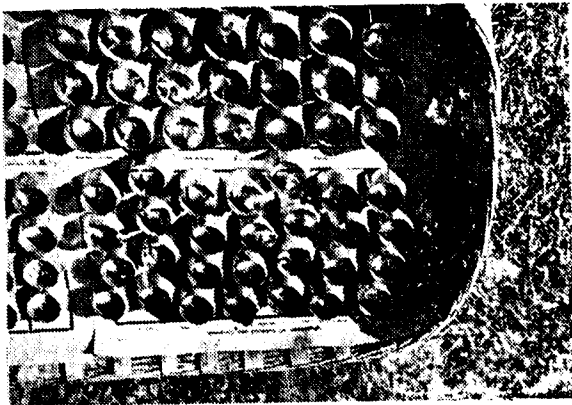
There are two problems connected with the expansion of sericulture in the firka, viz., 1) supply of disease free cross breed egg layings and (2) increase in the supply of mulberry leaves. As regards supply of egg layings, the rearers now get their supply from the Government grainages as well as from private grainages. Out of the 27 family units, 14 units purchased their requirements of 26,570 layings from Government grainages while 13 units purchased their requirements of 20,150 layings from private grainages. Out of the 40 employer units, 19 units purchased their requirements of 71,800 layings from Government grainages and one unit purchased its requirement of 3,400 layings from private grainages. The Government grainages supplied 56-9 per cent of the total requirements of the family units and 95-5 per cent of those of the employer units and 80-7 per cent of the total requirements. Generally employer units resort to the Government grainages while family units refer private grainages. The Government grainages sell at the rate of Rs. 4 per 100 layings while the private grainages sell at Rs. 5. In spite of this difference, many rearers continue to purchase from private grainages because they get credit facilities and they have long associations with particular grainages. The Government grainages are also not in a position to supply the entire requirements of the area. Their total production in 1951-52 amounted to 21-9 lakhs of layings while the total requirements of Kollegal taluk during the same year was estimated at 89-6 lakhs at the rate of 400 layings per acre under mulberry. The Government grainages are thus in a position to supply only 24-5 per cent of the total requirements. The aided grainages supplied during the year 35-8 lakhs of layings or 40 per cent of the total requirements and private unaided grainages supplied 31-9 lakhs of layings or 35-5 per cent of the total.

SILK WORM REARING INDUSTRY.

MOTHS COME OUT.

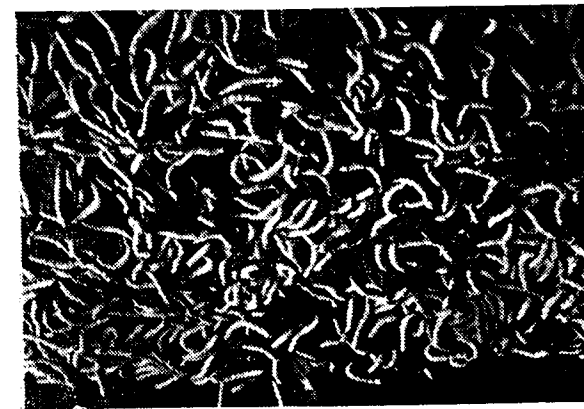
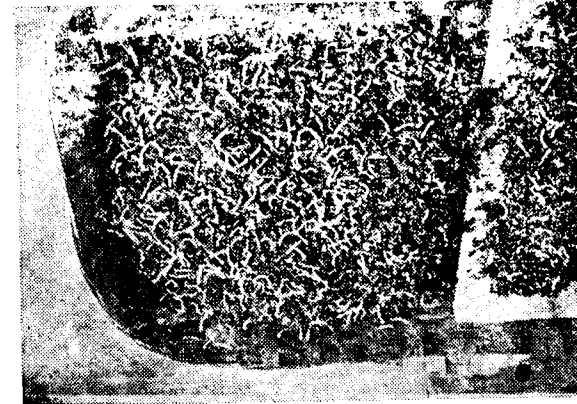


MALE AND FEMALE MOTHS ARE LEFT FOR HYBRIDIZATION.



FEMALE MOTHS START LAYING EGGS.

LIFE CYCLE OF THE SILK WORM.
SILK WORMS BREEDING ON MULBERRY LEAVES.

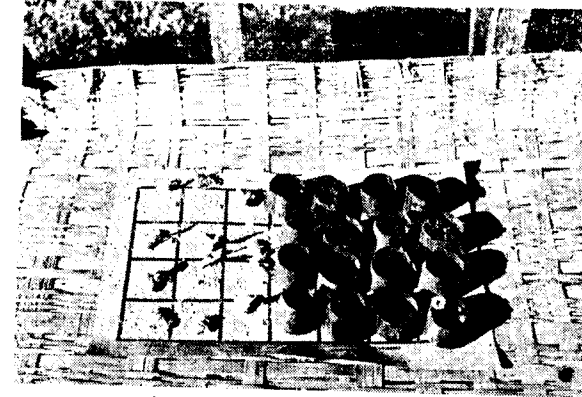


SILK WORMS PRIOR TO SPINNING STAGE

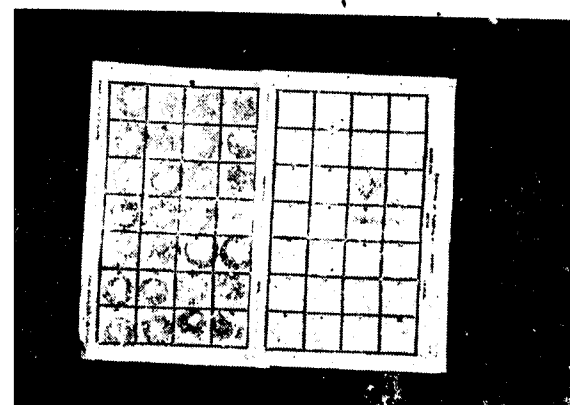
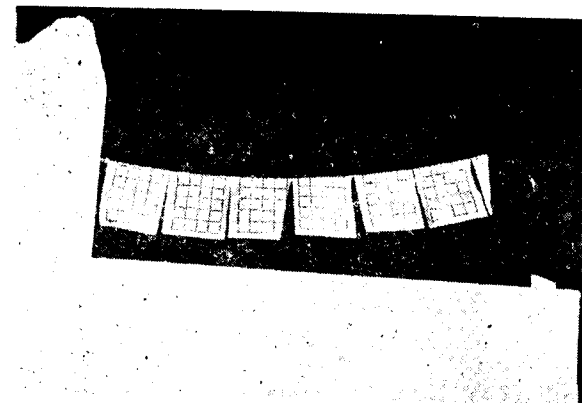


SPINNING STATE OF SILK WORMS.

LIFE CYCLE OF THE SILK WORM—*cont.*
 RED CHAMBER (CONICALS) WITH MALE AND
 FEMALE MOTHS.



THE SEEDS STICKING ON THE PAPER (EGG SHEETS)
 ARE SOLD TO COCOON REARING PEOPLE.



A CLOSE UP OF THE SEEDS ON AN EGG SHEET

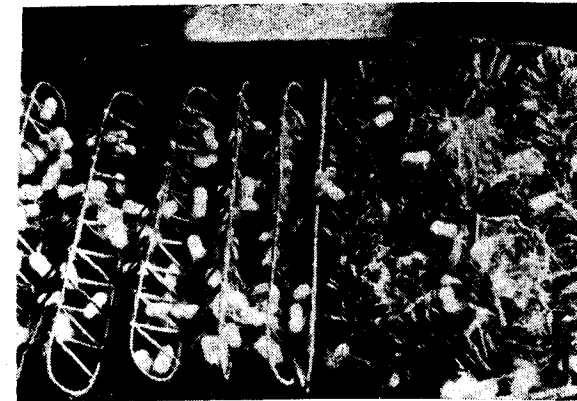
LIFE CYCLE OF THE SILK WORM—*cont.* .
REMOVING WORMS DELICATELY FROM THE PAPER.



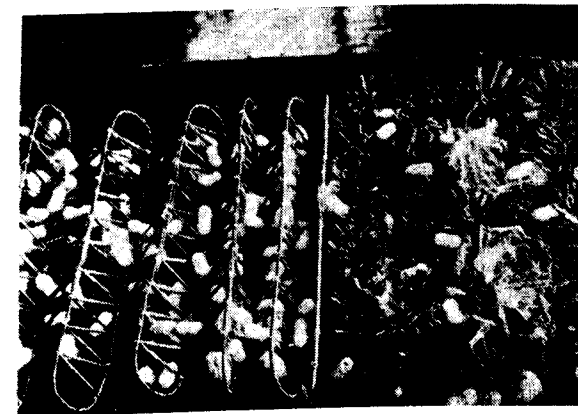
TESTING OF DISEASED WORMS.



PUPA STAGE.



PUPA STAGE.



TRANSPORT OF COCOONS.

Government have been trying to increase their production of disease free layings so as to meet the entire demand of the area. The progress can be seen from the figures given in Appendix 92.

In 1947-48 the Government grainages and aided grainages together supplied 51.5 lakhs of layings out of a total of 86.5 lakhs or 59.4 per cent of the total while in 1951-52 they supplied 57.7 lakhs out of a total of 89.6 lakhs or 64.5 per cent.

While the price for 100 layings at the Government grainages is kept at a steady figure of Rs. 4, it varies with the private grainages where it ranges from Rs. 5 to Rs. 15 in the mungari season, i.e., months of April and May. During this period the Kollegal area receives plenty of showers and all the mulberry gardens are in full flush. The cocoons produced during these months get very good price which stood at Rs. 2-2-0 per lb. in April 1951 as against Re. 0-15-0 in December of the same year. Hence demand for egg layings is very high during this season. The Government grainages try their best to increase their supply of seed layings during this period. Appendix 93 shows month-wise production of egg layings by the Government and aided grainages from April 1951 to December 1952.

Supply of mulberry leaves.—Next in importance to the supply of disease-free layings for the development of the silk industry is the availability of mulberry leaves and reduction in their cost of production. The 27 family units together owned 277.10 acres of lands of which 101.18 acres or 36.5 per cent were under mulberry. The 20 employer units owned 476.45 acres of which 199.70 acres or 41.9 per cent were under mulberry. On the whole, out of 753.55 acres, 300.88 acres or 39.9 per cent were under mulberry. In the six villages surveyed, out of the total cultivated area of 9,818 acres, 3,741 acres or 38.1 per cent were under mulberry. For the Kollegal firka as a whole, out of 21,343 acres of cultivated area, 5,594 acres or 26.2 per cent were under mulberry.

There are two methods of increasing the supply of mulberry leaves (1) by increasing the acreage and (2) by increasing the yield per acre. Although there has been marked growth in the area under mulberry from 8,479 acres in 1941-42 to 21,226 acres in 1952-53, there is no appreciable progress since 1947-48, when the acreage stood at 21,633. This is because of the post-war slump in the demand for silk and the preference shown by the ryots towards food crops. Although Kollegal taluk possesses all the advantages for cultivation of mulberry and at the same time a climate suitable for rearing of silk worms, it may not be feasible to convert the entire area into mulberry gardens, in view of the need for augmenting food production. Nor would it be possible to persuade the ryots to divert all the area for mulberry cultivation in the absence of an assured food supply.

The only other method of increasing the supply of mulberry leaves is to increase the yield per acre. This can be achieved by introducing graft variety. The present average yield of leaves per acre is only 3,250 lb. as against 12,000 lb. per acre in Japan. The experiments conducted at the Kollegal Farm have shown that a graft with local root and Berhampur shoot can yield 7,000 lb. of leaves per acre. The yield can therefore be doubled without increasing the acreage. The Department has started a central mulberry nursery at Kollegal with the aid of the Central Silk Board covering 12.89 acres of land and it aims at supplying the graft variety to the ryots of Kollegal. To speed up the cultivation and distribution of mulberry grafts to the ryots, it would be necessary to establish a large number of private aided mulberry nursery farms throughout the taluk and the ryots must be given necessary facilities for replacing the old bush variety with the graft.

The graft variety possesses an additional advantage in that its leaves are more nutritive than those of the bush variety. According to the present practice, a ryot is able to rear 400 layings per acre of mulberry, i.e., with 3,250 lb. of leaves and he gets an average yield of 200 lb. of cocoons. In other words, for producing one lb. of cocoon, about 16 lb. of leaves are required. It has been estimated that 13 lb. of leaves of the graft variety will suffice for

producing one pound of cocoons and that from one acre 461.5 lb. of cocoons can be produced which is 230.75 per cent of the present rate of production. More intensive efforts are required if the bush variety is to be replaced with the graft variety within a reasonable period.

Lighting charges.—The average expenditure on lighting for industrial purposes was Rs. 5-12-9 for a family unit against Rs. 9-9-7 for an employer unit and Rs. 7-6-8 for all the units.

30. *Tools, machinery and equipment.*—The principal tools and equipment are rearing trays, “*chandrakais*”, knives and ant-well stones. A detailed statement showing the number of tools and equipment owned by an average unit under the two categories is given in Appendix 94.

Each family unit had on the average 1.6 rearing stands, 27.2 trays, 6 “*chandrakais*”, 1.8 knives and 6.7 ant-well stones. The average initial cost of the tools per unit was Rs. 88, their maintenance charges Rs. 8 and depreciation Rs. 17.

Each employer unit had on the average 2.1 rearing stands, 37.3 trays, 11.7 “*chandrakais*”, 2.2 knives and 8.6 ant-well stones. The average initial cost of the tools was Rs. 122, their maintenance charges Rs. 10 and depreciation Rs. 23.

For the sample as a whole each family had on an average 1.8 rearing stands, 31.5 trays, 8.4 “*chandrakais*”, 2.0 knives and 5.4 ant-well stones whose initial cost amounted to Rs. 102, maintenance charges Rs. 9 and depreciation Rs. 20. Of the total cost, rearing stands formed 34.5 per cent, trays 33.0 per cent, “*chandrakais*” 19.8 per cent, ant-well stones 7.0 per cent and knives 5.7 per cent.

31. *Production.*—The production of cocoons depends on a number of factors such as seasonal condition, the quality of the egg layings, the quality of mulberry leaves and the attention paid towards rearing. In times of rising prices, more attention is paid to the rearing of cocoons and there is a tendency to rear the maximum quantity possible. In times of declining prices, the mulberry growers no doubt continue to rear silk worms according to the capacity of their gardens but they do not pay the same attention to rearing. During the period under survey (i.e., between November 1951 and October 1952) the Mungari season (April-May) was unfavourable and the prevailing price ranged from only Re. 0-15-0 to Rs. 1-2-0 per lb. against Rs. 1-14-0 to Rs. 2-2-0 in the corresponding period of the previous year.

The statement below gives the annual production of cocoons per unit :—

31.1. *Production of cocoons per industrial unit per annum.*

Type of unit.	Quantity maunds (25 lb.).	Value per maund.		Total value.	
		RS.	A. P.	RS.	A. P.
1 Family unit	40.4	28	2 5	1,055	2 5
2 Employer unit	90.6	26	10 7	2,364	6 5
Average for all units ..	61.7	26	1 11	1,612	11 2

Each unit produced on the average 61.7 maunds of cocoons (1,532.5 lb.) valued at Rs. 1,612-11-2, the average price per maund being Rs. 26-1-11. An average employer unit produced 2.2 times that of a family unit. The average production per worker in the case of a family unit was 14.0 maunds valued at Rs. 361-5-1 as against 37.8 maunds valued at Rs. 905-4-6 in the case of an employer unit and 22.3 maunds valued at Rs. 583-1-9 for the entire sample.

32. *Estimated production for the firka.*—On the basis of average production per unit, the total production for the Kollegal firka may be estimated at 73,000 maunds of cocoons valued at Rs. 19 lakhs.

33. *Fluctuations in output.*—Appendix 95 shows the monthly fluctuations in output during the year under survey (November 1951 to October 1952) and Appendix XIV-A the variations in the price of cocoons in Kollegal.

Production is not uniform and varies considerably from month to month. The maximum number of layings is reared during the “*Tarageddt*” season, i.e., month of September and in the “*Mungari*” season, i.e., May. As the mulberry plants are pruned at the end of June or early in July, the first flush will be available in the months of September. This also explains why production in August is very low. As the gardens will be again in flush only after 30-40 days, the next rearing is taken up in November. The story is repeated for every alternate month till June when the mulberry gardens are pruned and there is a longer interval of 2½ to 3 months. This also explains why there are only 5 to 6 crops in a year.

34. *Labour force and employment potential.*—The average number of workers engaged in sericulture in a family unit was 3 persons of whom 1.7 were men, 1 woman, 0.2 boy and 0.1 girl. Among the employer units, the average number of workers belonging to the family was 1.4 men, and 0.1 woman. For the sample as the whole, the average number of workers per family was 2.3 persons being made up of 1.6 men, 0.6 woman and 0.1 boy.

Besides family labour both the family and employer units engaged outside labour on a casual basis for mulberry leaf picking. Each of the 20 employer units engaged one permanent male labourer for attending to rearing.

Assuming that a woman's work is equal to that of a man, and that of a child half that of an adult, the total audit labour force of a family unit was 2.9, that of an employer unit 2.4 (including outside permanent labour) and for the sample as a whole 2.7. Excluding outside labour, the adult labour force for the sample was 2.2. The family units were engaged for 149 days, the employer units 154 days and for the sample as a whole 149.2 days. Assuming 295 days to be the full employment level, an average family unit secure employment for 50.5 per cent, an employer unit for 52.2 per cent and an average unit for 50.6 per cent.

35. *Wages.*—Wages are paid both by the family units and employer units for the labour engaged in picking mulberry leaves. The only difference between the two types is that the former employ as much family labour as possible including women members, boys and girls while the latter do not utilise family labour for the purpose. In the case of family units, the members generally attend to leaf picking during the first two stages when the worms consume only very small quantities of leaves. It is only during the latter three stages that outside labour is employed. For rearing purposes, while family units depend solely on their own labour, the employer units engage permanent outside labourers, the male members of the family confining themselves to direction and supervision. The usual rate for picking 120 lb. of mulberry leaves is Re. 0-10-0 for female and child labour. Normally a woman or child will be able to pick this quantity during a day of eight hours' work. Male labourers are engaged both for picking and transporting the leaves and they are paid at Re. 1 per day. Outside labourers are engaged at Rs. 30 per month by the employer units. As the family members attend to other work also during intervals of feeding, one-third of the prevailing rate for labourers engaged for rearing, i.e., Re. 1 per day may be allotted as the share of wages payable to them. On this basis, the wage for adult family members would be Re. 0-5-4 per day. Children engaged in rearing have been given a wage rate of Re. 0-2-8 per day. In the case of employer units, the wage payable to the employer has been computed at one-fourth the rate for a full time worker, i.e., at Re. 0-4-0 per day.

The following statement shows the amount of wages payable to family members and the wages actually paid to outside labourer :—

35.1. Wages.

Description.	Leaf picking and transport.		Rearing.		Total.	
	Wages payable.	Wages paid.	Wages payable.	Wages paid.	Wages payable.	Wages paid.
	RS.	RS.	RS.	RS.	RS.	RS.
1 Family unit	43	135	172	..	215	135
2 Employer unit	..	333	72	300	72	633
Average for all units ..	25	219	129	128	154	347

The average amount of wages paid by a family unit was Rs. 135 as against Rs. 633 by an employer unit and Rs. 347 per unit for the whole sample. The total wages payable in the case of a family unit was Rs. 215 as against Rs. 72 in the case of an employer unit and Rs. 154 for the sample as a whole. Distributed among the adult workers, an adult worker in a family unit secured Rs. 74 per annum against Rs. 59 by one in an employer unit and Rs. 70 for the sample as a whole.

36. *Transport.*—The cocoons are generally taken to the Government market or to the reelers by the rearers. Only rarely do reelers send their brokers to the surrounding villages for collection of cocoons. Even in such cases, the rearers accompany the broker. For transport, an average family unit incurred during the year a sum of Rs. 8-5-0, an employer unit Rs. 13-7-0 and an average unit for the entire sample Rs. 10-8-0.

37. *Cost of production.*—The following statement furnishes the details of expenses incurred by each unit :—

37.1. Components of cost of production per industrial unit per annum.

Description.	Family unit.		Employer unit.		Average for the sample.	
	Amount.	Percent- age.	Amount.	Percent- age.	Amount.	Percent- age.
	RS. A. P.		RS. A. P.		RS. A. P.	
1 Raw materials and fuel—						
(i) Egg layings	81 4 9	10.6	155 1 7	9.9	112 11 3	10.3
(ii) Mulberry leaves ..	286 5 11	37.1	622 0 0	39.9	429 2 4	38.7
(iii) Lighting	5 12 9	0.8	9 9 7	0.6	7 6 8	0.6
Total ..	373 7 5	48.3	789 11 2	50.4	549 4 3	49.6
2 Rent—						
(i) Rent paid	..	0.6	..	0.3	..	0.4
(ii) Rent payable	4 14 3	0.6	5 3 2	0.3	5 0 4	0.4
(iii) Repairs	10 11 10	1.4	13 2 5	0.8	11 12 2	1.1
Total ..	15 10 1	2.0	18 5 7	1.1	16 12 6	1.5
3 Tools and equipment—						
(i) Maintenance	8 0 0	1.0	10 0 0	0.6	9 0 0	0.8
(ii) Depreciation	17 0 0	2.2	23 0 0	1.5	20 0 0	1.8
Total ..	25 0 0	3.2	33 0 0	2.1	29 0 0	2.6
4 Wages—						
(i) Paid	135 0 0	17.5	633 0 0	40.8	347 0 0	31.4
(ii) Paid	215 0 0	27.8	72 0 0	4.8	154 0 0	13.9
Total ..	350 0 0	45.3	705 0 0	45.6	501 0 0	45.3

Description.	Family unit.		Employer unit.		Average for the sample.	
	Amount.	Percent- age.	Amount.	Percent- age.	Amount.	Percent- age.
	RS. A. P.		RS. A. P.		RS. A. P.	
5 Transport	8 5 0	1.0	13 7 0	0.8	10 8 0	1.0
Grand total cost ..	772 6 6	100.0	1,557 7 9	100.0	1,106 8 9	100.0
Total sale value—						
(i) Main product cocoons ..	1,055 0 0	..	2,365 0 0	..	1,612 0 0	..
(ii) Waste product	37 0 0	..	52 0 0	..	44 0 0	..
Total ..	1,092 0 0	..	2,417 0 0	..	1,656 0 0	..
Gross profit ..	319 9 6	41.4	860 8 3	55.8	549 7 3	49.5

Raw materials and wages constitute the major items in the cost of production forming 49.6 per cent and 45.3 per cent respectively of the total. The total profits amounted to Rs. 319-9-6 for a family unit, Rs. 860-8-3 for an employer unit and Rs. 549-7-3 for the entire sample. The profit formed 41.4 per cent of the cost of production for a family unit, 55.8 per cent for an employer unit and 49.5 per cent for an average unit in the whole sample.

38. *Relative efficiency.*—The following statement shows the relative efficiency of the two types of units. Assuming the cost of raw materials to be 100, the total cost of production for the two types of units works out as follows :—

38.1. Relative efficiency.

Components.	Family unit.	Employer unit.
(1)	(2)	(3)
1 Raw materials and lighting as 100	100	100
2 Rent and repairs	4.2	2.3
3 Tools machinery and equipment (maintenance and depreciation).	6.7	4.2
4 Wages	93.8	89.5
5 Transport	2.1	1.6
6 Total cost	206.8	197.6

The employer unit appears to have worked with greater economy.

39. *Investment.*—The investment in the industry consisted of buildings, tools, machinery and equipment and working capital. Provision has already been made for buildings and tools. The average amount of working capital for a family unit was Rs. 538, Rs. 900 for an employer unit and Rs. 697 for an average unit in the sample. Out of the investment of an average family unit, a sum of Rs. 146 was borrowed for which interest amounting to Rs. 17-8-6 was paid. No employer unit had borrowed for business purposes. Allowing an interest of 6 per cent on own capital, the net profit from the industry would be as follows :—

39.1. Net profit.

Item.	Family unit.	Employer unit.	Average for the sample.
	RS. A. P.	RS. A. P.	RS. A. P.
1 Gross profit	319 9 6	959 8 3	549 7 3
2 Interest paid	17 8 6	..	10 1 3
3 Interest on own capital	23 8 0	54 0 0	37 12 0
4 Net profit	278 9 0	905 8 3	501 10 0

40. *Income from the industry.*—The income from the industry including imputed items such as net profit, interest on own capital, wages payable, depreciation and rent payable amounted to Rs. 528-15-3 for a family unit or Rs. 85-5-0 per capita, Rs. 1,059-11-5 for an employer unit or Rs. 134-2-3 per capita and Rs. 718-6-4 for an average unit in the sample or Rs. 102-10-0 per capita.

41. *Marketing.*—There are two types of markets for cross breed cocoons—(1) Government market and (2) private market. The sericulture department has set up marketing agencies at seven centres where cocoons are purchased for cash. Private markets consist of the reelers of raw silk who purchase both for cash and for short-term credit. The statement below shows the quantity and value of the cocoons disposed of in the Government and private markets.

41.1. Marketing of cocoons.

	Government market.			Private market.			Total.		
	Quantity.		Value.	Quantity.		Value.	Quantity.		Value.
	MAUNDS.	RS.	A. P.	MAUNDS.	RS.	A. P.	MAUNDS.	RS.	A. P.
Family unit	17.6	463	2 5	22.7	592	0 0	40.4	1,055	2 5
Employer unit	56.8	1,485	2 5	33.8	879	4 0	90.6	2,364	6 5
Average for the entire sample.	34.3	898	2 2	27.4	714	9 0	61.7	1,612	11 2

On the whole, the sale through Government markets was 55.5 per cent and through private markets 44.5 per cent. The family units sold 43.7 per cent in Government markets as against 62.6 per cent by the employer units. The employer units made greater use of Government markets than the family units. All the "quality" cocoons produced out of layings supplied by the Government were not sold to them by rearers. The only method of ensuring this will be to organize a regulated cocoon market as has been done in the case of certain agricultural produce like groundnut, cotton, tobacco, etc., where all the cocoons produced in the area will be brought graded and sold at prevailing rates.

42. *Role of co-operation and forms of State aid.*—There is no co-operative organization for the cocoon rearers. But the sericulture department is giving active assistance to them in the following ways:—

- (1) Supply of disease-free layings directly and through aided grainages.
- (2) Improvement in the quality of mulberry leaves and supply of graft variety.
- (3) Grant of loans for cultivation of mulberry.
- (4) Establishment of Government Cocoon markets.

43. *Income of the families.*—Sericulture forms only a subsidiary source of income to these families whose income is derived principally from agriculture. The following statement shows the main sources of income of the selected units:—

43.1. Sources of income.

Description.	Family unit.		Employer unit.		Average for the sample.	
	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
	RS.		RS.		RS.	
1 Income from the industry	529	24.4	1,060	26.2	718	24.5
2 Income from agriculture	1,172	54.2	2,084	51.6	1,580	53.3
3 Income from other occupations, etc.	57	2.6	72	1.8	63	2.2
4 Income from assets	407	18.8	826	20.4	585	20.0
Total	2,165	100.0	4,042	100.0	2,926	100.0

The average income of a family unit was Rs. 2,165 or Rs. 349-3-0 per capita, that of an employer unit Rs. 4,042 or Rs. 511-10-0 per capita and that of an average unit for the sample Rs. 2,926 or Rs. 418 per capita. Income from sericulture formed 24.5 per cent of the total income for the sample as a whole.

44. *Expenditure.*—Appendix 96 gives the average expenditure per industrial unit. The average expenditure of a family unit was Rs. 1,262, that of an employer unit Rs. 2,168 and that of an average unit for the sample Rs. 1,647. Out of the total expenditure, that on ordinary items amounted to 93.9 per cent for a family unit, 91.6 per cent for an employer unit and 93.9 per cent for the entire sample.

45. *Assets.*—Appendix 97 gives the details of the assets owned by the different types of units. The average asset of a family unit was Rs. 12,610, that of an employer unit Rs. 31,033 and that for the entire sample Rs. 20,448. Land and houses were the principal assets accounting for more than 80 per cent.

46. *Liabilities.*—Appendix 98 gives the liabilities of the families. Out of 27 family units 21 or 77.8 per cent were indebted, the average debt per indebted family being Rs. 816, and for all families Rs. 635. Among the employer units, 9 out of 20 or 45 per cent were indebted, the average debt per indebted family being Rs. 635 and that for all families Rs. 598. The average debt per indebted family for the sample as a whole was Rs. 970 and for all families, Rs. 619. Out of the total liability, 82.4 per cent was on simple mortgage, 16.3 per cent on pro-note and 1.3 per cent on hand-loans. The rate of interest varied from 6½ to 12½ per cent while the average rate for all loans worked out to 9.7 per cent.

47. *Efficiency assessment.*—There was no appreciable difference between the two types of units in regard to provision of employment. The adult labour force of an average family unit was 2.9 and they worked for 149 days while an average employer unit employed 2.4 workers for 154 days. In regard to output per worker, the employer unit was superior, the average being 37.8 maunds against 14.0 maunds in the case of the family unit. From the point of view of relative cost of production also, it has been seen that the employer unit functioned with greater economy.

SUMMARY.

48. The above survey of the Sericulture Industry in Kollegal firka shows that it is an ideal cottage industry for utilizing the local raw material and the spare time of the agriculturists of this region. With the help of this cottage industry, the cultivator is able to combine agriculture with industry in a happy blending. By setting apart nearly 40 per cent of his land for mulberry cultivation, he has been able to improve his economic position to a substantial degree. The investment on raw materials amounted to Rs. 541-13-7 of which Rs. 112-11-3 was on disease-free layings and Rs. 429-2-4 on mulberry leaves. The initial cost of industrial equipment was Rs. 102-2-8. The industry provided employment for 149 days in the year or 50 per cent of the maximum days (295) available for employment or 40.8 per cent of the total days in the year. The annual production of an average unit was 61.7 maunds valued at Rs. 1,612-11-2 and on this basis the estimated production for the firka was 73,000 maunds valued at Rs. 19 lakhs. It has yielded, on the average, an annual income of Rs. 718-6-4 per family and Rs. 102-10-0 per capita. Out of the total average annual income of Rs. 2,226 per family the income from sericulture formed nearly one-fourth. The Sericulture Industry has thus helped to raise the general economic condition of the people in this dry area from a level of poverty to one of affluence. Against an average income of Rs. 2,926 per family, the average expenditure was Rs. 1,648 leaving a net surplus of Rs. 1,279 for the year. The average asset of a family was Rs. 20,450 against which the average liability was only Rs. 619 or 3 per cent. The survey has revealed the large scope for expansion of the industry provided the people are given necessary help to adopt improved methods of cultivation of mulberry and rearing of silk worms. The experiments conducted at the Government research farms have shown that the income of the people from the industry can be easily doubled even with the present acreage under mulberry and without much additional investment on industrial equipment.

SILK REELING INDUSTRY OF KOLLEGAL FIRKA. *

49. *Introduction.*—Unlike the silk worm rearing industry which is found practically in every village in Kollegal firka, silk reeling is carried on only in 7 out of the 21 villages. This is because silk worm reeling is not a subsidiary industry to agriculture which any mulberry cultivator can take up but is a purely industrial enterprise involving employment and supervision of skilled outside labour, investment of comparatively larger amount of capital and undertaking of greater risks due to fluctuations in prices.

50. *Selection of sample.*—There were 13 reelers of raw silk distributed in seven villages in Kollegal firka. A statement showing the names of the villages and the reelers together with the number of basins or charkas owned by each is given in Appendix 99. Seven reelers in four villages were selected for detailed study of whom six were employer units and one a family unit. The statement below gives the names of the villages, the number of reelers in each and the number selected:—

50.1. Names of villages and number of reelers selected.

Name of village.	Number of reelers in the village.	Number of reelers surveyed.	Remarks.
1 Tagarapuram (Kajjihundi hamlet) ..	1	1	Employer unit.
2 Chilukuvadi	1	1	Do.
3 Kunthur	1	1	Do.
4 (a) Kunigalli	1	1	All employer units except one which is a family unit.
(b) Surapuram (hamlet)	4	3	

51. *Organization of the industry.*—Out of the seven units, six units were working only with charkas while one unit at Kajjihundi has adopted the improved method of reeling by basins supplied by Government under the production-cum-training centre scheme. Of the seven units was a family unit and all the others employer units. One unit combined rearing with reeling while the other five were solely engaged in reeling. The proprietors of the two industrial units engaged in rearing were well-to-do landlords having extensive mulberry gardens.

The family unit was a small enterprise having only one charka ; the minimum number of charkas owned by an employer unit was five. The family unit was an exception and was surveyed to find out its peculiarities.

Of the seven units, four were self-established and three hereditary. The family unit belonged to the former category. Of the four self-established units, two were started after the termination of the First World War and two recently, i.e., one in August 1952 and another in December 1952. One of the charka units established in 1918 was improved into a basin-cum-charka unit in 1952 under the production-cum-training centre scheme.

52. *Composition of the family.*—The seven families consisted of 63 members, the average size of a family being 9. Of these one joint family alone consisted of 27 persons. Excluding this family, the average size of the rest was only 6. The family unit consisted of five members. The average size of an employer unit was 9.7. Details of working and dependent members are furnished in Appendix 100.

In the case of the family unit, out of five members, three were workers and two dependents. Of the three workers two (a man and a woman) were engaged in reeling and one (a woman) in agricultural labour.

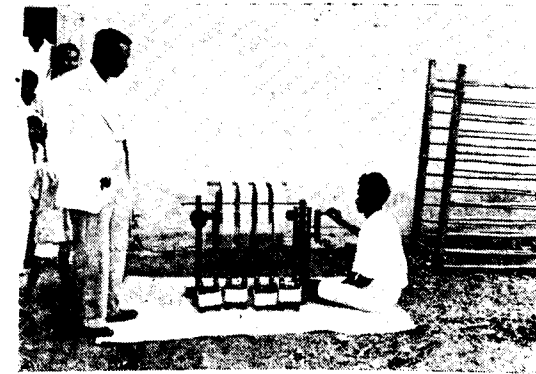
Among employer units, all the workers engaged in sericulture were men, the average number per family being 1.8. Women and children of the employer units do not go for work.

* NOTE.—This industry was taken up for study to get a complete picture of the economics of silk worm rearing and spinning industry although it does not fall strictly within the scope of cottage industry as defined in paragraph 4 of the preface.

SILK REELING INDUSTRY.
IMPROVED METHOD OF SILK REELING.

OLD METHOD OF SILK REELING.

SILK REELING INDUSTRY—*cont.*
REELING SILK THREADS INTO HANKS.



CLEARING REELED SILK.

53. *Housing of the industrial units.*—The seven industrial units were housed in eight sheds of which four were tiled and four thatched. The average space per unit was 1,492 sq.ft. The buildings were located adjacent to the houses of the employers to have effective supervision. In the case of the family unit, the work place was in a side veranda. The average value of a work place was Rs. 1,021. None of the industrial units paid any rent. The annual estimated rent was Rs. 42 and their repair charges Rs. 62.

54. *Raw materials and fuel.*—The principal raw material is cocoons. Generally 15 lb. of cocoons are required to produce one lb. of silk. The number of lb. of cocoons required to produce one lb. of silk is known as "Rendita". The "Rendita" in the case of charka silk is on the average 15. The average production of raw silk per charka per day of eight hours is one lb. The Rendita in the case of Government Silk Filatures is 18. The higher rate is due to the fact that the Filatures aim at producing superior quality of raw silk and consequently, there is a larger quantity of waste materials than in the case of charka silk.

During the year under review (November 1951 to October 1952) the employer unit purchased on the average 1,301 maunds of cocoons valued at Rs. 34,987 while the family unit purchased 25 maunds valued at Rs. 200. The latter purchased double cocoons at cheap rates at the stage when the silk worms begin to spin and manufactured dupion silk. The price of cocoons for the employer units varied from Rs. 26 to 28 per maund. Out of the six employer units, one purchased below 500 maunds and three, 501 to 1,000 maunds, one 2,001 to 2,500 maunds and one 2,501 to 3,000 maunds. The reelers found no difficulty in buying the cocoons.

Fuel is required for cooking the cocoons while reeling is in progress. Jungle wood which is available locally in plenty is used. The family unit consumed 40 head-loads of fuel costing Rs. 60 (one head-load=about 112 lb.), and an average employer unit 2,472 head-loads costing Rs. 3,708, the average for all units being 2,125 head-loads costing Rs. 3,187.

55. *Tools, machinery and equipment.*—A statement showing the details of tools and equipment owned by an average unit is given in Appendix 101.

The principal tools and equipment are charkas, basins and balance with a set of weights. The average initial cost was Rs. 360-11-5, replacement cost Rs. 394-9-2 and present value Rs. 318-9-2. The average depreciation charges amounted to Rs. 21 and maintenance charges Rs. 14. Five out of the seven units owned less than 10 charkas. Two of the units owned improved charkas or basins also. One of these units had an improved charka costing Rs. 200 and the other 18 basins.

The adoption of the basin method would result in the production of better quality of silk, commanding better price than the best quality charka silk and the rate of production per charka can be stepped up by 30 per cent. In spite of these distinct advantages, the substitution of charkas by basins has not proceeded rapidly mainly because of the heavy investment required for installing basins. Whereas the cost of a charka is only Rs. 8 to 10, the cost of a complete equipment for a set of five basins is Rs. 500. A complete replacement of the 69 charkas owned by the seven units by basins would cost Rs. 7,000. In addition to this, construction of substantial buildings at the rate of Rs. 1,000 per set of five basins would cost another Rs. 14,000. Under the Government scheme, selected reelers are given a set of five reeling machines for a period of one year and the reelers are expected to impart training to batches of trainees for a period of six months. The stipend to be given to the trainees is borne by the Government and the reelers on a 50 : 50 basis. The Government have so far installed 15 basins in three centres in Kollegal taluk. Balances and weights are required for weighing the cocoons purchased from the rearers and also for weighing the raw silk produced. The family unit did not possess this equipment.

56. *Production.*—The production of raw silk by the family unit amounted to 48 pounds of dupion and coarse silk, valued at Rs. 576 or Rs. 12 per lb. The six employer units

produced 15,394 lb. of raw silk, valued at Rs. 3,61,949 or Rs. 22-6-8 per lb. One of the employer units produced in addition 192 lb. of dupion silk valued at Rs. 1,531 or Rs. 7-15-7 per lb. The total production by all the seven units was 16,634 lb., valued at Rs. 3,64,056. The average production of raw silk per unit was 2,233 lb., valued at Rs. 52,088. The average annual production per charka was 177.6 lb., valued at Rs. 4,137 and per working day 1 lb. nearly. The average production per adult worker was 0.42 lb. per day.

There were some significant differences in the level of production among the six employer units. The production by each of the six units was 600 lb., 1,000 lb., 1,352 lb., 1,400 lb., 3,667 lb. and 7,375 lb.

57. *Estimated production for the firka.*—On the basis of the average production per unit, the total production of raw silk by all the 13 units may be estimated at 29,000 lb. of raw silk valued at Rs. 6.8 lakhs per annum.

58. *Fluctuations in output.*—Appendix 102 shows the fluctuations in output during the course of the year under survey. Production is high during the months from January to June and September to October. It will be observed that there is greater uniformity in the production of raw silk than in the production of cocoons which showed rise and fall between alternate months. This uniformity is due to the fact that the reelers purchase the cocoons as and when they are available, stifle them and store them for future consumption.

59. *Labour force and employment potential.*—The family unit employed one man and one woman in silk reeling industry. The average number of family workers per employer unit was 1.8. The average number of outsiders per employer unit was 31 made up of 12.3 men, 12.3 women, 2.5 boys and 3.9 girls. There was variation in the number of outside workers engaged by the units. Out of the 6 units, one unit employed 14 persons, two units 22 persons each, one unit 26 persons, one unit 45 persons and one unit 57 persons. Outside labour is employed for reeling, turning, stifling cocoons and for carrying water for cooking cocoons. Each charka requires one reeler and one turner. Both men and women skilled in the art are employed for reeling while women, boys and girls are engaged for turning. In the case of basins, one turner is sufficient for five basins. Men are employed for carrying water and for stifling cocoons. Excluding the family workers in the employer units who are engaged mainly in supervision, the average number per unit was 14.4 reelers, 1.8 water carriers, 9.9 turners and 0.7 cook. In this industry, worker, whether male or female, engaged in reeling and water carrying may be regarded as adults and those engaged in turning and cooking as half that of an adult. In that case, the average adult labour force per unit was 23.1. The average number of man-days worked per annum was 180 and on the assumption of a maximum level of 295 working days per year, the families secured employment for 61.6 per cent of the total.

There was considerable variation in the level of employment between the family unit and the employer unit and even among the employer units themselves. This was because of the variation in the productive capacity of different units and their financial ability to stock cocoons and hold reeled silk till the market is favourable.

The statement below shows the level of employment as between the family unit and employer units :—

59.1. Level of employment.

Description.	Annual output (in lb.).	Number of days worked.	Average production per unit per day in lb.
(1)	(2)	(3)	(4)
1 Family unit	48	48	1.0
2 Employer unit	2597.7	202	12.9
Average for the sample ..	2,233	180	12.4

While the family unit was employed only for 48 days an average employer unit was engaged for 202 days, the number of days for the sample as a whole being 180.

60. *Wages.*—The statement below shows the amount of wages paid and payable :—

Type of work. (1)	60.1. Wages.				
	Rate per worker per working day. (2)	Family unit wages payable. (3)	Employer unit.		
			Wages payable. (4)	Wages paid. (5)	
	RS. A. P.	RS.	RS.	RS.	
1 Reeling	1 0 0	48	..	3,623	
2 Turning	0 10 0	30	..	1,949	
3 Cooking	0 10 0	..	..	105	
4 Water carrying	1 0 0	..	..	761	
5 Stifling cocoons	1 0 0	..	..	136	
6 Supervision	1 8 0	..	3,336	..	
Total	..	78	3,336	6,574	

Out of the total wages, reeling absorbed 36.6 per cent turning 19.7 per cent and supervision 33.7 per cent. The average wage received by an adult wage earner was Rs. 305-12-0 per annum and Rs. 1-8-0 per working day.

61. *Transport.*—In the case of the family unit, no expenditure was incurred on transport of raw cocoons or reeled silk. In the case of the employer units, transport charges were incurred in marketing the goods, the average expenditure per unit being Rs. 422 per annum.

62. *Cost of production.*—The statement below shows the average expenses incurred by an industrial unit in the manufacture of raw silk during the year :—

62.1. Components of cost of manufacture per industrial unit per annum.

Description. (1)	Family unit.		Employer unit.		Average for all units.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS.	(3)	RS.	(5)	RS.	(7)
1 Raw materials—						
(i) Cocoons	200 }	72.4	34,987 }	78.7	30,017 }	78.7
(ii) Fuel	60 }		3,708 }		3,187 }	
2 Housing—						
(i) Rent paid	15 }	4.2	47 }	0.2	42 }	0.2
(ii) Rent payable	.. }		72 }		62 }	
(iii) Repairs	.. }		.. }		.. }	
3 Tools and machinery—						
(i) Maintenance	1 }	1.7	16 }	0.08	14 }	0.08
(ii) Depreciation	7 }		24 }		21 }	
4 Wages—						
(i) Paid	.. }	21.7	6,574 }	20.12	5,620 }	20.12
(ii) Payable	78 }		3,336 }		2,870 }	
5 Transport	..		422	0.9	362	0.9
Total cost	359	100.0	49,186	100.0	42,195	100.0
Sale value—						
(i) Main product—raw silk	376	95.5	60,580	96.5	52,008	96.5
(ii) By-product—waste silk.	15	2.5	1,998	3.1	1,689	3.1
(iii) Waste product	12	2.0	212	0.4	183	0.4
Total	603	100.0	62,760	100.0	53,880	100.0
Gross profit	244		13,574		11,685	

Raw materials and wages form the two major items in the cost of production accounting for 78.7 per cent and 20.12 per cent respectively. The average cost of production per lb.

sample as a whole. The annual wage bill of an average employer unit amounted to Rs. 6,574. Wages payable to family worker in the family and employer units were Rs. 78 and Rs. 3,336 respectively.

Transport charges were incurred by employer units only and amounted to an average sum of Rs. 422, annually.

The total cost of production was Rs. 359 for the family unit, Rs. 49,186 for an average employer unit and Rs. 42,195 for an average unit for the sample as a whole. Deducting this from the sale value of the output of raw silk, waste silk and waste product, the gross profit amounted to Rs. 244, Rs. 13,574 and Rs. 11,685 respectively. The family unit had no working capital while an average employer unit had Rs. 3,500. The net profit less interest on working capital was Rs. 244, Rs. 13,324 and Rs. 11,505 respectively. The income from the industry including imputed items of cost, i.e. depreciation, estimated rent, wages payable and interest on own capital amounted to Rs. 342, Rs. 16,861 and Rs. 14,515 and the average per capita income from the industry was Rs. 68, Rs. 1,756 and Rs. 1,613 respectively.

The income from the industry formed 59 per cent of the total annual income of Rs. 580 of the family unit. In the case of the average employer unit, the total income was Rs. 23,524 of which income from the industry formed 71.7 per cent. The average annual income for the entire sample was Rs. 20,260 of which the income from the industry was Rs. 14,515 or 71.8 per cent. The annual expenditure in the three cases was Rs. 649, Rs. 11,010 and Rs. 9,530, respectively. The value of assets owned was Rs. 490, Rs. 39,648 and Rs. 32,669 in each case while the average liability per unit was Rs. 1,286.

RECOMMENDATIONS.

Hosur area.—The entire Hosur area is now treated as a seed area. This means that production of cocoons is regulated by the requirements of the Central Grainage at Kollegal. For the rapid development of the silk worm industry in Hosur area, it is necessary that silk-worm rearing must be placed on a commercial footing as in Kollegal. The average annual income now derived from the industry by a family (Rs. 82) is too meagre to make it attractive. To make the industry more attractive to the ryots, it is necessary that a few compact villages should be set apart for the production of seed cocoons and the rest of the Hosur area thrown open for the production of industrial cocoons.

2. The expansion of the industry is dependent on the availability of mulberry leaves. Now, only the bush variety of mulberry is cultivated in Hosur area. As the yield of the graft variety is nearly double, and its nutritive value greater, steps should be taken to encourage ryots to plant graft variety even at the first instance instead of trying to replace the bush variety by the graft variety at a later stage. To supply graft variety to the ryots, one or more nurseries should be started at Hosur by the Government. As an encouragement to the ryots, the grafts should be supplied either free of cost or at a nominal price.

3. Another important prerequisite for development of the Hosur area is to provide disease-free cross-breed layings and other equipment necessary for silk-worm rearing. To ensure quality the seed supply should be undertaken by the Government Grainage only and should not be left to aided grainage or private graineurs. Simultaneously assistance should be given to the rearers for the constructions of model rearing houses.

4. A reeling establishment should be started on co-operative lines to reel the cross-bred cocoons. All the reelers should become members of the reeling society so that the profits will to be distributed to the rearers in proportion to their supply of cocoons. This will considerably increase the income of the rearer as reeling is more profitable than rearing. Reeling requires special training. Production-cum-training centres should therefore be started to impart training in reeling and create a set of trained personnel.

Kollegal area—(i) *Silk-worm rearing.*—(1) In Kollegal area, also only the bush variety of mulberry is cultivated. The Central Mulberry Nursery established in August 1950 is raising root grafts for distribution among the ryots. The progress is rather slow as it is only in the beginning stage. Steps should be taken to convert the entire acreage under mulberry from bush to graft variety so that the yield of leaves can be more than doubled. As it is not possible for the Central Nursery to cater to the entire requirements of the area, private nurseries should be encouraged by granting them adequate subsidies so that the substitution can be completed within a period of ten years.

(2) Silk worms are prone to infectious diseases and unless effective steps are taken to supply disease-free seeds, the stability of the industry cannot be guaranteed. The supply of disease-free layings by the Government is limited to 25 per cent of the total requirements of Kollegal taluk while the aided graineurs supply 40 per cent and unaided private graineurs 35 per cent. As the supply of disease-free layings is the most important factor in the development of sericulture, it should be the aim of the department to supply the entire requirements from its own grainages. As this may take some time, the private graineurs should be made to take licences and should be brought under the departmental control and supervision as in the case of aided graineurs. The present system of aided grainages is a purely voluntary one. This should be replaced by a system of compulsory licensing.

(3) The department is already carrying on research into improved methods of rearing of silk worms with the help of persons who have been sent to Japan for studying the latest methods there. It is necessary that the results of these researches should be taken to the rearers. The staff of the Sericulture section is already carrying on propaganda among the villagers. This can be intensified by Government themselves purchasing and supplying the people with improved appliances at cheap rates.

(4) At present there is no system of grading of cocoons. Grading of cocoons is insisted in Japan by law. Cocoons are tested and graded according to their reeling properties. Similar arrangement should be made in the Kollegal area also under Government auspices so that there would be an incentive to improve quality.

(5) There is no organized market for the cocoons. No doubt there are a few Government markets where cocoons are brought by some rearers and bought by the Government for use in their Silk Filature after some sort of grading. A regulated market with sub-stations where all cocoons produced in the area would be brought and sold with reference to the grade certificate and the latest market information would go a long way to give fair price to the rearers. This may be done under the Regulated Markets Act.

(ii) *Reeling.*—(1) Improved methods of reeling should be introduced by replacing the present charkas by basins. This will not however result in the reduction of employment. In spite of Government aid for the introduction of basins, progress has not been rapid. This is because of the prohibitive cost of installing basins which amounts to Rs. 1,000 for a set of five basins as against Rs. 50 for five charkas. In the interest of improving the quality of the local raw silk, Government should help the reelers by a system of subsidy or loans so that all the charkas would be replaced within a definite period.

(2) Stabilization of prices is equally important for the progress of the industry. There has been marked fluctuations in the price of cocoons and that of raw silk during the last decade which has upset the cultivation of mulberry and rearing of silk-worms. This is an All-India problem and must be dealt with by the Government of India who should regulate imports with reference to local production and guarantee a minimum fair price for the cocoon producers.

CHAPTER V.

COIR, COPRA AND COCONUT OIL INDUSTRIES IN KOZHIKODE FIRKA.

Introduction.—Kozhikode firka in Malabar district was chosen for a survey of the coir, copra and coconut oil industries on the basis of regional, economic and cultural considerations. These industries constitute an important means of livelihood for the people of the region. Although coconut palm grows in many districts of the State, it is nowhere on such a magnificent scale as in Malabar. Its commercial exploitation is most widely practised in that district. The extraction of fibre from the husk and oil from the kernel of the coconut are the most important industries associated with the palm. These industries are best developed in the West Coast, in Travancore-Cochin State and in Malabar district.

2. *Selection of sample.*—Appendix 106 gives the number of families engaged in various cottage industries in the 15 villages in the firka as revealed by the preliminary survey. There were 2,097 families engaged in cottage industries forming 4.9 per cent of the total number of families in the firka. Of these, 1,102 families were engaged in coir manufacture, 42 in copra industry and 44 in oil pressing. A total of 80 units (50 family units and 30 merchant-cum-manufacturer units) forming 6.7 per cent of the total was surveyed for all the coconut industries. The family units were all employed in coir making but the manufacturer units were frequently engaged in more than one of the three industries besides having other occupations. Thus of the 30 manufacturer units, only three were engaged purely in coir manufacture and seven purely in copra manufacture. Of the rest, 17 were engaged in coir and copra manufacture and 3 in coir, copra and coconut oil industries. This combination of functions makes a study of the economics of any one industry rather difficult. Hence for purposes of analysis, only such units as were engaged purely in one industry were taken into consideration.

COIR INDUSTRY.

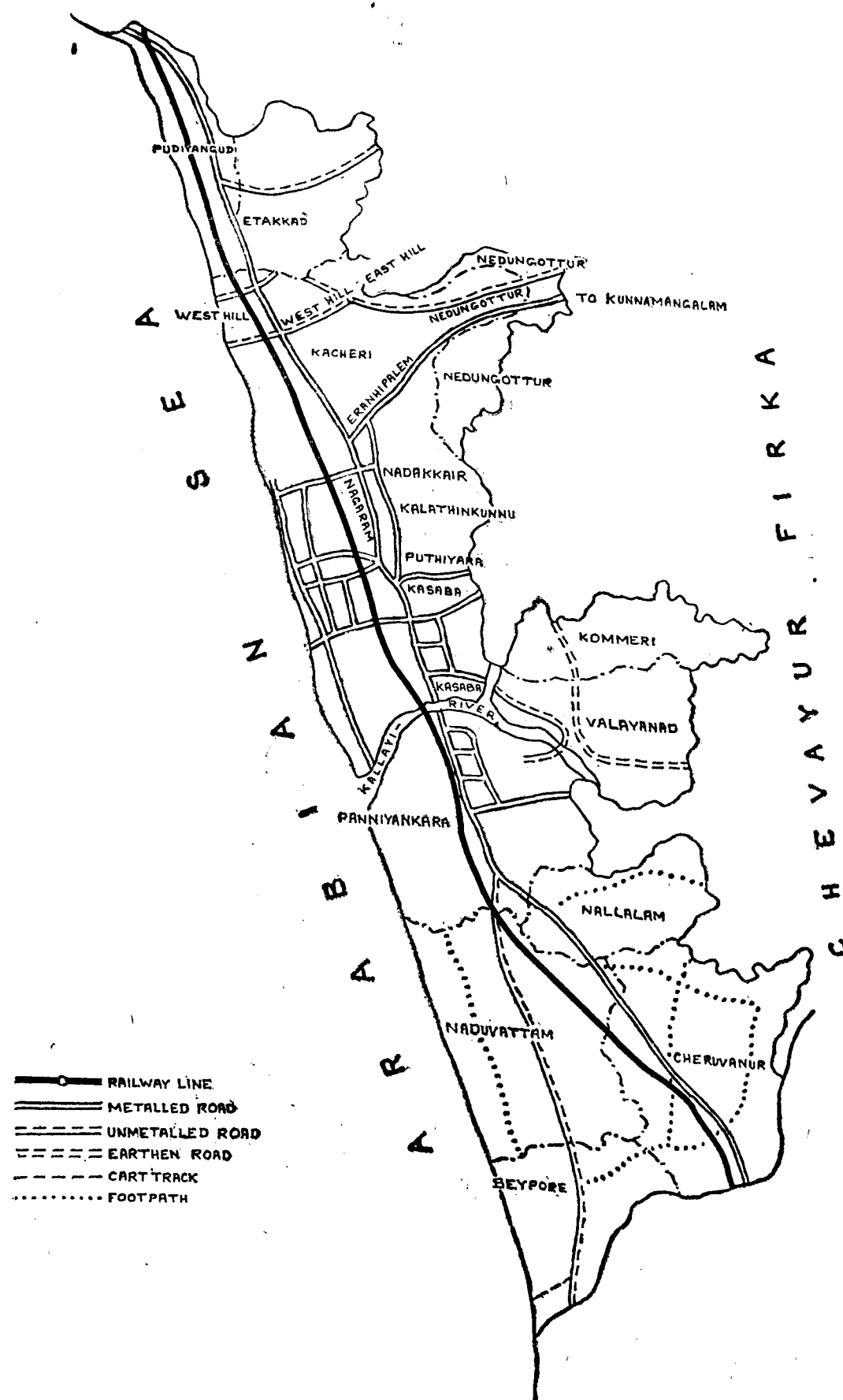
3. *Origin of the coir industry.*—Although coconut is grown extensively in several countries and islands of South East Asia, like Philippines, Indonesia, Malaya, Ceylon, South Sea Islands, etc., India is the largest producer of coir and coir goods. Ceylon is another country where large quantities are produced. The origin of the coir industry in Malabar dates back to the 15th century. The main causes for its localization in this district are the abundant supply of raw materials, existence of back-waters useful for retting, cheap water transport and cheap labour. The industry also owes its rise to the pioneering efforts of a few European firms. It is carried on both as a factory industry and as a cottage industry. While the spinning of coir yarn is mainly a cottage industry, the manufacture of mats and mattings and ropes is generally done as a factory industry.

4. *Industrial uses of coir.*—The uses to which coir yarn is put are numerous. Ropes, mats, rugs and carpets are made of coir yarn. Coir bags are commonly used in estates as packing material. Coir dust, an important by-product is utilized as packing, stuffing and heat insulating material and for soil conditioning. Coir offers a vast field for experiment and research on its uses.

5. *Organization of the industry.*—The sample consisted of 50 family units and three merchant-cum-manufacturers. The family units are in reality wage earner units for whom this is a subsidiary source of income. The organization of the industry is governed by the nature of the raw materials used by the families. Coir fibre is extracted in the firka from soaked husks as well as from raw husks by the women of the households. Soaking of yarn requires considerable waiting, extending from 7 to 12 months and cannot be undertaken by the ordinary workers but only by capitalists. In the case of soaked yarn, the workers are therefore supplied with fibre by the merchant-manufacturer and the yarn spun is returned to the suppliers for which they receive prescribed rates of wages. In the case of manufacture

C.I.—27

KOZHIKODE FIRKA
SCALE 1 INCH = 1 MILE



of the unsoaked yarn, the families themselves buy their small daily requirements of husks from local shop-keepers or landowners, extract the fibre by beating the husks, spin the yarn and sell it to the nearest merchant. Thus in spinning unsoaked yarn, the families act as independent units rather than as wage earners. But a few families spin both soaked and unsoaked yarn. Out of the 50 families surveyed, 23 families or 46 per cent were purely wage earners, i.e., engaged in spinning soaked yarn, 19 families or 38 per cent completely independent units, i.e., working on only unsoaked yarn and eight families or 16 per cent worked in both capacities. The merchant-manufacturers, on the other hand, are the organizers of the industry; they purchase coconut husks, ret them in the back-waters, employ labour for converting them into fibre and yarn and market them. As already pointed out, coir making is by no means their sole occupation. They are generally landholders, who also run provision stores and carry on money lending, etc. No comparison can therefore be instituted between the operations of the two types of units. It would be best to treat the two separately, taking first the family units into consideration.

6. *Composition of families.*—The average size of a family in the sample of 50 family units was five comprising 1.6 men, 2.1 women, 0.6 boy and 0.7 girl. Of these 1.3 men and 1.8 women were workers and the rest dependents. The women were employed for the most part solely in coir industry while men were employed in other occupations. The families belonged to the Harijan and Mopilla communities.

The industry was a hereditary occupation for all the 50 families and the skill of the workers is inherited.

7. *Housing.*—Of the 50 families, 43 or 86 per cent lived in thatched houses and only 7 or 14 per cent in tiled houses. Coir spinning does not require separate place for work and so the industry is carried on inside the houses or under the shade of trees. Most of the families (43) had houses of their own but six lived in houses belonging to the landlords free of rent and one in a rented house, for which it paid Rs. 4-8-0 per annum.

8. *Types of articles manufactured.*—All the families were engaged only in spinning coir yarn, soaked and unsoaked varieties.

9. *Raw materials.*—The raw materials consisted of retted fibre for spinning soaked yarn and raw husk for the making of unsoaked yarn. On the average, a family unit used annually 33.5 thulams * (1,172.5 lb.) of fibre and 1,284 raw husks. The former was supplied by the merchant while the latter was bought, the average purchase price being Rs. 11 per 1,000. On an average five husks were sold for an anna.

10. *Tools and equipment.*—No tool or equipment was owned by any of the families as coir spinning is only done by hand. The charka is not widely used in Malabar unlike Travancore. Attempts made to introduce machinery for yarn spinning have not succeeded so far. The Coir School at Beypore teaches young trainees in the use of charka for spinning coir yarn but none of the families engaged in coir spinning in the firka has taken to the use of charka.

11. *Manufacturing processes.*—The preparation of retted fibre for spinning of yarn is an elaborate and time-consuming process spread over a year. Raw coconut husks are buried in pits dug in shallow back-waters, covered with mud and leaves and left for a period ranging from seven months to one year. A pit is capable of holding from 1,000 to 1,500 husks. The wide expanse of back-waters in the West Coast is a natural advantage. Periodical flow of salt water from the sea helps in the decomposition and cleansing of the husks and in getting fibre of superior quality having golden yellow colour. Beypore, Panniankara, Valayanad, Cheruvannur and Nallalam in Kozhikode firka are favourably situated for retting husks. When the husks are well soaked, they are removed from the pits and thoroughly cleaned and

* 20 thulams = 700 lb. = 1 candy, i.e., 1 thulam = 35 lb.

COIR INDUSTRY.

HUSKING COCONUTS.



BEATING COCONUT HUSKS.

COIR INDUSTRY--*cont.*

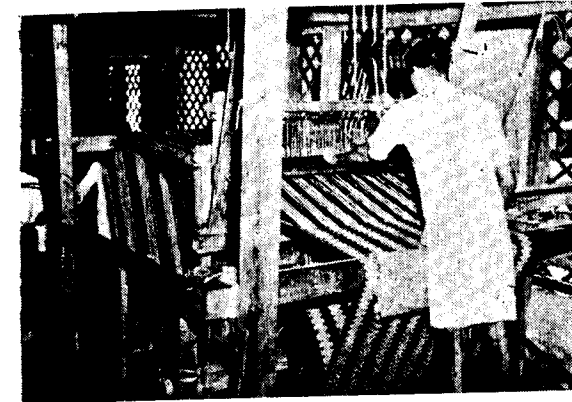
BEATING HUSKS.



CLEANING FIBRES.

COIR INDUSTRY—*cont.*

COIR MAT WEAVING.



COIR POLISHING.



CARDING COIR FIBRE.

COIR INDUSTRY—*cont.*
COIR SPINNING BY HAND.



COIR SPINNING BY CHARKA.

beaten with short wooden mallets to remove the pith from the fibre. The clean fibre is then dried in the sun and is ready for being spun into yarn. The large number of husks necessary for soaking and the length of time involved in the process with the attendant risks in price fluctuations make it impossible for the small scale units to work independently at this operation. Merchants or dealers who can afford to invest, undertake large scale soaking and employ labour for beating the husks and spinning the fibre. There are about 55 such dealers in the firka of whom 12 soak between 1 lakh to 4 lakh husks, 20 from 50,000 to 1 lakh, about 10 from 20,000 to 50,000 and 13 below 20,000 husks.

The method of extracting unsoaked fibre is less elaborate. It is followed in places where there are no facilities for soaking, e.g., Edakkad, Khasba, Nedungathur, etc., in the firka. Green husks are beaten without being soaked and it is difficult to remove the adhesive pith completely. The yarn spun out of unsoaked fibre is not considered as good as soaked yarn. However, as this is a simpler process involving less investment and waiting, the smaller units are able to undertake it on their own. But even here the middle men exploit the poverty of the worker ; it is usual for the provision store-keepers in villages to sell the green husks and to purchase the finished yarn, making sizable profit in both transactions.

12. *Production.*—The average annual output of a family unit amounted to 1,197 “ *Kaiyyus* ” (76,608 feet) or 1.7 candies * of coir yarn made out of soaked fibre (1 *Kaiyyu* 64 feet) and 3,871 “ *Kaiyyus* ” (92,904 feet) or 1.6 candies of unsoaked yarn (1 *Kaiyyu* = 24 feet). The former was produced for wages while the sale value of the latter amounted to Rs. 40-7-0 per annum. On an average, a family worked for 149 days on the production of soaked yarn and for 146 days on unsoaked yarn. The daily output amounted to 8 “ *Kaiyyus* ” or 512 feet of soaked yarn and 26 “ *Kaiyyus* ” or 624 feet of unsoaked yarn valued at Re. 0-4-5.

13. *Estimated production for the firka.*—On the basis of average production per industrial unit, the production of coir yarn for the entire firka may be estimated as follows :—

					<i>Kaiyyus.</i> (LAKHS).	<i>Candy of</i> 700 lb.
Soaked yarn	..	..	..	..	13.17	1,884.28
Unsoaked yarn	..	..	..	..	42.54	1,777.50
Total				..	55.71	3,661.78

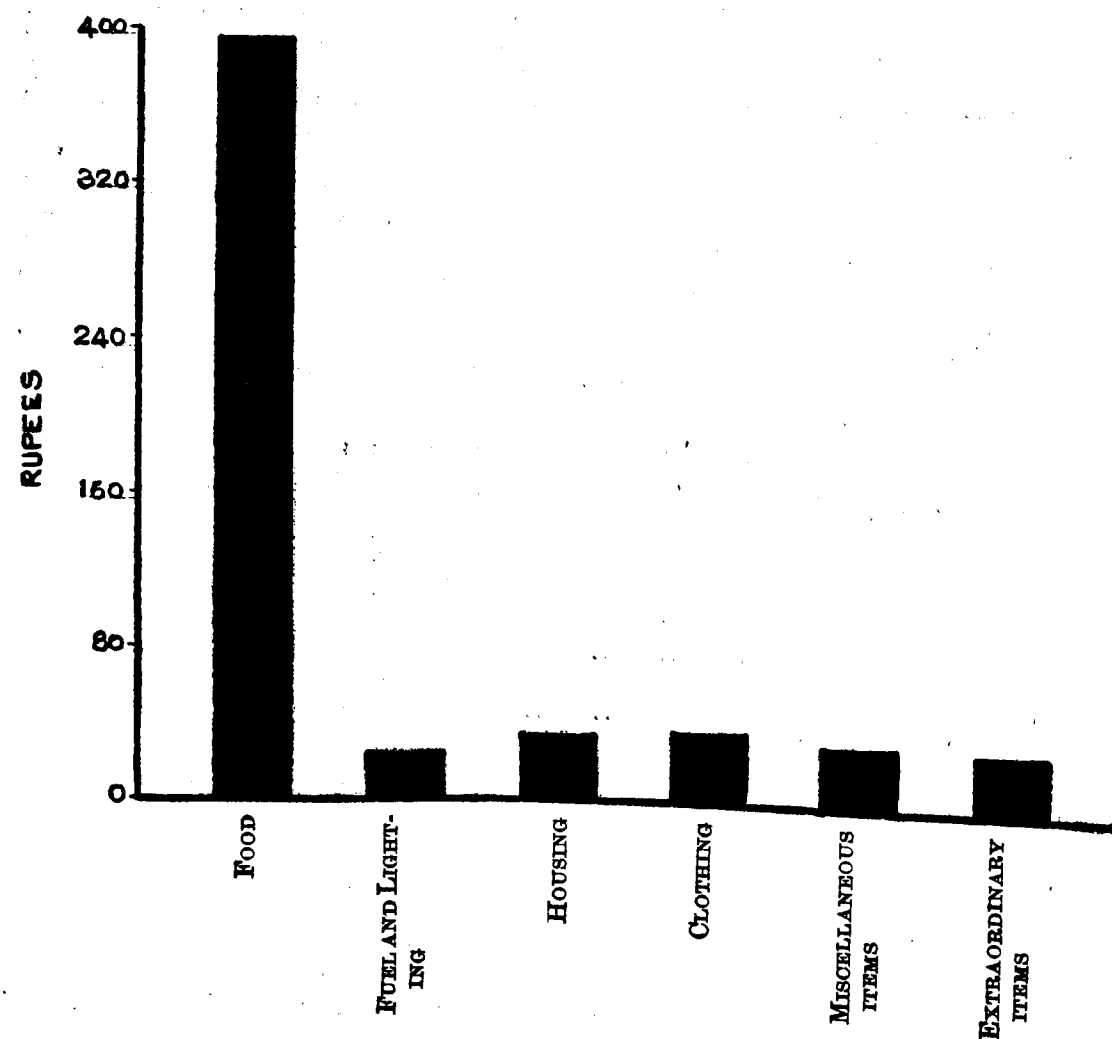
14. *Fluctuations in output.*—As the industry is carried on by women in their homes during spare time, there is little variation in output as between different months of the year.

15. *Labour.*—The labour force consisted entirely of women except in the case of one family which obtained some help from one of its men. The average labour force per family was 1.8 women. The industry provided employment for a total of 295 days per unit (149 days for the output of soaked yarn and 146 days for unsoaked yarn). On the assumption that 295 days is the maximum number of working days in the year, the families may be deemed to have secured full employment.

16. *Wages.*—Wages are paid to the workers by middle men for the spinning of soaked yarn. The average annual wage earned by a family unit for this work was Rs. 41-2-0. The daily average wage obtained by a worker was Re. 0-2-5.

* 700 *Kaiyyus* of soaked yarn = 1 candy.
2,400 *Kaiyyus* of unsoaked yarn = 1 candy.

KOZHIKODE FIRKA
COIR INDUSTRY
AVERAGE ANNUAL EXPENDITURE OF A FAMILY UNIT



The five families that worked at husk beating received a sum of Rs. 746 for beating 1,16,150 husks. For the sample as a whole, the average annual income from this source was Rs. 15-7-0 per unit.

17. *Transport.*—Transport does not involve any cost or present a problem to these workers as they themselves fetch the required materials from and return the yarn to the middlemen or the provision store-keepers as the case may be.

18. *Cost of production.*—Analysis of cost of production has to be made only in regard to the spinning of unsoaked yarn as the spinning of retted yarn is done for wages. The only item entering the cost of production is purchase value of the raw material. Since the industry was carried on in the workers' houses without any implements, no separate expense was incurred by way of rent or maintenance of tools. Nor can any separate assessment be made of the wages payable to the workers because of the peculiar nature of the units. The profits earned are themselves in the nature of wages as the operation is on a small scale, and is a subsidiary source of income. On the average a family unit purchased 1,284 raw husks for Rs. 16 per annum, out of which 3,871 *Kaiyyus* of yarn were spun and sold for Rs. 40-7-0.

19. *Profit.*—The annual profit realized amounted to Rs. 24-7-0 per family unit.

20. *Income from the industry.*—Income from the industry includes, besides the profit from spinning unsoaked yarn, wages paid to the unit for other operations. The annual income received by an average family unit from the industry is as follows :—

20.1. *Average annual income from coir industry for a family unit.*

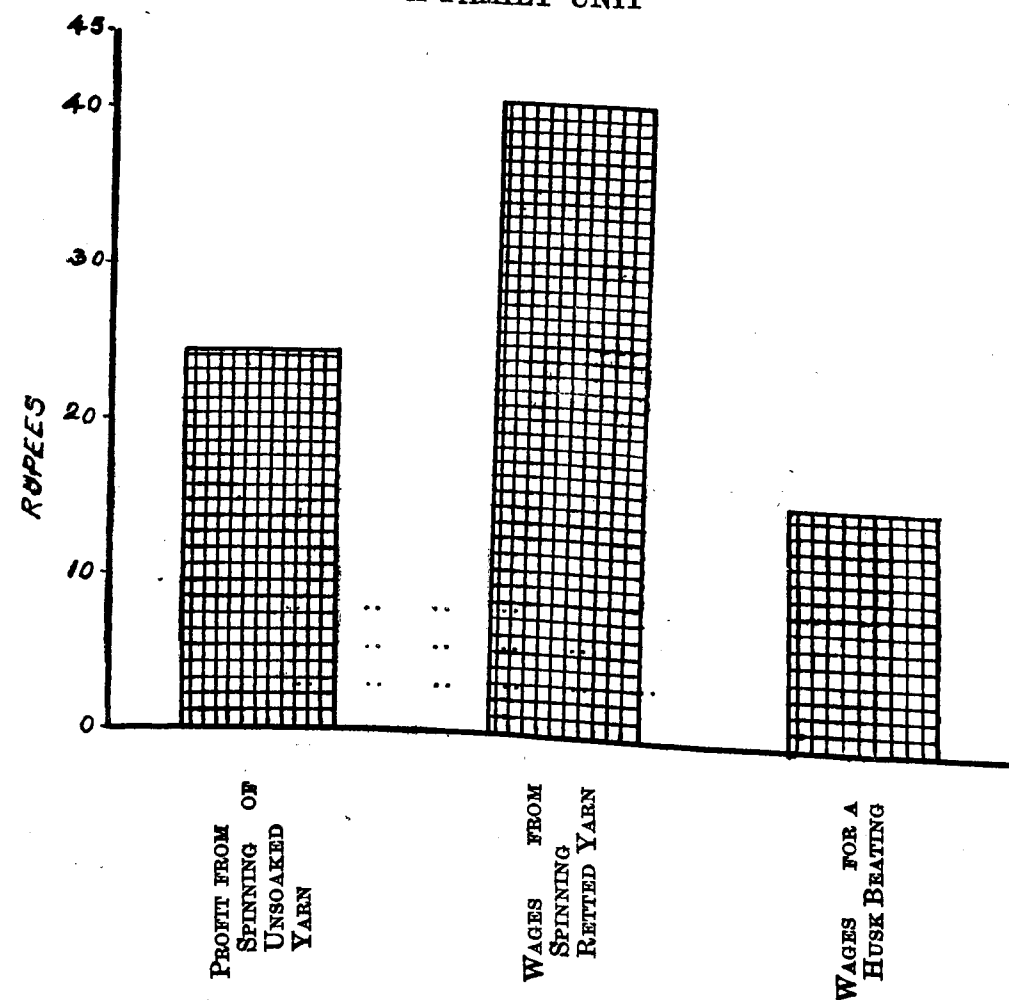
Source of income.	Amount.		
	RS.	A.	P.
1 Profit from spinning of unsoaked yarn	24	7	0
2 Wages for spinning retted yarn	41	2	0
3 Wages for husk beating	15	7	0
Total	81	0	0

The total annual income received by a family unit was Rs. 81, that per worker Rs. 45 and that per capita Rs. 16-3-0. The income per unit per working day was Re. 0-4-5 and that per worker per working day Re. 0-2-6.

21. *Marketing.*—The problems connected with marketing do not arise in the case of these family units. So far as the spinning of retted yarn is concerned, they are pure wage earners, obtaining the fibre from and returning the yarn to the merchant. In regard to unsoaked yarn, which they undertake on their own, they purchase the raw husks from provision store merchant and usually sell the yarn to the same merchant. Marketing is attended to by the capitalist entrepreneurs or merchants.

22. *Co-operation.*—Co-operative endeavour has so far not been attempted by the coir spinners of this firka.

KOZHIKODE FIRKA
COIR INDUSTRY
AVERAGE ANNUAL INCOME FROM COIR INDUSTRY FOR
A FAMILY UNIT



23. *Income.*—The statement below gives the average annual income of a family unit :—

23.1. *Average annual income of a family unit.*

Description.	Amount.	Percentage to total.
	RS.	
1 Income from coir industry	81	15.0
2 Income from other occupations	370	68.6
3 Income from assets	88	16.4
Total ..	539	100.0

It will be seen that the income from the coir industry was the lowest amount and that it formed only 15 per cent of the total.

24. *Expenditure.*—Appendix 107 gives the average annual expenditure of a family unit. The budget of an average family unit was a deficit one, the annual expenditure exceeding income by Rs. 13. Among items of expenditure, food formed 71.4 per cent of the total, housing 6.2 per cent, clothing 6.9 per cent, miscellaneous items 5.8 per cent and extra-ordinary items 5.4 per cent.

25. *Assets.*—The value of assets owned by an average family unit is given in Appendix 108. The total value of assets amounts to Rs. 810 or 1.5 times the average annual income.

26. *Liabilities.*—Of the sample of 50 families, 8 were indebted. The average liability of an indebted family was Rs. 187 and the average for the sample as a whole Rs. 30.

27. *Merchant-cum-manufacturer units.*—The operation and organization of the merchant-manufacturer units are entirely different from those of the family units. The manufacturers organize the industry on a large scale, invest capital in it and provide the wage-earning family units with part-time employment. While no comparison can be instituted between the two types of units, a study of the industry would not be complete without an analysis of the operation of the merchant-manufacturer unit. Of the 30 units surveyed, three were exclusively engaged in coir manufacture. Of these one was manufacturing coir using charka. All the units were self-established, between 5 and 6 years ago. The average size of a family was 8.3 of whom 2.6 (1 man plus 1.6 women) were earners and the rest dependents. Two of the units lived in thatched buildings and the third in a terraced building. The average estimated rental value of the industrial portion was Rs. 20 and the repairs and maintenance charges amounted to Rs. 13 per annum.

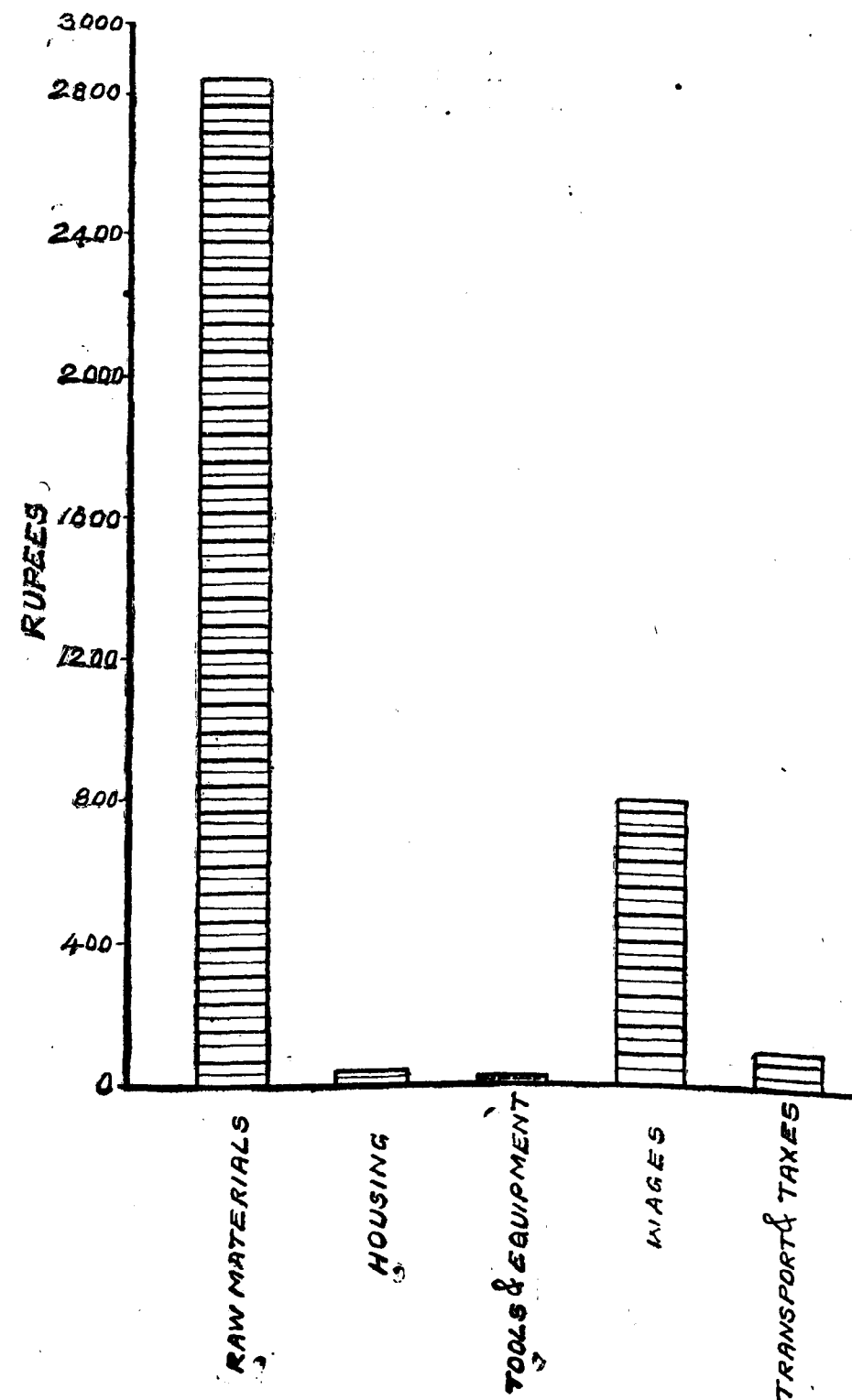
The raw materials purchased annually by an average merchant-manufacturer unit were 23,000 raw coconut husks for Rs. 443 and 400 thulams of processed fibre for Rs. 2,400.

Some tools and equipment such as chopping knives, husking bars, spinning wheels and carding machines were owned and used by these units. On the average an industrial unit owned 14 tools at an initial cost of Rs. 344 with a replacement value of Rs. 396, and present value of Rs. 251. The annual maintenance charge of the equipment was Rs. 12 and their depreciation charge Rs. 2.

An average manufacturer unit produced annually 553 thulams of coir yarn valued at Rs. 4,283. All the units engaged outside labour, the average per unit being 2 men and 12 women. Including workers among the members of the family, the labour force of an average merchant-manufacturer unit comprised 3 men and 13.6 women. The average number of working days in the year was 174 which is 59 per cent of the maximum of 95 working days in the year.

KOZHIKODE FIRKA
COIR INDUSTRY

**COMPONENTS OF ANNUAL COST OF PRODUCTION
OF AVERAGE MANUFACTURER UNIT**



The average annual wage bill of an industrial unit amounted to Rs. 670 which meant that an outside worker received about Rs. 48. With this rate as basis the wages payable to all the family members engaged in the industry in an average unit may be estimated at Rs. 125.

As production is on a large scale some expenditure is incurred for the transport of raw husks and finished yarn. The average expenditure under this head was Rs. 88 per annum.

Some idea of the expenditure involved in the production of coir (soaked yarn) can be had from Appendix 109 which gives the cost of manufacture of one candy of soaked yarn. The cost of operation of an average manufacturer unit is shown in the following table :—

27.1. *Components of annual cost of production of an average manufacturer unit.*

Item.	Cost.	Per-cent to total.
	RS.	
1 Raw materials	2,843	75.2
2 Housing—		
Estimated rent	20	0.9
Repair charges	13	
3 Tools and equipment—		
(a) Maintenance	12	0.4
(b) Depreciation	2	
4 Wages—		
(a) Paid	670	21.0
(b) Payable	125	
5 Transport	88	2.5
6 Tax, etc.	7	
Total	3,780	100.0
Sale value of output	4,283	
Profit	503	

The annual profit per average unit was Rs. 503 which works out to 13.3 per cent of the cost of production. Allowing for interest on working capital of Rs. 283 at 6 per cent the net profit per unit was Rs. 486.

The annual income from the industry which includes the imputed cost items was Rs. 650 per unit or Rs. 78 per capita.

28. *Marketing.*—Almost the entire output of the manufacturers is sold to merchants and firms in Kozhikode who deal in coir. The merchants in Kozhikode who deal in coir, to mention a few of the more important are, A. Sankunni Menon, Gulam Ali, Theyabali and Rajabali and the firms Pearce Leslie and Company, Volkart Brothers and Goodaker. These dealers and firms have their agents and brokers who also visit the mufassal centres and buy the yarn from the manufacturers.

29. *Income.*—The statement below shows the annual income of an average manufacturer unit :—

29.1. *Average annual income of a manufacturer unit.*

Item.	Amount.	Percentage to total.
	RS.	
1 Income from the industry	650	15.8
2 From other occupations	32	0.8
3 From assets	3,421	83.4
Total	4,103	100.0

Although, as in the case of family units, income from the industry is not prominent, it is not a subsidiary occupation as in the case of the former. This is revealed by the fact that the most important source is income from assets, which is, in the main, income from the shops

owned by the family. Appendix 110 gives the expenditure pattern of an average unit. The average expenditure amounted to Rs. 3,695 against an average income of Rs. 4,103 leaving a surplus of Rs. 408 per annum.

30. *Assets and liabilities.*—Appendix 111 gives the various assets of the families. The average asset of a family was Rs. 20,184 of which house formed the most important item. None of the families was indebted.

SUMMARY.

31. The sample selected for the survey consisted of 50 family units and 3 manufacturer units. The organization and operation of the two were vastly different. The former were essentially wage-earners; the spinning of coir yarn being undertaken by women of certain communities as a subsidiary occupation. The operations were different in the case of spinning soaked yarn and unsoaked yarn. In the former case, the workers obtained fibre from merchants or manufacturers, and made them into coir yarn working in their own homes, returned the finished products to the same manufacturer and were paid wages. The preparation of unsoaked yarn was undertaken by the workers themselves as this is a less expensive and elaborate process. They purchase raw husks from merchants or land-owners and sell the yarn to the same merchant who is also a grocery store-keeper, the profit in the operation being equivalent to wages.

On an average, a family unit consisting of 1.8 women workers, obtained annually 33.5 thulams of processed fibre and purchased 1,284 raw husks at a cost of Rs. 16. With these were produced 1,197 “*Kaiyyus*” (76,608 feet) of soaked coir yarn and 3,871 (92,904 feet) “*Kaiyyus*” of unsoaked yarn, the sale value of which was Rs. 40-7-0. Marketing did not present any problem as soaked yarn was spun for wages and the output of unsoaked yarn was sold to the provision store merchants. The total annual income from the industry was Rs. 81 made up of a profit of Rs. 24-7-0 earned from spinning unsoaked yarn, Rs. 41-2-0 earned as wages for spinning soaked yarn and Rs. 15-7-0 earned as wages for husk-beating. This income, however, formed only 15.0 per cent of the total income of the family (Rs. 539) as this was a subsidiary occupation. The average annual expenditure amounted to Rs. 552 leaving a deficit of Rs. 13. The average asset was Rs. 810 against an average debt of Rs. 30.

The three manufacturer units surveyed operated on a different level. The average annual consumption of raw materials was 23,000 raw husks costing Rs. 443 and 400 thulams of processed fibre costing Rs. 2,400. These units also owned some equipment, the total initial cost of the tools owned by a unit being Rs. 344, their maintenance charge Rs. 12 and their depreciation charge Rs. 2. The average annual output was 553 thulams of coir yarn valued at Rs. 4,283.

All the manufacturer units employed outside labour. The total labour force of an average unit consisted of 2.6 family members and 14 outsiders. The annual wage bill was Rs. 670 on the average; the wages payable to family members may be estimated at Rs. 125.

The total annual cost of operation of an average manufacturer unit was Rs. 3,780 while the sale value of output was Rs. 4,283 yielding a gross profit of Rs. 503 or 13.3 per cent on the outlay. The net profit allowing for interest on working capital was Rs. 486. The total annual income from the industry was Rs. 650 per unit or Rs. 78 per capita. The output is sold to dealers in coir yarn at Kozhikode who export coir. There was no co-operative organization at any stage of the industry. The average income of a merchant-manufacturer unit was Rs. 4,103 of which the coir industry contributed 15.8 per cent. The average expenditure amounted to Rs. 3,695 leaving a surplus of Rs. 408 per annum. The average asset of a family was Rs. 20,184 and none of the families was indebted.

COPRA INDUSTRY.

1. *Organization of the industry and the selection of sample.*—The copra industry is carried on by a few persons as their main occupation but a large number combine the production of coir, copra and coconut oil. The sample of the survey consisted of 7 units out of an universe of 42 who were mainly engaged in the copra industry. All the 7 were manufacturer units and the industry was not a hereditary occupation to any of them. They had entered this business only 2 to 5 years previously.

2. *Size of family.*—The average business unit consisted of 9.3 persons of whom 1.7 men were workers and the rest dependents.

3. *Housing.*—The industry requires separate accommodation as space is necessary for drying and storing copra. The annual expenditure incurred towards rent and maintenance per average business unit was Rs. 64.

4. *Raw materials.*—Coconuts, which were the only raw material required, were obtained from their own gardens or purchased from outsiders. An average unit used annually 60,814 coconuts valued at Rs. 7,507 of which 6,300 or 10.4 per cent were obtained from own gardens and 54,514 or 89.6 per cent purchased. The average price of 1,000 nuts was Rs. 123 nearly. Out of the 7 units, 2 did not get nuts from their own gardens but had to depend on outside purchases. The consumption of nuts ranged widely as between the units, the lowest being 26,000 nuts and the highest 120,000 nuts. There were 3 units consuming less than 50,000, 3 units between 51,000 and 1 lakh and one unit above one lakh.

The price of coconuts has shown remarkable fluctuations. In December 1951 for instance, the price of 1,000 nuts was between Rs. 175 and Rs. 185; in December 1952 it ranged between Rs. 95 and Rs. 110 but in the second week of January 1953, the price was between Rs. 120 and Rs. 150. The price of copra shows seasonal variations; in general, it is high from November to January and low in March and April.

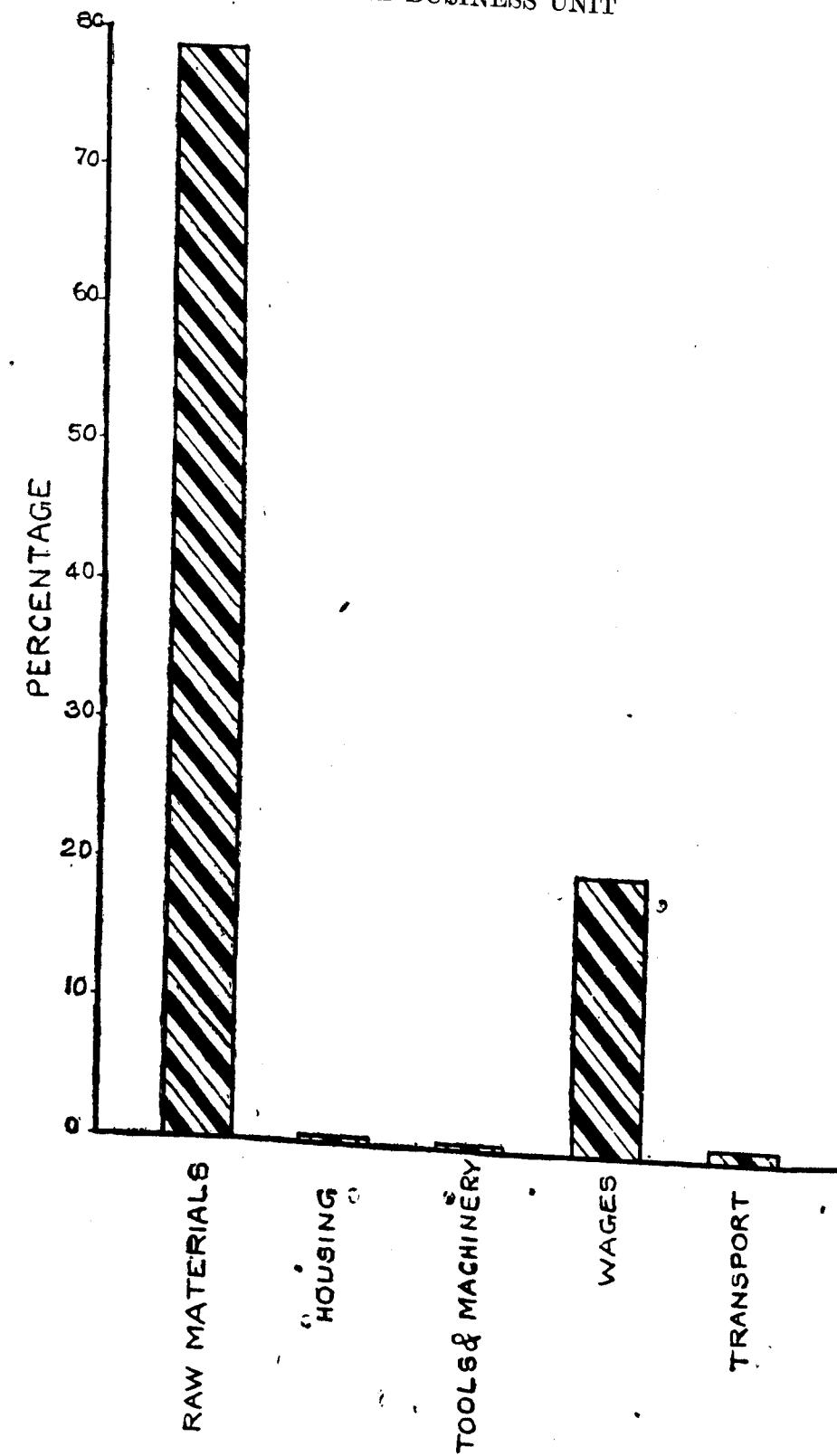
5. *Tools and equipment.*—The tools needed by this industry are few and simple. An average business unit owned 2.5 chopping knives, 2 husking bars and 4 coir net bags. The total initial cost of these was Rs. 17, the maintenance charge was Re. 1 and the depreciation charges Re. 1.

6. *Manufacturing process.*—Copra is of two kinds, (1) the edible copra and (2) copra for oil crushing. The former involves a longer period of preparation; coconuts are dried, generally in the warmth of kitchen lofts, for 7 to 8 months. This process enables easy separation of kernel from the shells. This copra is used for culinary purposes all over the country, especially in North India. In the case of copra intended for oil crushing, coconuts are dried in the sun for two days and the kernel, after removal, is dried for another four days.

7. *Production.*—Out of the total quantity of 60,814 coconuts, only 45,400 nuts were used for copra extraction; the rest were sold as nuts after removing the husks. On the average a unit produced 367.7 thulams or about 18 candies of copra valued at Rs. 6,461, the average number of nuts required for producing one candy of copra being 2,538. The by-products of the process of extraction were 60,814 coconut husks valued at Rs. 674 and 45,400 coconut shells valued at Rs. 278. The estimated annual output of copra for the whole firkha by cottage industrial units is 756 candies valued at Rs. 2.72 lakhs.

8. *Labour.*—All the units employed outside labour. The labour force of an average unit consisted of 1.7 members of the family and 1.9 from outside; all the workers were men. An average unit worked for 126 days or 42.7 per cent of the maximum of 295 working days in the year.

KOZHIKODE FIRKA
COPRA INDUSTRY
 COMPONENTS OF ANNUAL COST OF PRODUCTION OF AN
 AVERAGE BUSINESS UNIT

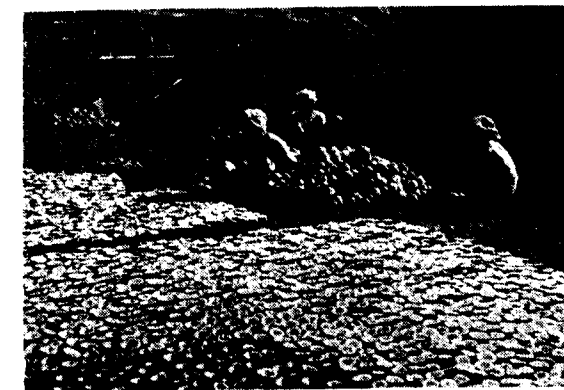
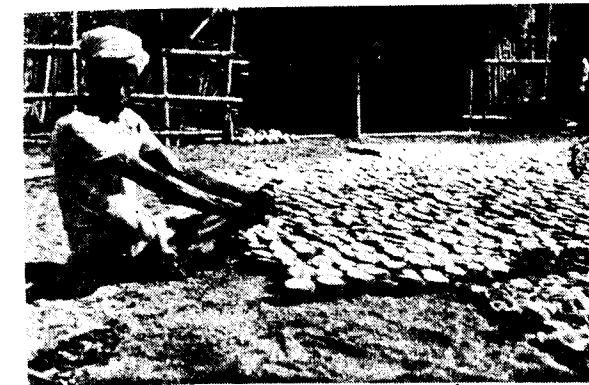


COPRA INDUSTRY.

COPRA DRYING.



COPRAS ARE DRIED.



DRIED COPRAS.

9. *Wages*.—The annual wage bill of an average unit amounted to Rs. 112 or Rs. 59 per worker. At the same rate, the wages payable to family workers may be estimated at Rs. 72.

10. *Transport*.—Transport charge was incurred for bringing the coconut from the different gardens to the work place and also for taking the copra to the market. The average expenditure incurred by a unit was Rs. 292 per annum.

11. *Cost of production*.—The cost of production of one candy of copra in the year of survey (1952) is given in Appendix 112. The following statement gives the annual cost of production of an average unit :—

11.1. *Components of annual cost of production of an average business unit.*

<i>Items.</i>						<i>Amount.</i>	<i>Percentage to total.</i>
						RS.	
1	Raw materials—						
	(a) Value of coconuts purchased	..	..	..	..	6,728	} 92.7
	(b) Value of own coconuts	..	..	..	..	729	
						64	0.78
2	Rent and repair	..	..	..	..		
3	Tools—						
	(a) Maintenance of tools	..	..	..	..	1	} 0.02
	(b) Depreciation	..	..	..	..	1	
4	Wages—						
	(a) Wages paid	..	..	..	..	112	} 2.3
	(b) Wages payable	..	..	..	..	72	
						292	3.6
5	Transport	..	..	..	..		
						50	0.6
6	Tax, etc.	..	..	..	..		
	Total cost	..				8,099	100.0

Sale value.—The value of total output, inclusive of by-products, was as follows :—

						<i>Amount.</i>
						RS.
1	Coconuts sold	..	..	..	..	1,705
2	Copra	..	..	..	..	6,461
3	Husks	..	..	..	..	674
4	Shells	..	..	..	..	278
	Total sale value	..				9,118
	Profit	..				1,019

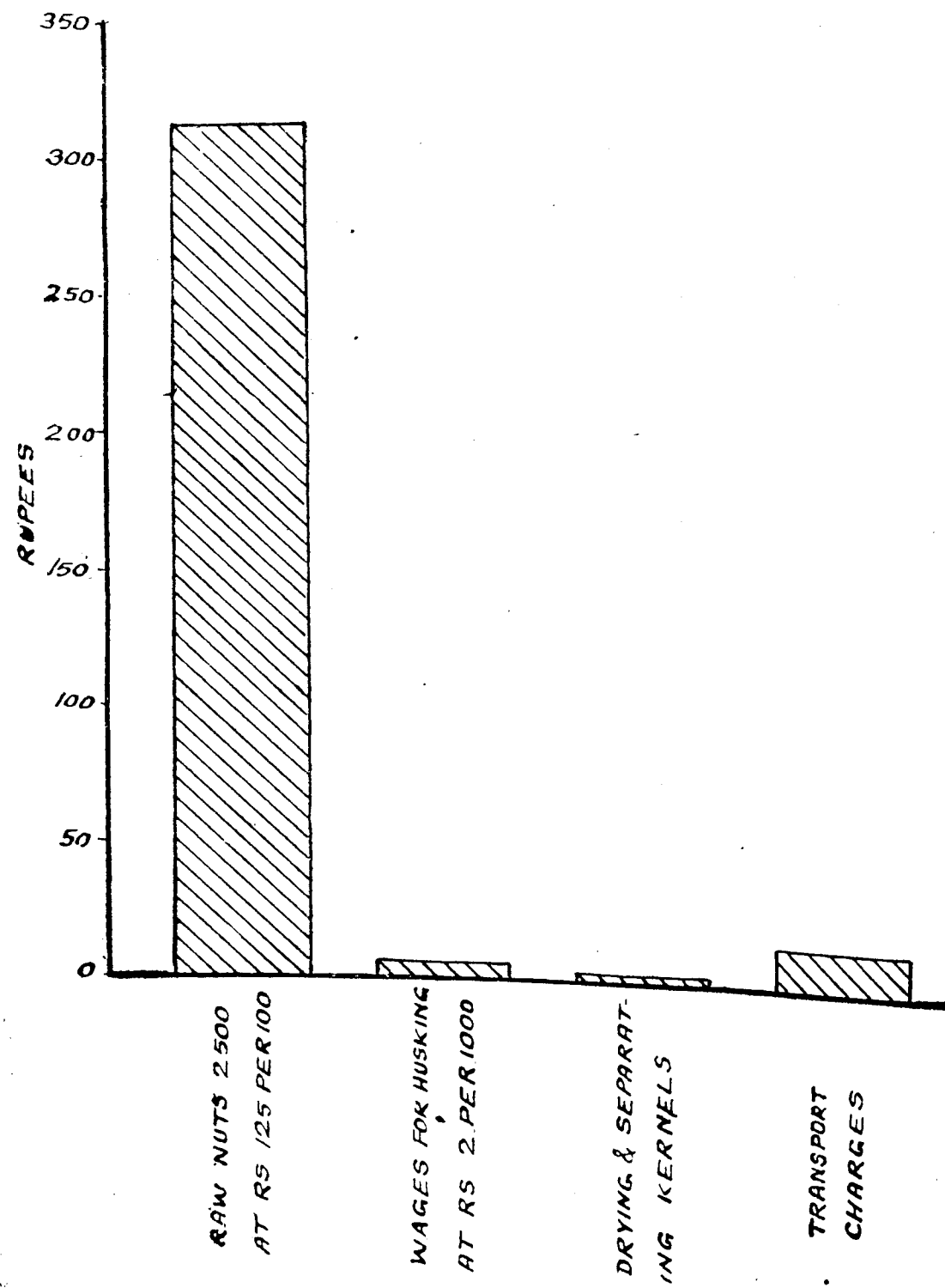
The annual profit amounted to Rs. 1,019 or 12.6 per cent of the cost per unit. The net profit, allowing for interest at 6 per cent on working capital of Rs. 1,200 was Rs. 947 per unit.

12. *Income from the industry*.—Including the imputed items in the cost of production such as value of coconuts grown in own gardens, wages payable, etc., to gross profit, the annual income from the industry amounts to Rs. 1,871 per unit or Rs. 1,101 per worker and Rs. 201 per capita.

KOZHIKODE FIRKA

COPRA INDUSTRY

COST OF PRODUCTION OF ONE CANDY OF COPRA (IN 1952).



13. *Marketing.*—Out of the average annual production of 18 candies per unit, 13 candies or 72.2 per cent were sold locally and 5 candies or 27.8 per cent to merchants at Kozhikode.

14. *Co-operation.*—There has been no attempt so far at co-operative endeavour in the industry in the firka.

15. *Income.*—The statement below gives the average annual income of a family :—

15.1. Average annual income of a family.

Source of income.	Amount.	Percentage to total.
	RS.	
Income from the industry	1,871	48.5
Income from other occupations	871	22.6
Income from assets	1,112	28.9
Total	3,854	100.0

The income from the industry was the most important single source, closely followed by income from assets. The average per capita income works out to Rs. 414.

16. *Expenditure.*—The expenditure pattern of an average industrial unit is shown in Appendix 113. Expenditure on food formed 69.9 per cent, fuel and lighting 4.1 per cent, housing 9.5 per cent, clothing 7.2 per cent and miscellaneous items 7.5 per cent.

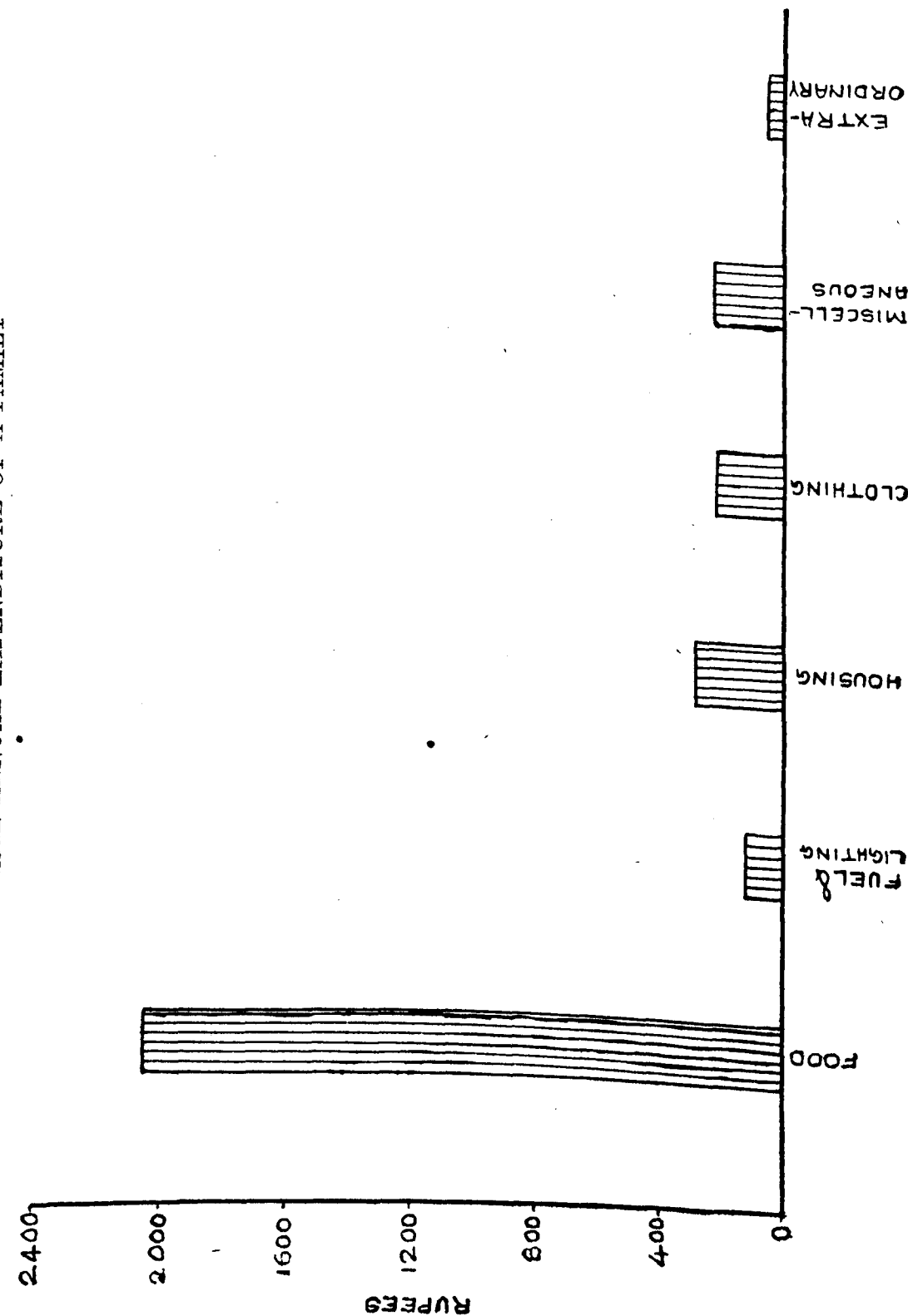
17. *Assets.*—The value of the assets owned by an average unit is given in Appendix 114. The total amounted to Rs. 9,231 which is indicative of the better economic status of the units surveyed.

18. *Liabilities.*—None of the units was indebted.

SUMMARY.

Out of a total of 42 units engaged in the copra industry in the firka, 7 units constituted the sample of the survey. All the units were manufacturer units, employing outside labour. An average business unit used annually 60,814 coconuts valued at Rs. 7,507 of which 10.4 per cent was got from own garden and the rest purchased. Out of this, 45,400 nuts were converted into copra and the rest sold as nuts. The annual output of copra amounted to about 18 candies valued at Rs. 6,461 and the estimated output for the whole firka by the cottage industrial units is 756 candies worth Rs. 2.72 lakhs. The total labour force of a unit comprised 1.7 family members and 1.9 outsiders; the wages paid to outside labour amounted to Rs. 112 and the estimated wages payable to family workers to Rs. 72. The families were employed in the industry on the average for 126 days in a year. As against the total annual cost of production of Rs. 8,099 per unit, the sale value of the total output including quantity sold as nuts and by-products like husks and shells, was Rs. 9,118, resulting in a profit of Rs. 1,019. The net profit, less interest on working capital was Rs. 947. The income from the industry including imputed items was Rs. 1,871 per unit or Rs. 201 per capita. This income formed 48.5 per cent of the total annual income. The stable economic condition of the sample is revealed by the fact that the average family budget was a surplus one, its assets amounted to Rs. 9,231 and it had no debt.

KOZHICODE FIRKA
COPRA INDUSTRY
AVERAGE ANNUAL EXPENDITURE OF A FAMILY



COCONUT OIL MANUFACTURE.

1. Compared to the number of cottage industrial units engaged in coir and copra manufacture, the number engaged in coconut oil manufacture was comparatively small. Manufacture of coconut oil by the country chekku (ghani) is a declining industry. The competition between the ghani and oil mill is an unequal one, the dice being heavily loaded against the former. While the village ghani industry lacks organization and caters to a dwindling local market composed of a few persons who care more for satisfying their fastidious tastes than price, the oil mill industry, by better organization of production, use of improved machinery and large scale marketing methods has become a serious rival to the ghani industry even in its own home market. The ghani industry has a gloomy future before it unless the State steps in and helps it to a significant extent. The position of the ghani industry *vis-a-vis* the oil mill industry is perhaps worse than that of the handloom industry *vis-a-vis* textile mills.

2. *Selection of sample.*—The preliminary survey revealed that there were 43 chekkus and 11 oil mills in the firka. None of the cottage industrial units was solely engaged in coconut oil manufacture but had other strings to its bow. The three units surveyed were engaged in coir, copra and coconut oil industries.

3. *Organization of the industry.*—The three units were all self-established, the date of establishment varying from 3 to 6 years. All three were merchants-*cum*-manufacturers.

4. *Composition of family.*—The average size of a family was 10, consisting of 3 men, 2.7 women, 2 boys and 2.3 girls. Almost all the men were workers and the others dependents.

5. *Housing.*—This industry requires large space for the setting up of the 'Chekku' as well as for drying and storing copra. The area of the work portion of an average business unit was 754 square feet valued at Rs. 1,400. The annual estimated rent was Rs. 86 and cost of maintenance Rs. 4.

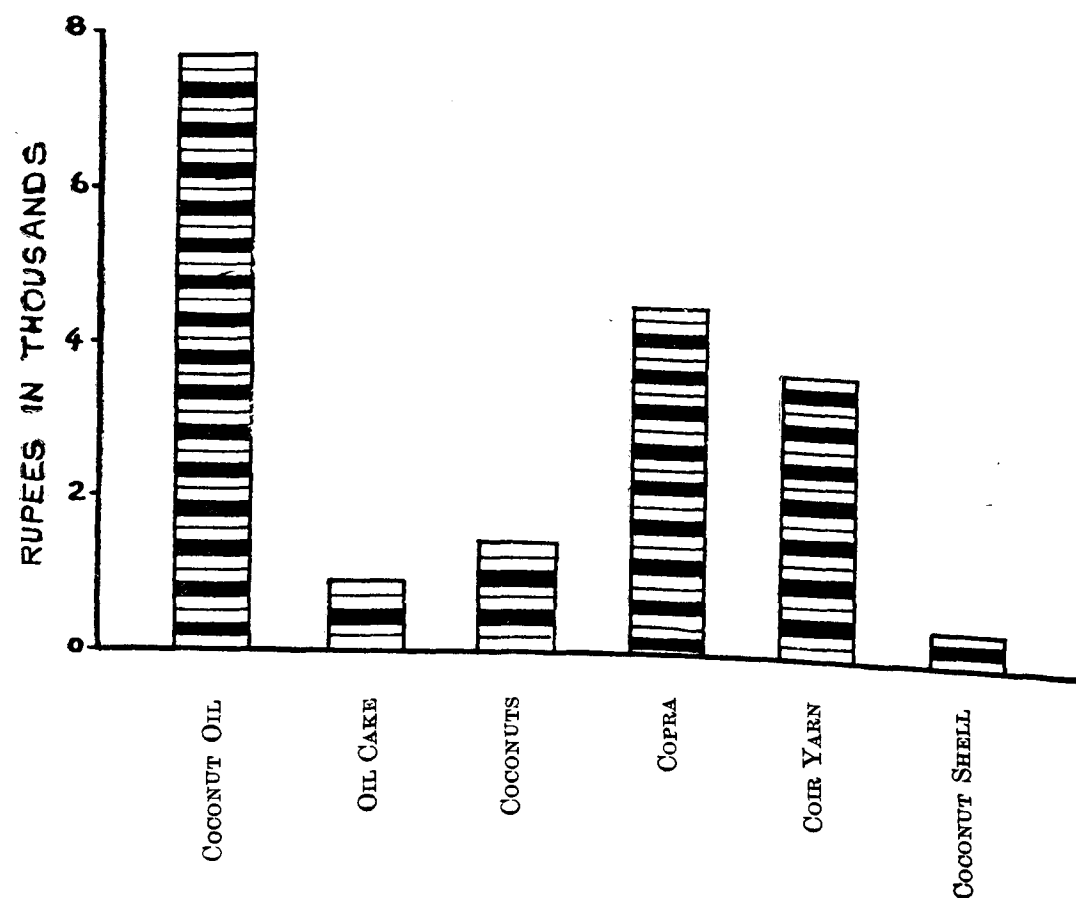
6. *Raw materials.*—The requisite raw material is copra which is either purchased or prepared from coconuts. Since all the units combined coconut oil manufacture with other coconut industries, it was more usual to manufacture copra themselves and utilize the husk for coir manufacture. An average business unit used annually 73,600 nuts of which 11,600 nuts worth Rs. 1,384 were grown in own gardens and 62,000 nuts worth Rs. 7,330 were purchased. In addition to this 208 thulams of prepared copra were purchased for Rs. 3,120.

7. *Tools and equipment.*—The equipment owned by an average business unit comprised a wooden chekku, 4 chopping knives and 5 coir nets. For operating the 'Chekku', there were 2 bulls per unit. The total initial cost of the equipment including the bulls was Rs. 416 and the annual maintenance charge including that of the bulls was Rs. 637.

8. *Manufacturing process.*—The process of extracting coconut oil from a country oil mill or chekku is exactly like that of extraction of any other vegetable oil and hence does not require description. As the quality of the oil depends mainly on the quality of the copra, care is taken to avoid inferior stuff, such as copra obtained in the monsoon. This is one of the reasons for the manufacturers preferring to make their own copra to purchasing prepared copra.

9. *Production.*—The annual output of an average business unit amounted to 296 thulams of oil valued at Rs. 7,897 and 144 thulams of 'punak' (oil-cake) valued at Rs. 864; the total value amounted to Rs. 8,561. Besides these, there was also production of copra

KOZHICODE FIRKA
COCONUT OIL INDUSTRY
ANNUAL OUTPUT OF AN AVERAGE
BUSINESS UNIT



and coir yarn, as also sale of nuts. The following statement shows the various items of output and their value :—

9-1. *Annual output of an average business unit.*

	Quantity.	Value.
		Rs.
Coconut oil (thulam)	296	7,697
Oil-cake (thulam)	144	864
Coconuts (Nos.)	12,500	1,375
Copra (thulam)	250	4,500
Coir yarn (thulam)	491	3,680
Coconut shell (Nos.)	70,000	420
Total		18,536

The estimated output of oil by the country chekkus for the firka is about 12,700 thulams per annum or 635 candies valued at Rs. 3.3 lakhs.

10. *Labour force.*—All the units employed outside labour. The labour force of an average unit consisted of 2.8 family members and 22 outsiders. All the family workers were men while the recruited labour comprised 6 men and 16 women.

11. *Wages.*—Wages for husking were paid at Rs. 2 per 1,000, for shelling at Rs. 6 per 1,000 and for other work at 12 annas per day. The wage bill of an average unit amounted to Rs. 1,754. However, this includes wages paid for operations connected with the coir and copra industries. The wages payable to family workers may be estimated at Rs. 224.

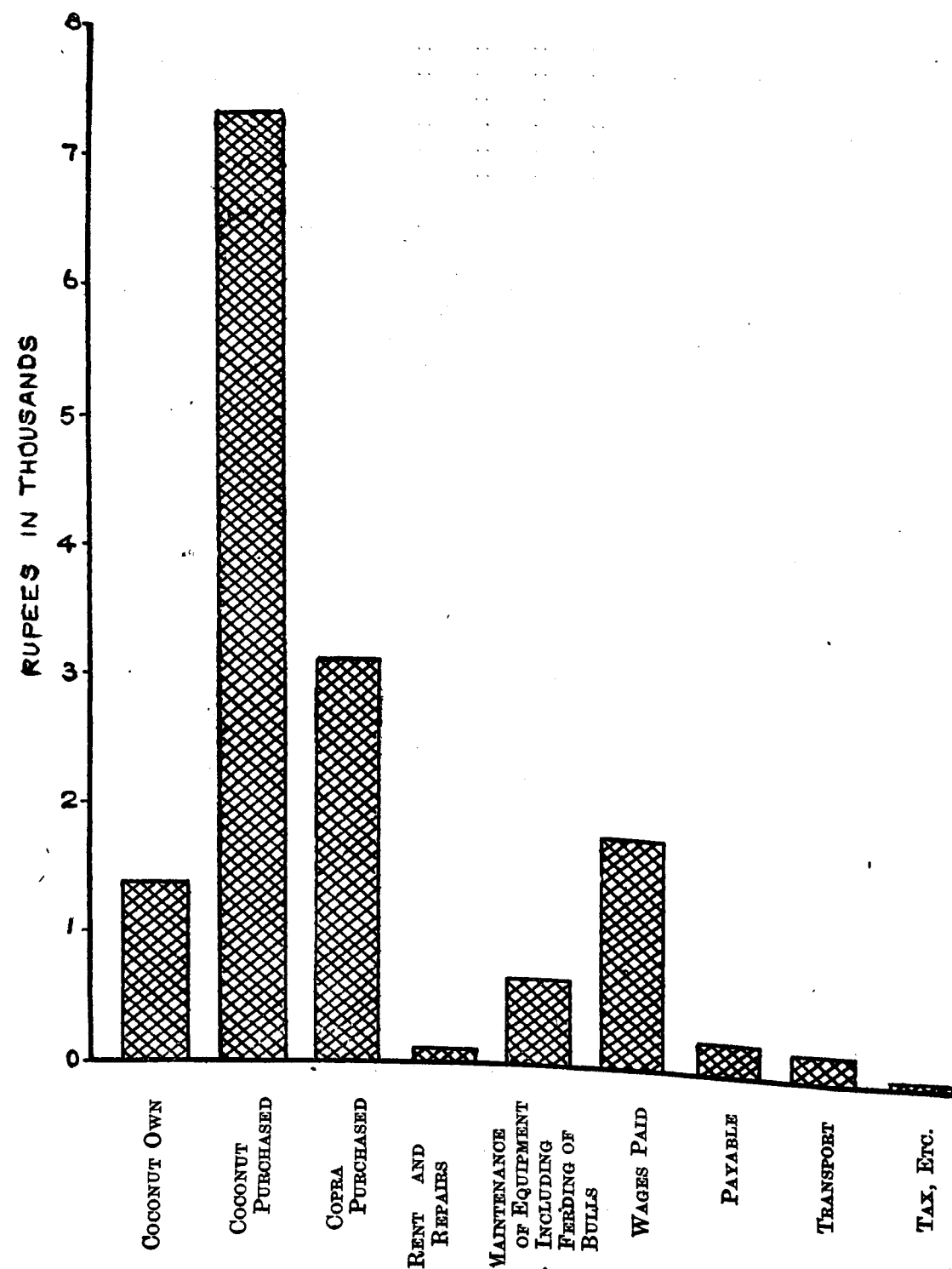
12. *Cost of production.*—A study of the economics of oil production by 'Chekku' requires a comparison with production by mill. Appendix 115 gives the analysis of the operation of a chekku and that of a mill. Profit from the oil mills is greater per day because whereas it takes five days to press 1 candy of copra in a chekku, it takes only one day for a power mill and the yield of oil and punak is greater in the latter than in the former and there is greater wastage in a chekku, 7½ per cent against 2 per cent in an oil mill. We have, however, to allow depreciation charges in both cases. The yield of oil per candy of copra by a chekku is 11.35 thulams or 56.8 per cent, while that by a power mill is 62.5 per cent. The cost of a chekku is only Rs. 150 to Rs. 200, while that of an oil mill with 12.5 horse-power is Rs. 1,000 to Rs. 1,200.

Because of the combination of operations, only a composite analysis of the cost of production of an average business unit, inclusive of costs incurred under all the industries engaged in by the unit is possible. The following statement gives the cost of production of an average unit :—

12-1. *Components of cost of production per industrial unit per annum.*

Description.	Cost.
	Rs.
1 Raw materials—	
Coconut—own	1,384
Coconut—purchased	7,330
Copra—purchased	3,120
2. Rent—	
Rent (estimated)	86
Repair	..
3 Maintenance of equipment including feeding of bulls ..	637

KOZHIKODE FIRKA
COCONUT OIL INDUSTRY
COMPONENTS OF COST OF PRODUCTION
PER INDUSTRIAL UNIT PER ANNUM



Description.	Cost. RS.
4 Wages—	
Paid	1,754
Payable	224
5 Transport	196
6 Tax, etc.	27
Total ..	14,762
Sale value of output ..	18,536
Profit ..	3,774

The net profit, allowing for interest at 6 per cent on working capital of Rs. 2,067 would amount to Rs. 3,650. Inclusive of imputed items, the annual income from the operation amounted to Rs. 5,468 or Rs. 547 per capita.

It is difficult to separate the cost of oil manufacture from the composite analysis given above. In regard to certain costs such as wages payable, rent and repair of industrial portion and the differentiation in raw materials as between own and purchased, separation is not possible. However, with the aid of certain basic figures which were used for the comparison of the operation costs of a chekku and a mill (vide Appendix 115), an analysis of the cost of production of coconut oil by an average businessunit is attempted. The following statement gives the costs necessary for the average output of 296 thulams of oil :—

12.2. *Components of costs for an average output of an industrial unit per annum.*

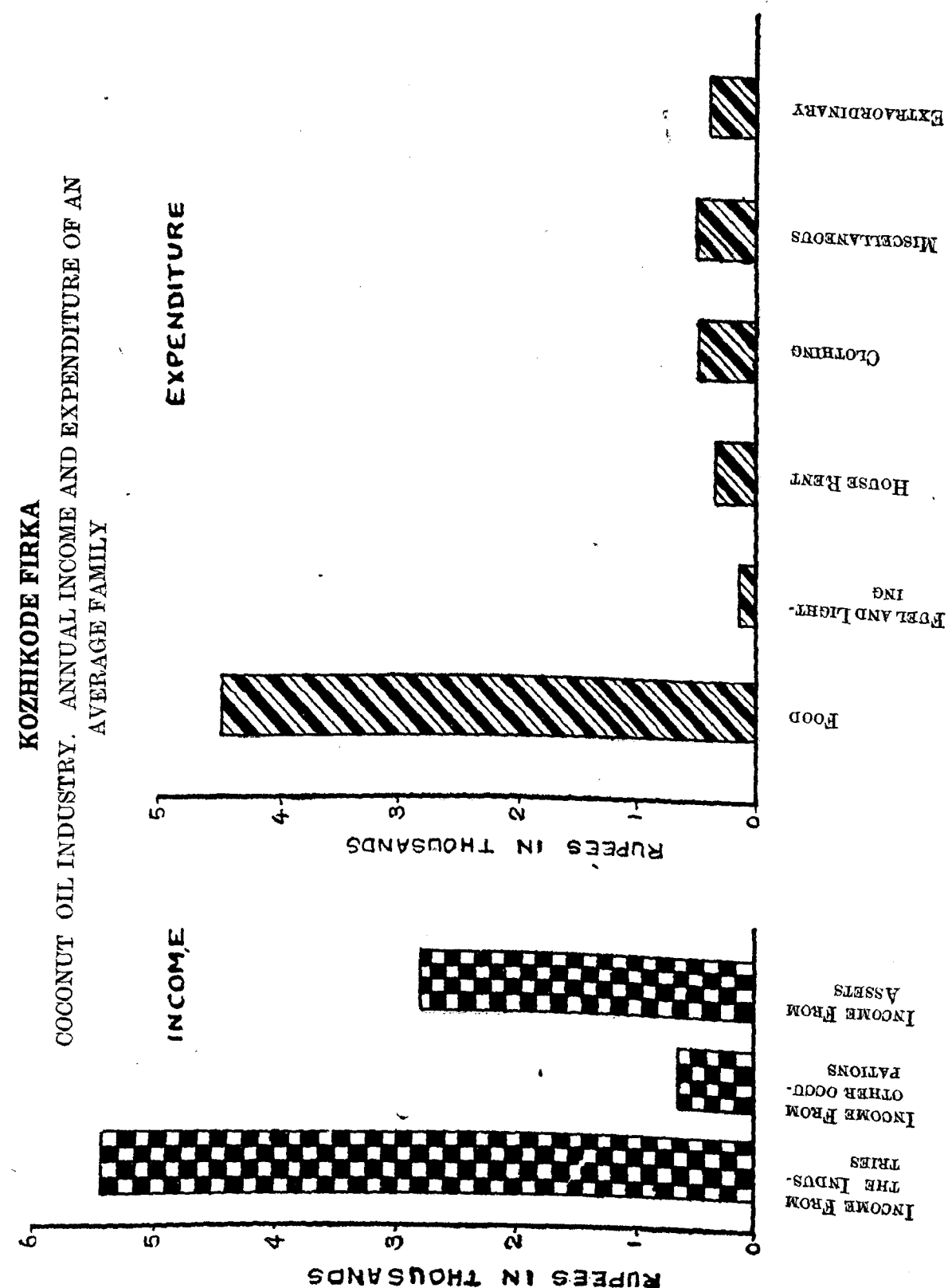
Description.	Amount. RS.
Raw material (value of 26 candies of copra)	7,800
Transport charges (at Rs. 2-8-0 per candy)	65
Wages (at Rs. 2 per day for 130 days required to produce 296 thulams).	260
Feeding charges for bulls (at Rs. 2-8-0 per day for 130 days).	325
Total ..	8,450

As against this the total value of output of oil and 'Punak' was Rs. 8,561. (Oil Rs. 7,697 and 'Punak' 144 thulams = Rs. 864.) The annual profit per unit from oil pressing may be estimated at Rs. 111.

13. *Marketing.*—All the units owned retail grocery stores where the oil pressed in their own chekku was sold.

14. *Income and expenditure.*—The income of an average family is given in Appendix 116, while Appendix 117 gives the expenditure pattern. The average income of a family amounted to Rs. 8,954 of which income from the industry was 61.1 per cent, from assets 31.4 per cent and from other occupations 7.5 per cent. The average annual expenditure of a family was Rs. 6,423 leaving a surplus of Rs. 2,536.

15. *Assets and liabilities.*—The value of assets owned by an average unit is given in Appendix 118. It amounted to Rs. 13,285 of which houses formed 35.1 per cent and lands 51.9 per cent. None of the units had any liabilities.



SUMMARY.

16. The oil-pressing industry is carried on in combination with other coconut industries such as coir and copra manufacture. There were 44 units owning 'Chekku' or country oil mills (ghanies). The survey was confined to 3 units.

This combination of occupations makes a separate study of the oil industry rather difficult. The composite analysis shows that an average unit consumed 73,600 nuts valued at Rs. 8,714 and 208 thulams of copra purchased for Rs. 3,120. The maintenance of a pair of bulls for operating the chekku entailed a total expense of Rs. 637 towards the maintenance of equipment. The labour force consisted of 2.8 men family members and 6 men and 16 women employees. The total wages paid amounted to Rs. 1,754 and the wages payable was estimated at Rs. 224. The total annual cost of operation of an average unit amounted to Rs. 14,762; against this the value of annual output, including by-products, amounted to Rs. 18,536. The output of oil was 296 thulams worth Rs. 7,697 and that of 'punak' 144 thulams valued at Rs. 864. The output of oil for the firka as a whole may be estimated at 12,700 thulams or 635 candies valued at Rs. 3.3 lakhs.

The annual profit per unit amounted to Rs. 3,774, while the income from combined occupations was Rs. 5,468, or Rs. 547 per capita. The cost of oil manufacture, calculated separately on the basis of the average output of oil, works out to Rs. 8,450; as against this, the value of the annual output of oil and punak was Rs. 8,561 leaving an annual profit of Rs. 111 from oil pressing only.

RECOMMENDATIONS.

The survey has shown that the coir, copra and coconut oil industries are carried on by well-to-do persons who combine all these operations and also have other business such as running of a provision store. The combination of functions helps them to distribute the risks of business among various items so that the losses incurred in one operation may be compensated by profit in another. This is all the more necessary because of the risks involved due to the time required in waiting as in retting husks and fluctuations in price as in copra and coconut oil. The prices of these commodities are also governed by world factors. As a co-operative society will find it rather difficult to undertake all these functions, it would be preferable to stimulate private enterprise by helping these small business units to function more efficiently.

Government help can be in the form of providing suitable retting ground for those engaged in retting coconut husks. In spite of the training given at the Beypore Coir School in the use of charka and weaving of mats, the ordinary spinners in the cottages have not taken to it. At the present rate of output, the wage for a spinner is only As. 2-6 per working day and judged by any standard this is too low even for a part-time work. Increased income per working day can come only with increased efficiency and this is dependent upon increased per capita output per day. But as there is a demand for handspun coir yarn, no one is interested in introducing these improved tools. Government have constituted a Coir Board and that Board may be asked to take up the question of introducing charka spinning in the villages by provision of necessary training and tools for the workers. The experiment, to begin with, may be limited to a few select villages and then, after the results are known, may be extended to others.

The coconut oil industry by the use of the country chekku is a fast dying industry and in view of the cheapness of cost of manufacture by a mill, it is hardly likely to survive unless State helps the industry by a subsidy. The people should also be helped to instal improved ghanies and benefit by the results of the experiments conducted by the All-India Village Industries Association. But this is a problem applicable not merely to the chekku industry in Malabar but throughout the State.

RURAL CABINET-MAKING INDUSTRY.

1. Kozhikode firka in Malabar district was selected for a survey of cabinet-making industry. The Nilambur and Wynaad Forests yield some of the finest timber in the country and Kallai, a suburb of Kozhikode, is an emporium for the timber trade of Malabar. Large quantities of timber are exported from here not only to other parts of India but also to many foreign countries. The carpenters of Malabar are noted for their skill in wood work and cabinet-making as a cottage industry has been for years an important means of livelihood for many families in this region. The excellence of the wood combined with the dexterity and skill of the local craftsmen have built for Malabar furniture a reputation for strength, quality and finish.

2. *Organisation of the industry.*—The preliminary enquiry revealed that there were 84 cabinet-making units in the firka of which 64 were family units and 20 employer units. A statement showing the distribution of the units among the different villages is given in Appendix 119. The important cabinet-making units were concentrated in the two villages, Nagaram and Kasba, parts of Kozhikode town, while the others were located in Naduvattam, Beypore, Paniankara, Cheruvannur and Edakkad. In Nagaram and Kasba, there are about 200 carpenters working as labourers of whom 60 per cent work in furniture factories, while 25 per cent are engaged in miscellaneous work like house construction, repairs, etc., and 15 per cent in the workshops of cabinet makers. The cabinet makers formed nearly 4 per cent of the total families engaged in cottage industries in the firka.

3. *Selection of sample.*—Of the 84 units, 16 or 19 per cent were selected for detailed study of which 8 were family units and 8 employer units which worked with hired labour.

4. *Composition of families.*—A statement showing the composition of the families is given in Appendix 120. The average size of a family for the entire sample was 7.4 persons comprising 2.4 men, 2.0 women, 1.2 boys and 1.8 girls. In an average family 2.1 were earners and 5.3 dependents. The number of earners in a family unit was 2.5 against 1.5 in an employer unit. Of the earners in a family unit, 1.6 men were engaged in cabinet making industry.

5. *Nature of the units.*—Out of the 8 family units, 4 were hereditary units, while all the employer units were non-hereditary and acquired. The earliest among the employer units was established in 1940 and the latest in 1952. Out of the total of 12 self-established units 6 were established since 1945.

6. *Housing.*—Most of the family units—six out of eight—were located in thatched buildings, while most of the employer units, five out of eight, were located in tiled buildings. The average floor space per unit and per worker in the former case were 133 square feet and 82 square feet respectively, while the corresponding figures for an employer unit were 709 square feet and 61 square feet. Out of the 8 family units 4 units were located in rented buildings, while out of the 8 employer units 3 were located in rented buildings, the average annual rent paid in each case being Rs. 21-12-0 and Rs. 80-2-0 respectively. The average estimated annual rent for the owned portion in the case of a family unit was Rs. 7 as against Rs. 123 for an employer unit. The average maintenance charge incurred by a family unit was Rs. 2-5-0 compared with Rs. 8-5-0 in the case of an employer unit.

7. *Types of articles manufactured.*—All types of furniture required for household use and office purposes are manufactured, the main items being chairs, tables, cots, almirahs, stools, tea poys, etc. In addition to these, a few artistic utilities are also manufactured usually on order.

8. *Raw materials.*—The raw materials required by the industry are wood of different varieties, polish and accessories like screws, locks, mirrors, etc. Appendix 121 gives the details of the quantity and value of the different raw materials consumed.

Wood.—The main raw material, wood, is easily available in the centre. The requisite timber is usually purchased by the cabinet-makers from timber merchants. It is not usual for a timber merchant to take to this industry in addition to his trade. In the whole firka, there were only two such persons combining timber trade and cabinet-making.

The types of wood in use are rose wood, white teak wood, teak and country wood in the order of their importance. On an average, 39 candies of wood valued at Rs. 2,511-7-0 were used in a year. Furniture made of rose wood has the highest demand. On an average 33.4 candies of rose wood valued at Rs. 2,302 were used annually by a unit as against 4.2 candies of white teak wood valued at Rs. 166, 0.9 candy of teak wood valued at Rs. 31 and 0.5 candy of country wood valued at Rs. 12. The expenditure on wood formed 86.1 per cent of the total expenditure on raw materials. While rose wood, white teak wood and teak wood were used by both types of units, country wood was used only by the employer units. The average value of all types of wood used by a family unit was Rs. 663-1-0 against Rs. 4,359-12-0 by an employer unit and Rs. 2,511-7-0 by an average unit for the whole sample.

There were some significant differences in the consumption of wood by the two kinds of units as the following table will show:—

8.1. *Consumption of wood by an industrial unit per annum.*

Description.	Family unit.				Employer unit.			
	Per unit.		Per worker.		Per unit.		Per worker.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	CANDY.	RS. A. P.	CANDY.	RS. A. P.	CANDY.	RS. A. P.	CANDY.	RS. A. P.
1 Rosewood ..	9.5	594 4 0	5.9	371 7 0	57.6	4,009 0 0	5.0	348 9 0
2 White teakwood ..	1.5	58 13 0	1.0	36 12 0	6.9	274 6 0	0.6	23 13 0
3 Teakwood ..	0.25	10 0 0	0.1	6 3 0	1.5	52 8 0	0.1	4 8 0
4 Countrywood ..	..	..	..	..	1.0	23 14 0	..	2 0 0
Total ..	11.25	663 1 0	7.0	414 6 0	67.0	4,359 12 0	5.7	378 14 0

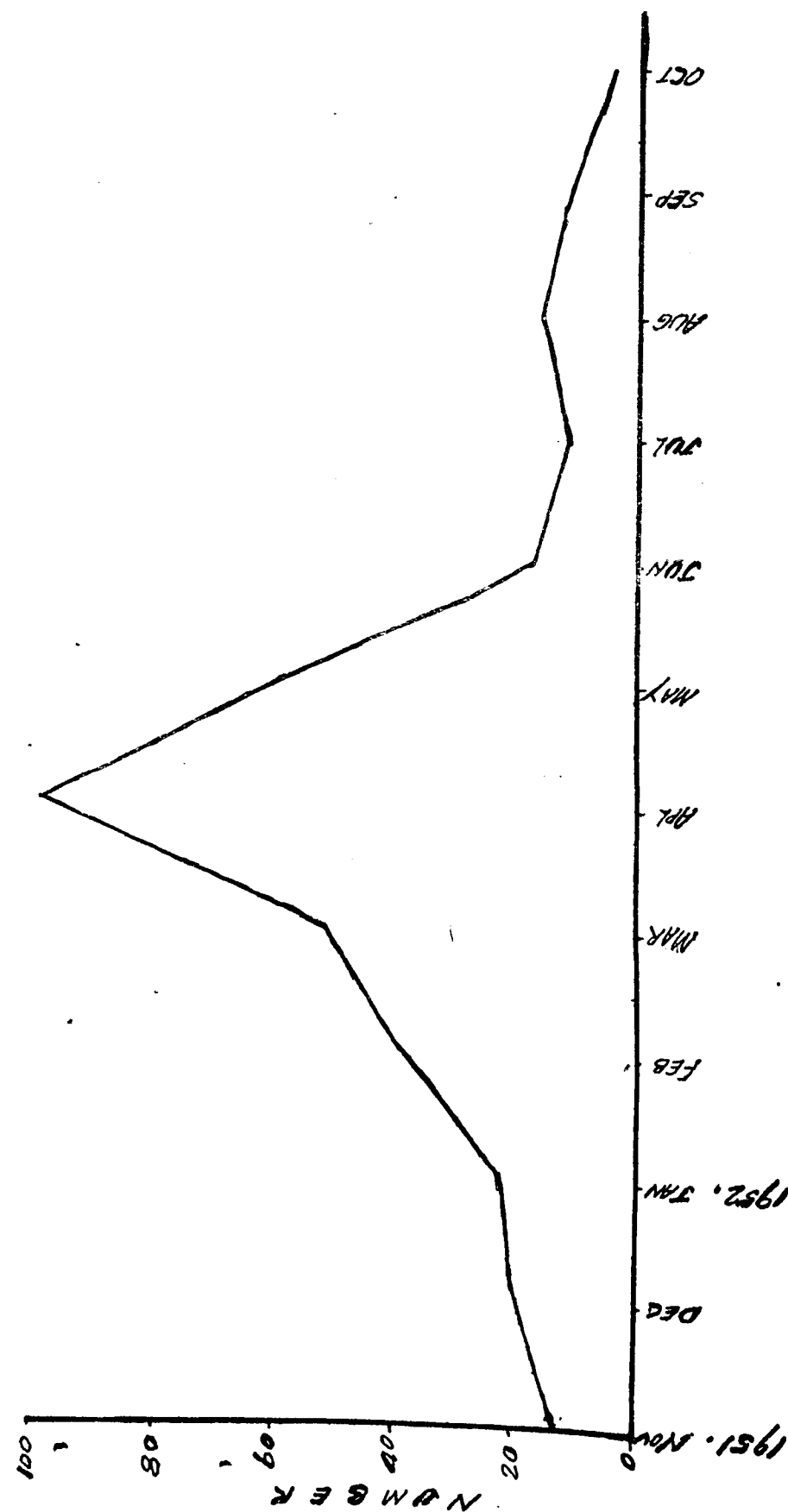
An employer unit consumed nearly six times the quantity of wood consumed by a family unit. On the other hand the consumption per worker was higher in a family unit by 1.2 times.

Screws, locks and other accessories.—These were used by all units. The value of these was 8.9 per cent of the total outlay on all raw materials. The average expenditure per family unit was Rs. 27 as against Rs. 491 per employer unit and Rs. 258-8-0 for all units. There was no difficulty in securing these articles.

Polish.—The value of polish used by all units was 5.0 per cent of the total outlay on raw materials. On an average a unit used annually 50 bottles of polish valued at Rupees 145-14-0. The consumption by a family unit was 4.1 bottles valued at Rs. 10-3-0 against 95.9 bottles valued at Rs. 280-10-0 by an employer unit. The average consumption by a worker in a family unit was 2.6 bottles against 8.3 bottles in an employer unit.

The average annual outlay on all raw materials per unit was Rs. 700-4-0 among family units as against Rs. 5,131-6-0 among employer units, and Rs. 2,915-13-0 for all units. The expenditure per worker was Rs. 437-12-0 and Rs. 446-4-0 respectively for both types of units.

KOZHICODE FIRKA
CABINET MAKING INDUSTRY
FLUCTUATIONS IN TOTAL OUTPUT PER UNIT



The average family unit spent annually Rs. 663-1-0 on wood, Rs. 10-3-0 on polish and Rs. 27 on screws, locks, etc. while the outlay of an employer unit on each item was Rs. 4,359-12-0, Rs. 280-10-0 and Rs. 491 respectively.

Difficulties in the supply of raw materials.—While these raw materials were available locally, the units experienced much difficulty due to the fluctuation in the price of timber, the main raw material. As the cabinet-makers do not market the goods immediately after manufacture, and have to wait for some time and even months, the fluctuations in the price of timber cannot be reflected immediately in the cost of the finished goods. Moreover, the rigidity of the wage rates is a handicap to cabinet-makers in times of falling prices. The growth of a timber-trading centre at Baliapatnam in the same district which is able to get timber at cheaper rates from the nearby forests is affecting the cabinet-makers at Kallai as the price of timber at Kallai is generally higher by about Rs. 5 per candy. There is a tendency for some of the cabinet-makers to set up branch units at Baliapatnam.

9. *Machinery, tools and equipment.*—The principal tools used were saw, hammer measuring rod, 'kadasal', chisel, 'thamasu' and planing and drilling machines. It is customary for carpenters and sawers in the employ of the employer units to take their own tools with them to work. Hence the tools owned by such units were but few and hardly sufficient to cope with their output schedule without the aid of the equipment of their employees. In this survey, however, all tools in use were taken into consideration and not merely those actually owned by the units. Appendix 123 gives particulars of equipment owned by the different types of units as a whole.

An average unit of the sample, as a whole used 3 saws, 2 hammers, 8.6 chisels, 2.3 measuring rods, 0.3 "kadasals," 1 "choppuli," 0.2 "thamasu" and 2 planing and 4 drilling machines. The initial replacement and maintenance costs of tools used by the two types of units is shown in the following statement:—

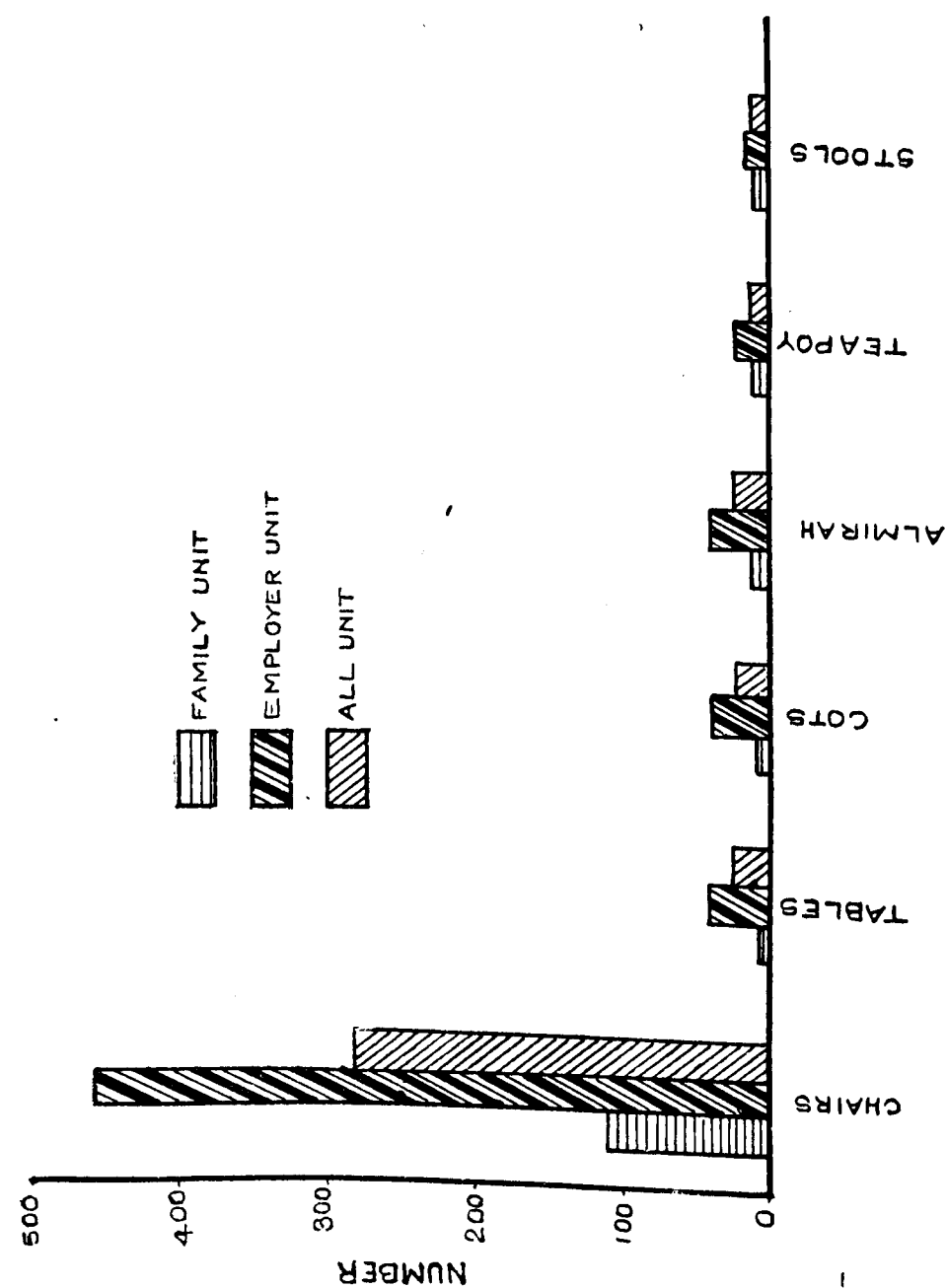
9.1. *Cost of tools owned by an average industrial unit.*

Description.	Family unit (amount).			Employer unit (amount).		
	(2)			(3)		
	RS.	A.	P.	RS.	A.	P.
1 Initial cost	51	12	0	131	14	0 *
2 Replacement cost	58	12	0	142	8	0 *
3 Maintenance cost	2	0	0	3	4	0 *
4 Depreciation	4	0	0	8	0	0 *

There appears to be some scope for the introduction of improved machinery, particularly in the initial process of sawing timber. Only hand saws are used by ordinary cabinet-makers. A saw one foot long costs Rs. 3-8-0 and usually saws of 10 feet are used for sawing timber. The saw mills and bigger cabinet-makers like the Standard Furniture Company and the Kohinoor Wood Works use either a circular saw costing Rs. 1,500 or a band saw costing Rs. 30,000. While a sawer using a hand saw can saw only one candy at the most per day, a band saw can saw 70 to 75 candies. While a sawer should be paid Rs. 6 per day, a labourer using band saw is paid only Rs. 2-8-0. There is economy in cost and greater efficiency for those using modern tools. The enormous difference in the initial cost forbids the easy adoption of the more modern appliances by the ordinary cabinet-maker whose scale of operations is comparatively small. Further, the use of the band saw entails much wastage in the form of saw dust which the small-scale cabinet-maker, interested in the maximum utilization of the available timber, can ill afford. The hand saw, on the other hand, will conserve timber and enable the workman to cut it according to his requirements. Hence, only establishments of considerable size will find it profitable to

* Met by the employees.

KOZHIKODE FIRKA
CABINET MAKING INDUSTRY
ANNUAL OUTPUT OF AN AVERAGE INDUSTRIAL UNIT



employ the more modern tool; for the small-scale unit, this is not merely uneconomic but practically impossible. There is also the question of displacement of labour by these labour-saving devices leading to the problem of unemployment.

10. *Manufacturing process.*—The process of furniture manufacture is too well known to necessitate detailed description. The first process is to peel off the bark from the timber. The timber logs are then sawn to suitable sizes by sawers and the wood is handed over to the carpenters. Furniture is manufactured by the carpenters under the direction of the employers or in the case of family units according to orders received. The completed piece is finally polished.

11. *Production.*—The important articles manufactured are chairs, tables, cots, almirahs, teapoy and stools. The particulars of the output of an average family and employer unit are shown in the following statement:—

11.1. Annual output of an average industrial unit.

Article.	Family unit.			Employer unit.			Average for entire sample.		
	Num-ber.	Value.	Per-cent to total.	Num-ber.	Value.	Per-cent to total.	Num-ber.	Value.	Per-cent to total.
		RS. A. P.			RS. A. P.			RS. A. P.	
1 Chairs ..	110.0	972 8 0	61.4	455.0	6,011 0 0	50.1	282.5	3,491 12 0	51.5
2 Tables ..	9.0	266 14 0	16.9	40.1	1,495 0 0	12.5	24.8	881 0 0	13.0
3 Cots ..	3.0	132 8 0	8.4	36.6	1,872 8 0	15.6	19.8	1,002 8 0	14.8
4 Almirahs ..	2.5	128 6 0	8.1	33.4	2,048 12 0	17.1	18.0	1,088 12 0	16.0
5 Teapoys ..	7.4	70 12 0	4.5	15.0	120 12 0	1.0	11.2	95 12 0	1.4
6 Stools ..	1.3	10 0 0	0.7	9.0	444 0 0	3.7	5.1	227 0 0	3.3
Total ..	133.2	1,581 0 0	100.0	589.1	11,992 0 0	100.0	361.4	6,786 12 0	100.0

The output of an average employer unit was considerably higher than that of the family unit; the value of articles produced annually by the former was nearly 7.6 times that of the latter.

Value of annual production per worker was Rs. 988-2-0 in a family unit and Rs. 1,042-13-0 in an employer unit.

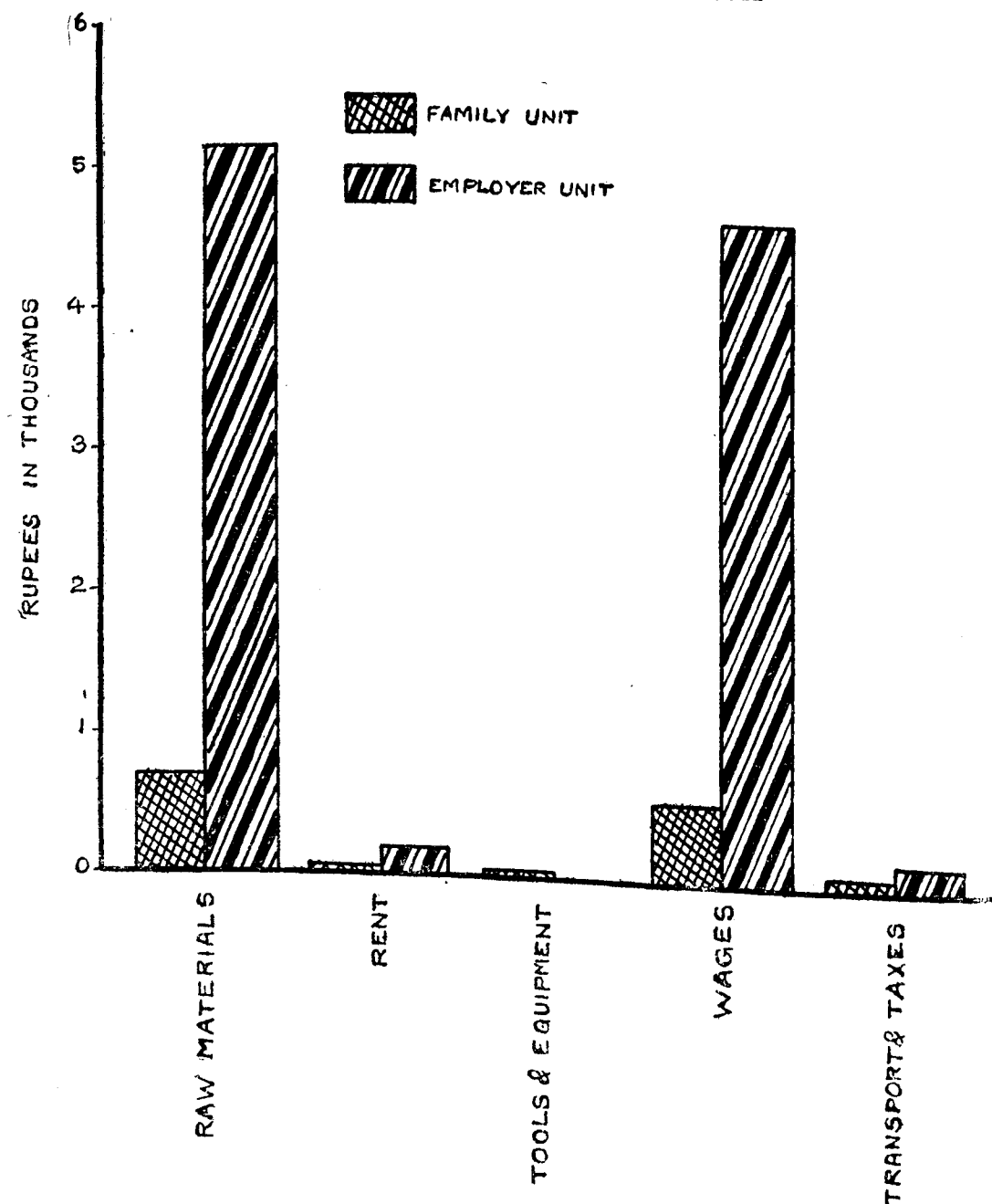
Of the articles produced, chairs were the most important accounting for 78 per cent of the total number of articles produced and 51.5 per cent of the aggregate sale value of the average annual production of all units. Almirahs and cots were the next best earners accounting for 16 per cent and 14.8 per cent respectively of the total sale value; tables, though numerically more prominent than these yielded lower return on account of their lower price. The production of teapoys and stools was negligible from the point of view of both number and value.

12. *Estimated output for the firka.*—The annual output for the entire firka by the cottage industrial units may be estimated at about 20,000 articles worth about Rs. 2.5 lakhs.

13. *Fluctuations in output.*—Appendix 122 gives the fluctuations in the total output of the sample as a whole during the year of the survey, November 1951 to October 1952. The peak output was reached in the months, February to May while production was lowest in September to November.

14. *Labour force and employment.*—Women are not employed in any of the processes in this industry. Employment is confined to family members only in the family units. In the employer units, the family members sometimes worked along side recruited labour, but for the most part, the employers did not actually participate in the work but organized and

KOZHIKODE FIRKA
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COMPONENTS OF COST OF PRODUCTION
PER INDUSTRIAL UNIT PER ANNUM



directed it. For the sample as a whole, the industry provided employment for 105 men of whom 13 or 12.4 per cent were family members and 92 or 87.6 per cent outsiders. The employment in the industry for the whole firka may be estimated at 532.

The labour force of an average family unit was 1.6 and that of an employer unit 11.5 all of whom were outsiders.

The average number of working days per unit was 205 in the family unit group and 235 in the employer group. Assuming 295 days to be the maximum number of working days per year, an average family unit was employed for 69.5 per cent and an average employer unit for 79.9 per cent of the maximum.

15. *Wages.*—Wage rates differed for the different types of work. The wages of carpenters varied from Rs. 2-8-0 to Rs. 3 per day, that for a sawer was about Rs. 6 and for a polisher Rs. 1-8-0 per day. An average employer unit paid Rs. 4,639 annually by way of wages which amounted to Rs. 403-8-0 per labourer per annum or Rs. 1-11-0 per working day. Estimated on this basis, the wages payable to family member in an average family unit was Rs. 557-10-0.

16. *Transport.*—The manufacturer has to bear only the expenses of the transport of raw materials to his workshop as the cost of transporting the finished product falls on the purchaser. Timber, the principal raw material, is available locally and within easy distance of workshops and hence transport does not involve much expense. The annual transport charges of an average family unit was Rs. 24-12-10 and that of an employer unit Rs. 156-6-0.

17. *Cost of production.*—The annual cost of production of an average family and employer unit was as follows:—

17.1. *Components of cost of production per industrial unit per annum.*

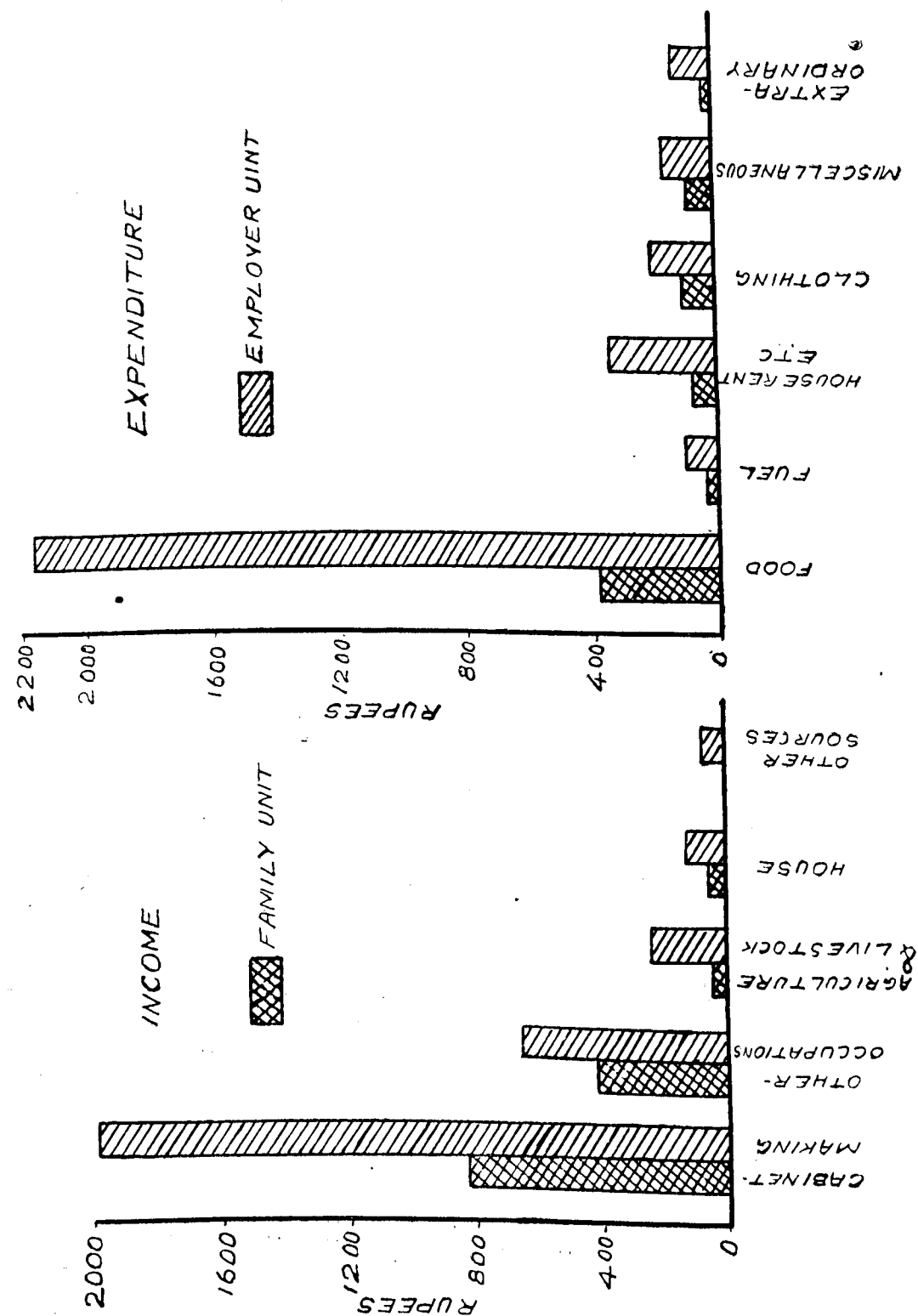
Description.	Family unit.			Percentage to total.	Employer unit.			Percentage to total.
	RS.	A.	P.		RS.	A.	P.	
1 Raw materials	700	4	0	52.9	5,131	6	0	50.6
2 Rent—								
(a) Rent paid	21	12	0	2.4	80	2	0	2.1
(b) Rent payable	7	0	0		123	0	0	
(c) Repairs and maintenance	2	5	0		8	5	0	
3 Tools and equipment—								
(a) Maintenance	2	0	0	0.4	..			..
(b) Depreciation	4	0	0		..			
4 Wages—								
(a) Wages paid	..			42.0	4,639	0	0	45.7
(b) Wages payable	557	10	0	2.3	..			1.6
5 Transport	24	12	0		156	6	0	
6 Taxes	6	0	0		6	13	0	
Total	1,325	11	0	100.0	10,145	0	0	100.0
Sale-proceeds	1,582	0	0	..	11,992	0	0	..
Profit	256	5	0	..	1,847	0	0	..

Relative cost of manufacture.—The following table shows the relative cost of manufacture by the two types of industrial units:—

	Family unit.	Employer unit.
Raw material (taken as 100)	100	100
Wages	79.7	90.4
Others	9.7	7.3
Total	189.4	197.7

It can be seen from the above that the family unit functioned with greater economy.

KOZHIKODE FIRKA
CABINET MAKING INDUSTRY
INCOME AND EXPENDITURE OF AN AVERAGE INDUSTRIAL UNIT PER ANNUM



The average employer unit did not incur any expenditure by way of maintenance and depreciation of tools as the necessary tools were brought along by the employees. Similarly, the family units where employment was confined to family members only do not pay wages to outsiders. Wages payable has not been calculated in the case of employer units as the family members were mainly engaged in direction and organization. Apart from these minor variations in the composition of the cost of production, the main difference between the two types of units is one of magnitude rather than in the proportion of the costs on the different components. The costs incurred by an employer unit was more than 7 times that of a family unit, reflecting the differences in their scale of operation. In both cases, raw material formed the most expensive item accounting for 52.9 per cent and 50.6 per cent of the total costs in the family and employer units respectively. Wages came next forming 42 per cent and 45.7 per cent; the other items were insignificant.

18. *Profit.*—The average gross profit amounted to Rs. 256-5-0 in the case of a family unit and Rs. 1,847 for an employer unit.

Net profit.—Allowance has to be made for interest in the capital invested. Only working capital need be considered as rent and expenditure on machinery and equipment may be taken as providing for interest on fixed capital. The working capital of an average family unit was Rs. 190 against Rs. 2,000 for an employer unit. Deducting interest on working capital at 6 per cent the net profit of a family unit amounted to Rs. 245 and that of an employer unit to Rs. 1,727.

19. *Income from the industry.*—Including the imputed items in the cost of production such as wages payable, rent payable and depreciation of equipment to the gross profit, the income from the industry amounted to Rs. 824-15-0 for a family unit and Rs. 1,970 for an employer unit. The average per capita income was Rs. 123-2-0 and Rs. 240-4-0 respectively.

20. *Marketing.*—The entire output was disposed off locally to merchants who export the furniture by rail to towns within the State and other cities like Mysore, Bombay and Calcutta.

21. *Co-operation.*—No attempt has so far been made to organize this industry on co-operative basis.

22. *Income and expenditure.*—The income and expenditure of an average family and employer unit are given in Appendices 124 and 125. Annual income of a family unit was Rs. 1,346 of which 61.2 per cent was derived from cabinet making. The industry provided 63.8 per cent of the total income of Rs. 3,090 of an average employer unit.

Annual expenditure amounted to Rs. 1,305 for a family unit and Rs. 3,055 for an employer unit. Expenditure on food amounted to 75.6 per cent and 70 per cent of the totals respectively.

23. *Assets and liabilities.*—The average value of assets owned by the two types of units is shown in Appendix 126. The total was Rs. 1,391 in the case of an average family unit and Rs. 9,431 for an employer unit.

None of the units was indebted.

24. *Efficiency assessment.*—From the point of view of provision of employment the survey has shown that the average employer unit engaged a larger number of workers for a greater number of days than the average family unit. The former provided employment for 11.5 men for 235 days against 1.6 workers for 205 days by the latter. From the point of view of economy in cost, it is seen that the family unit worked at a relatively lower cost.

SUMMARY.

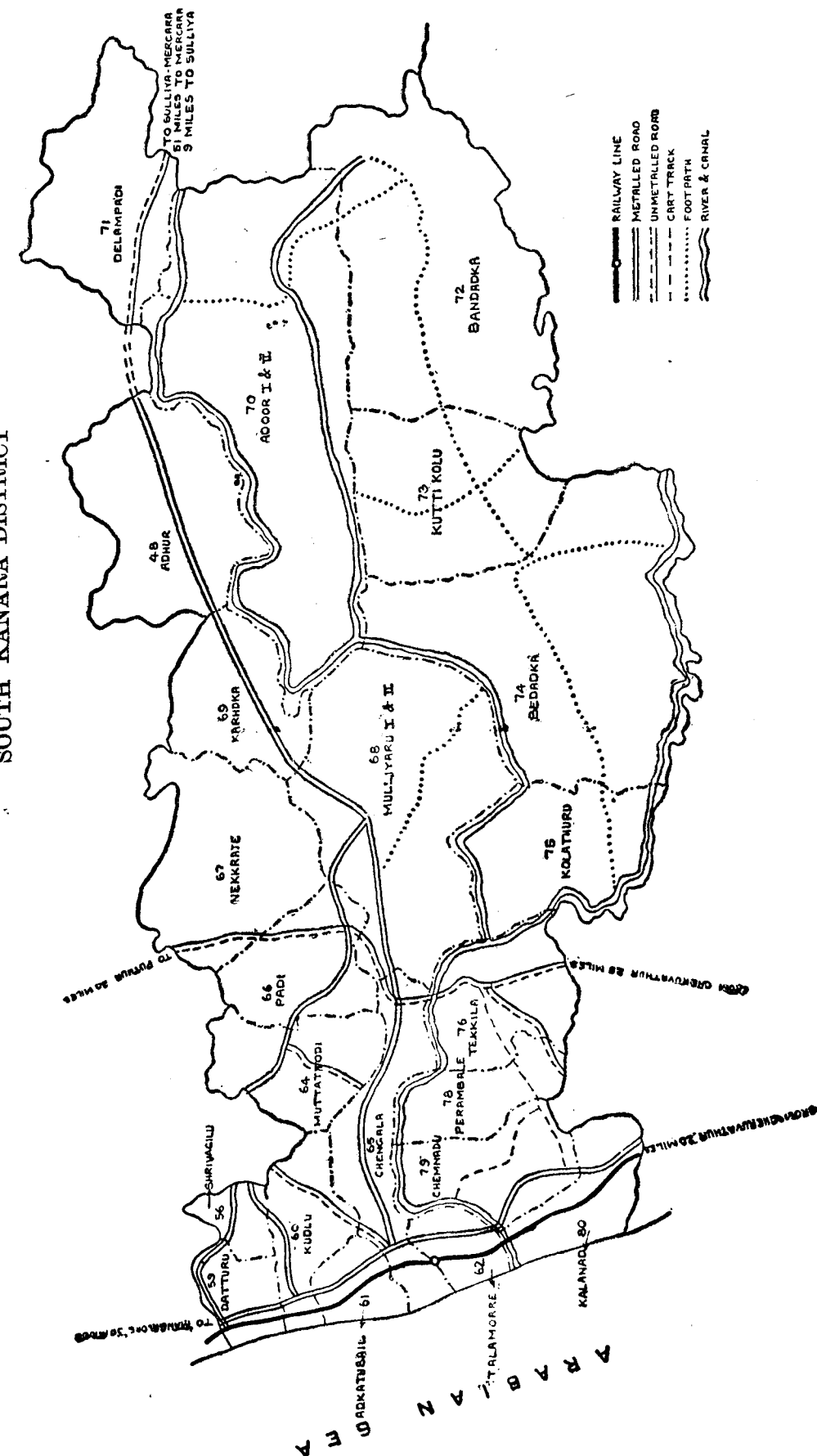
The survey was confined to 16 cottage industrial units in the Kozhikode firka out of a total of 84. Of these, 8 were family units and 8 employer units working with recruited labour. The number of earners was 2.5 for a family unit and 1.5 for an employer unit and the average labour for the industry was 1.6 and 11.5 respectively. The industry provided employment for 205 days in the year for an average family unit and for 235 days for an employer unit and 220 for the sample as a whole. The average annual output of a family unit was 133 articles valued at Rs. 1,581 and that of an employer unit 589.1 articles valued at Rs. 11,992. The cost of production per unit was respectively Rs. 1,325-11-0 and Rs. 10,145; the most important items of cost were raw materials and wages. Profit amounted to Rs. 256-5-0 in the case of an average family unit and Rs. 1,847 per employer unit; net profit allowing for interest on working capital amounted to Rs. 245 and Rs. 1,727 respectively per average family and employer units. Income from the industry for the two units inclusive of imputed items in the cost of production, however, was Rs. 823-15-0 and Rs. 1,970 per unit respectively or Rs. 123-2-0 and Rs. 240-4-0 per capita. The annual income of an average family was Rs. 1,346 of which 61.2 per cent was derived from cabinet making; in the case of an average employer unit income from the industry was 63.8 per cent of the total income of Rs. 3,090. Annual expenditure amounted to Rs. 1,305 and Rs. 3,055 and the value of assets owned Rs. 1,391 and Rs. 9,431 respectively per average family and employer units.

RECOMMENDATIONS.

This is an established industry of high repute. But its present position is not without some instability particularly in the case of the small-scale units. The main handicap with them is the absence of organized marketing facilities. The problem of transport is difficult by the very nature of the products of the industry; it is usual for the cabinet makers to dispose of their goods locally to middlemen who undertake marketing and export the furniture to other towns. Thus, the actual manufacturers of furniture have no contact whatsoever with the market and are unable to gauge the requirements and tastes of the consumers. A central organization for marketing like a co-operative society would solve this difficulty by keeping in touch, on behalf of its members, with the market. It could also attempt to enlarge the market and introduce new patterns and models in keeping with consumer preferences.

Another difficulty which the industry faces now is the uncertainty in timber prices. Frequent fluctuations lead to loss as the cabinet makers are not able to lower production or increase their selling prices in accordance with the increase in timber prices. Steps should be taken to stabilize prices by regulating the export of timber if necessary.

KASARAGOD FIRKA
KASARAGOD TALUK,
SOUTH KANARA DISTRICT



CHAPTER VI.

BASKET MAKING INDUSTRY IN KASARAGOD FIRKA (SOUTH KANARA DISTRICT).

Introduction.—The Kasaragod firka was selected for survey of basket making and umbrella manufacture. The preliminary count of the units engaged in the different cottage industries in the firka revealed that umbrella making has now become extinct and that basket making alone is now being carried on in a few villages. The survey was therefore confined to basket making industry.

Basket making is one of the commonest occupations found throughout the State. It exists in some form or other in all districts, but is carried on, on a large scale, only in the districts of Madurai, Tiruchirappalli, South Arcot, North Arcot, Chingleput, Madras, Salem, Malabar, South Kanara. The products comprise not only baskets intended for storage and transport of agricultural and other goods, but also a multitude of articles like winnows, sieves, screens, boxes, etc., required by the villagers for daily use. Their primary purpose is utilitarian and this probably accounts for their survival. Artistic baskets with lacquer coating or fancy colouring made of bamboos and palmyra leaves are also made in certain centres in the State like Rameswaram, Madras and Tenkasi. Superior baskets and other articles made of cane and rattan form a class by themselves. This industry is found only in a few centres in the district of Tanjore and Madras City. These goods are, however, generally beyond the reach of the majority of the people on account of their high price.

Baskets are made of many materials depending on the raw material locally available. The chief raw materials are bamboos, creepers found in jungles, date palm leaves, palmyra and screwpine leaves and palmyra fibre. The industry is mainly carried on by a few communities like the Koravas, Nadars, Harijans, Naickers and Muslims.

2. *Distribution of families engaged in cottage industries.*—The preliminary survey revealed that the industry is carried on in 9 out of the 25 villages in the firka. The following statement shows the distribution of the industry in the villages :—

2.1. *Distribution of families engaged in cottage industries and basket making.*

Name of the village.				Total number of families.	Number of families engaged in basket making.	Number of families engaged in other cottage industries.	Total [columns (3) + (4)].	Percentage of families engaged in basket making to total in column (5).
(1)				(2)	(3)	(4)	(5)	(6)
1	Kutti Kolu	..	..	378	2	15	17	13.8
2	Delampady	..	..	471	1	24	25	4.0
3	Adoor I	..	..	875	9	19	28	32.1
4	Adoor II	..	..	512	8	11	19	42.1
5	Karadaka	..	..	776	8	77	85	9.4
6	Adur	..	..	675	3	19	22	13.6
7	Muttathodi	..	..	724	3	61	64	4.7
8	Muliyaru I	..	..	1,753	1	28	29	3.4
9	Shribagalu	..	..	369	9	22	31	29.0
Total				6,533	44	276	320	13.8

The total number of families engaged in the industry was 44 forming 13.8 per cent of the total engaged in all cottage industries and 0.7 per cent of the total number of families in the villages.

Details of the number of families engaged in different cottage industries in the 9 villages are given in Appendix 127.

Basket making in Kasaragod is the traditional occupation of the Korava community. Three factors have been primarily responsible for the continuance of the industry in the firka. They are (1) availability of bamboos and creepers, the principal raw materials for the industry in abundance in the adjoining forests and private estates, (2) existence of a separate community, viz., the Koravas to whom basket making is a hereditary craft and (3) constant and continuous demand for the products from the agriculturists and all classes of house-holders in the villages to whom they form the cheapest and the most convenient of the containers for storage and transport of grains and other goods.

The extensive forests in the district of South Kanara abound in the raw materials required for this industry. The chief items of forest produce are bamboos, timber, fuel, cane, hardwood, softwood, cashewnut, etc. The statement below furnishes the quantity and value of forest produce in the nine villages where the basket making industry is carried on :—

2.2. Quantity and value of yield of forest produce in the nine villages in 1951-52.*

Item.				Quantity.	Value. RS.
Bamboos	..	..	..	7,200 Nos.	4,800
Timber	..	..	..	9,376 c.ft.	16,337
Fuel	..	..	..	11,000 „	11,000
Cane	..	..	..	1,000 ft.	125
Hardwood	..	..	..	14,000 c.ft.	14,000
Softwood	..	..	..	5,000 „	3,750
Cashewnuts	..	..	..	21,000 seers.	6,000
Total				..	56,012

* (Source) Forest Office, Kasaragod.

The contribution of forest produce to the economy of the villages is significant and the output of raw materials for the basket-making industry, bamboos and creepers, is ample for the requirements of the workers engaged in the industry.

3. Selection of sample.—The number of families selected at random for detailed investigation was 21 forming a sample strength of 47.7 per cent. The distribution of the sample among the villages was as follows :—

3.1. Distribution of the families selected for survey.

Village.				Number of families surveyed.
1 Adoor I	..	..	..	6
2 Adoor II	..	..	..	5
3 Karadaka	..	..	..	6
4 Muttathodi	..	..	..	2
5 Shribagalu	..	..	..	2
Total				21

4. Size of family.—The size of an average family surveyed was 4.8 comprising 1.4 men, 1.6 women, 1.0 boy and 0.8 girl. All the men and women were earners and the rest dependents.

5. General condition of the families.—The Koravas belong to a backward community and their economic condition does not compare favourably with that of other cottage industrial workers. All their wealth consists of thatched huts, a few industrial tools and mud vessels. They are mainly dependent on basket making, while occasionally they are also employed as agricultural labourers. But their agricultural work is not considered efficient

and is rated low. They are also in the habit of wandering from place to place for a few days carrying on their traditional occupation of basket making under the shade of trees and hawking the baskets in shandies and villages. This largely explains why the basket making industry in the firka has never risen beyond the primitive stage, in spite of the abundance of raw materials.

6. Housing.—The industry was carried on in the houses of the workers. Each of the families surveyed owned a thatched hut; the average value of which was Rs. 44. The floor space available per industrial unit was 180.3 square feet allowing 60.1 square feet per worker. Repairs to the houses consisting mainly of renewal of roofing were carried out only infrequently.

7. Raw materials.—The principal raw materials for the industry are bamboos and creepers, both of which are available in plenty in the nearby forests and private estates. But in spite of this, workers are not able to get bamboos free of cost or for a nominal fee. The Forest Department rules allow the removal of bamboos from the Reserve Forest on payment of a nominal fee only if they are intended for bona fide domestic purposes and not for commercial use. The basket weavers have therefore to get their supply of bamboos from private estate holders or merchants at relatively high prices. Creepers are collected by the workers themselves. The cost of bamboos ranged between Rs. 50 and Rs. 80 per 100 at the time of the survey, the average price being Rs. 66-12-0 per 100. The raw materials were transported by the workers themselves and no transport charge was therefore incurred. An average family unit used annually 219 bamboos costing Rs. 157-10-0 and 56.7 head-loads of creepers estimated to be worth Rs. 43-10-0. The average quantity of raw material processed annually by a worker was 73 bamboos and 18.9 head-loads of creepers.

8. Tools and equipment.—The only tools used by the workers are curved knives costing Re. 1 each. An average unit owned 3 knives or 1 knife per worker. The knives generally last for one year only and hence the recurring annual cost borne by a unit towards this was Rs. 3.

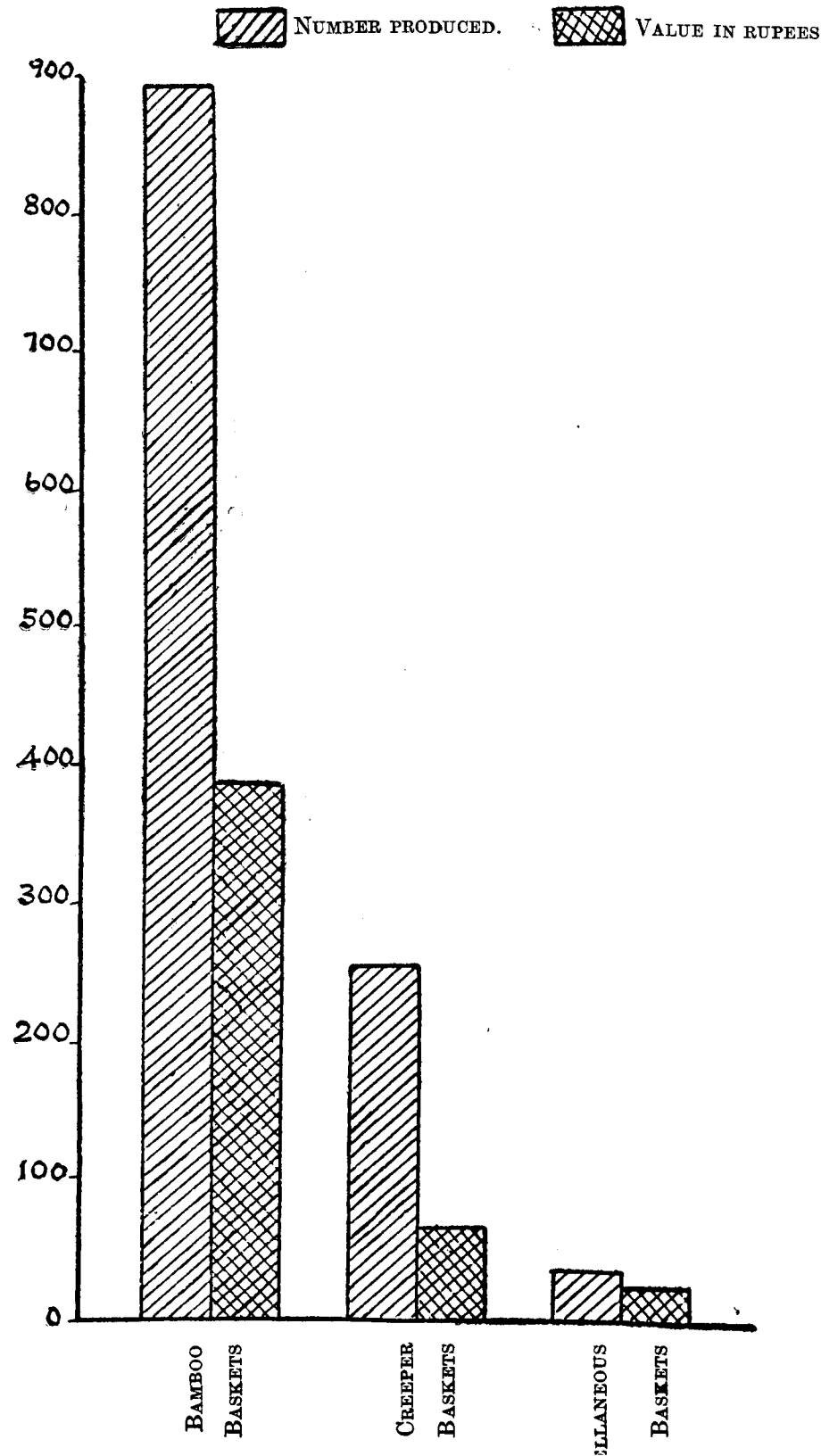
9. Manufacturing processes.—In respect of bamboo baskets, the first item of work is to get the bamboos from the estates. Generally three bamboos are purchased at a time so that there will be work for two to three days. Both men and women are engaged in fetching bamboos walking a distance of about a mile. It takes nearly four hours for them to fetch the bamboos after cutting them from the grove.

The next process is to remove the smaller branches and cut the main stem into four feet long pieces. They are again cut into fine strips measuring one-tenth of an inch. It takes about five hours to cut and slice three bamboos into suitable pieces. Thus nearly one day is spent in completing these preliminary processes.

It takes nearly three hours to weave a big basket, 2½ hours for a medium basket and 1½ hours for a small basket. First, the bottom piece is woven to the required width and some hay is placed over it to give pressure. The sides are then woven by keeping the unfinished basket within the two thighs. For binding the edges two thick strips of bamboos are used, one on the outside and the other inside and they are tied firmly to the basket. In a day, nearly 3 big baskets (1 foot high and 1½ with strings made of bamboo strips. In a day, nearly 3 big baskets (1 foot × 1 foot) or 6 small baskets (¾ × ¾) can be woven by one person. On the whole 9 big baskets, or 12 medium baskets or 18 small baskets can be made out of three bamboos. Only plain varieties are made and no colours are used.

In the case of creeper baskets, both men and women go out into the estates and collect free of cost creepers which grow wild. It takes nearly three hours to collect one head-load of creepers and bring it home. Each creeper is first split into two and then dried in the sun for about two hours.

KASARAGOD FIRKA
BASKET MAKING INDUSTRY
AVERAGE PRODUCTION PER FAMILY UNIT PER ANNUM



There is some difference in the weaving of creeper baskets and bamboo baskets. In the case of creeper baskets, the bottom is very closely woven and no straw is placed at the bottom while weaving the sides as the creepers are sufficiently stiff. There is also no binding of the top edge, the creepers themselves being twisted at the edge. In the manufacture of both bamboo and creeper baskets, much time is lost in getting the raw materials. This is on account of the fact that the industry is unorganized and is in the hands of people with little resources.

10. *Production.*—The articles produced by the selected units consisted mainly of baskets made of bamboos and creepers. Occasionally, other articles like winnows, flower baskets, sieves, etc., were also made. The output of bamboo baskets per unit varied from 3 to 10 per day and that of creeper baskets from 2 to 8 per day depending on the number of workers available in the family, skill of the workers and number of work-days actually put in. The annual output of an average family was as follows :—

10.1. *Average production per family unit per annum.*

Type of product.	Number produced.	Value.
		RS.
1 Bamboo baskets	900	390
2 Creeper baskets	258	68
3 Miscellaneous articles—		
(a) Winnows	16	28
(b) Sieves	7	
(c) Flower baskets	17	
Total ..	1,198	486

The average total output per annum was 1,198 articles worth Rs. 486. Bamboo baskets were the principal articles produced, their value forming 81 per cent of the total.

The average annual output per worker was 300 bamboo baskets, 86 creeper baskets and 13.3 miscellaneous articles. The price of a bamboo basket was 5 annas for a small basket, 6 annas for a medium basket and 8 annas for a big basket and that of a creeper basket varied from 4 to 6 annas.

The baskets are chiefly of rough quality used for ordinary household and agricultural purposes. There was little of artistic work in evidence. It is said that “next to Buddhism, bamboo was the most valuable gift that India made to Japan. Now Japan grows more than a hundred varieties of bamboo. The uses of bamboo are almost numberless. From bamboo alone, the Japanese manufacture 1,400 articles in their home factories which number 14,000. India, the original home of bamboo, can easily turn bamboo into a profitable export industry if only we adopt one hundred and forty of the 1,400 beautiful articles of bamboo that Japan produces”.*

There is plenty of raw materials and a certain amount of inherited skill. But the industry is not organized, the workers are poor and move from place to place occasionally and there is no technical guidance for them with the result that this skilled work is paid worse than ordinary unskilled manual labour. The workers need technical guidance and many young men, if properly trained, can take to this industry and make it a thriving and prosperous one. An institution to give training to young students and others in the modern technique of basket-making is necessary in this land of bamboos.

11. *Estimated production for the firka.*—The annual output for the whole firka may be estimated at 39,600 bamboo baskets, 11,352 creeper baskets and 1,760 other articles with a total value of Rs. 21,400.

* Cottage Industries and Agriculture in Japan by Chaman Lal, pages 55, 66 and 67.

12. *Fluctuations in output.*—Basket-making being the chief means of livelihood of the families was carried on throughout the year. But the output of baskets was low in the months of August, September and October when the families were engaged in agricultural operations and high in the preceding three months when the demand for baskets was brisk. The monthly output of baskets is furnished in Appendix 128.

13. *Labour force.*—Employment was confined to members of the family only; the labour force of an average unit consisted of all its adult members, viz., 1·4 men and 1·6 women. The children also helped to a little extent in the work but they cannot be considered as whole-time workers.

An average unit worked for 153·5 days at bamboo basket-making, for 64·0 days at creeper basket-making and for 23·6 days at making other miscellaneous articles or for a total of 241·1 days. Assuming 295 days to be the maximum number of working days available in a year the industry provided employment for 81·7 per cent of the maximum. The workers were employed as agricultural labourers for part of the year.

14. *Cost of production.*—The following statement shows the approximate time taken for the various processes as well as the direct cost incurred in the production of each type of basket :—

14.1. *Time involved in the production of one basket and cost of raw materials per basket.*

Description.	Bamboo baskets.			Creeper baskets.		
	Big.	Medium.	Small.	Big.	Medium.	Small.
	(1)	(2)	(3)	(4)	(5)	(6)
	HRS. MTS.	HRS. MTS.	HRS. MTS.	HRS. MTS.	HRS. MTS.	HRS. MTS.
1 Time taken for fetching raw materials.	0 30	0 25	0 16	2 0	1 20	1 0
2 Cutting raw materials into pieces	0 30	0 20	0 13	2 30	1 40	1 15
3 Weaving the basket	3 0	2 15	1 30	4 30	3 0	2 15
4 Marketing the basket	1 0	0 45	0 30	1 0	0 40	0 30
5 Total time taken	5 0	3 45	2 29	10 0	6 40	5 0
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
6 Cost of raw materials purchased	0 2 8	0 2 0	0 1 0	..	..	..
7 Sale value of one basket	0 8 0	0 6 0	0 5 0	0 6 0	0 5 0	0 4 0

The only cost incurred by the industrial units are the cost of bamboos (as creepers are collected) and the cost of replacing knives. No transport charges occur as they carry the raw materials and finished products themselves. No wages are paid as no outsider is employed. The total annual costs incurred by an average unit was Rs. 157-10-0 towards purchase of bamboos and Rs. 3 towards the replacement of knives. As against this the sale value of the total output was Rs. 486. The income from the industry was thus Rs. 325-6-0 per family per annum, Rs. 108-7-0 per adult worker and Rs. 67-15-0 per capita. The income per worker per working day amounted to Re. 0-7-4. This does not compare favourably with the wages paid to agricultural labour locally which varied from Re. 1 to Re. 1-4-0 per day per man and Re. 0-12-0 to Re. 1-0-0 per woman nor even with the lower wages paid to Korava agricultural labour, viz., Re. 0-14-0 per man and Re. 0-10-0 per woman.

15. *Marketing.*—The bulk of the baskets and other products produced by the selected units were sold in the locality itself. This was particularly true of the basket-makers in Adoor I and II, Karadaka and Adur which are far away from urban centres. But the

basket-makers of Shribagalu and Muttathodi villages sell nearly 50 per cent of their products in the neighbouring town of Kasaragod. The following statement shows the quantity of local and outside sales of an average family per annum :—

15.1. *Quantity sold in local and outside markets per family unit per annum.*

Description of article.	Number sold locally.	Number sold outside the village.	Total.
(1)	(2)	(3)	(4)
1 Bamboo baskets	756	144	900
2 Creeper baskets	222	36	258
3 Winnows	13	3	16
4 Sieves	6	1	7
5 Flower baskets	13	4	17
Total	1,010	188	1,198

Local sales formed 85·1 per cent of the total.

16. *Co-operative endeavour.*—No attempt has so far been made to introduce co-operation in the industry in the firka.

17. *Income.*—Except the house in which they live, the families surveyed did not own any other income—yielding assets and the estimated income from houses was Rs. 3 per unit per annum. The only other source of income, supplementing the earnings from the industry, was agricultural labour. An adult worker engaged in this was paid Re. 0-12-0 per day on the average. The average number of days on which employment was secured in agriculture was 71 and including the number of days spent in basket-making, the total number of days in the year on which a unit was employed was 312·1.

The total annual income of an average family was Rs. 487-8-0 of which Rs. 325-6-0 or 66·8 per cent was derived from basket-making, Rs. 159-2-0 or 32·6 per cent from agricultural labour and Rs. 3 or 0·6 per cent from assets (house).

18. *Expenditure.*—The statement below shows the pattern of expenditure of the selected families :—

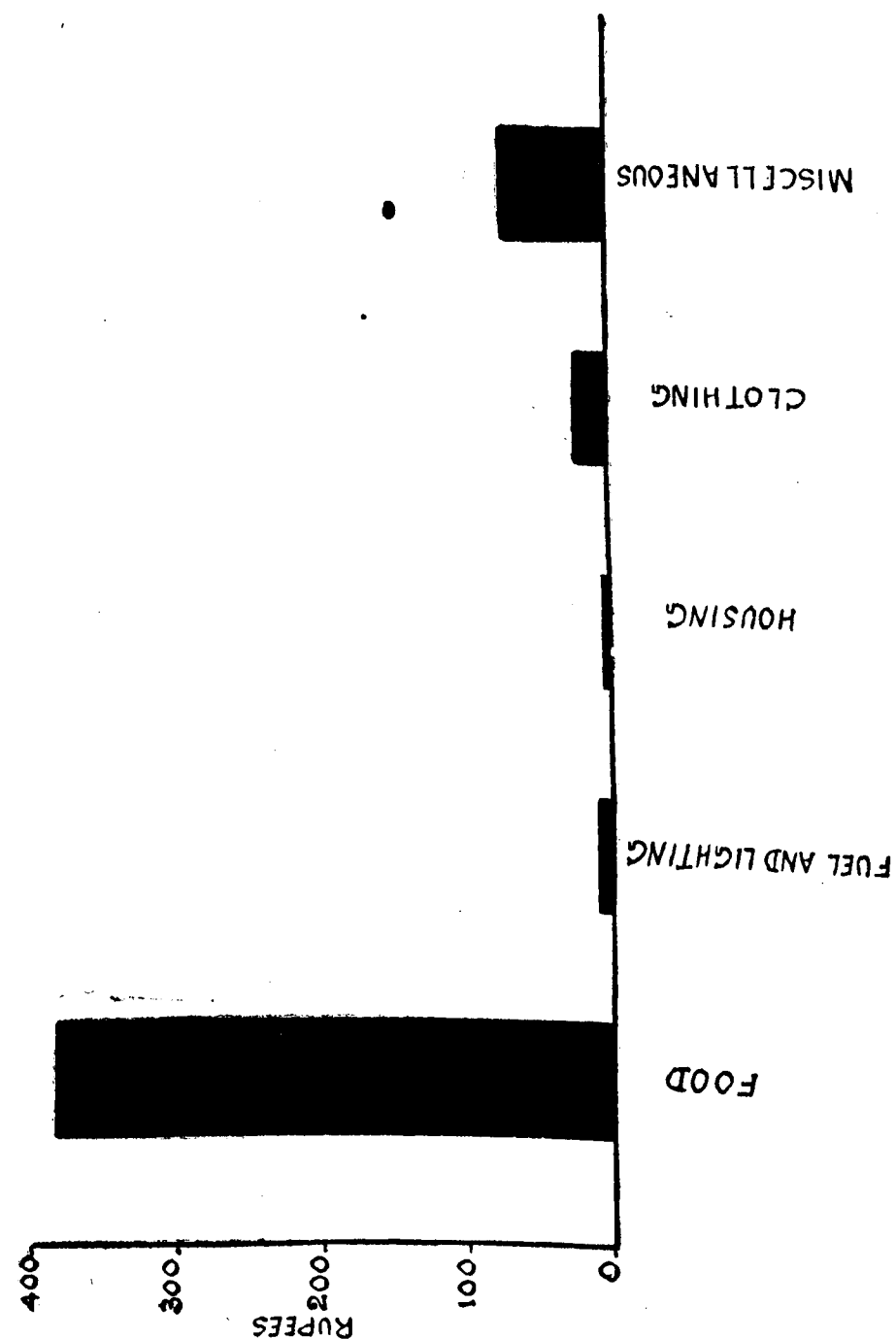
18.1. *Annual expenditure of an average family unit.*

Item.	Amount.	Percentage to total.
	RS. A. P.	
Food	382 13 0	77·7
Fuel and lighting	12 12 0	2·6
Housing	3 13 0	0·8
Clothing	22 6 0	4·5
Miscellaneous	71 2 0	14·4
Total	492 14 0	100·0

The average expenditure amounted to Rs. 492-14-0 against an average income of Rs. 487-8-0 leaving a small deficit of Rs. 4-11-0 per annum.

19. *Assets and liabilities.*—The only item of assets owned by an average unit was the house, the value of which was Rs. 44. None of the families was indebted to any considerable extent.

KASARAGOD FIRKA
BASKET MAKING INDUSTRY
ANNUAL EXPENDITURE OF AN AVERAGE FAMILY UNIT



SUMMARY.

20. Basket-making in Kasaragod firka was confined to 44 families belonging to the Korava tribe distributed in 9 villages of the firka. The number of families selected for the survey was 21. The industry was the main source of livelihood of the families supplemented by wages earned as agricultural labourers.

The size of an average family was 4.8 consisting of 3 workers and 1.8 dependents, all of whom were children. The industry was carried on in the homes of the workers.

The principal raw materials for basket-weaving are bamboos and creepers, the former being purchased from merchants or private estate-holders at an average price of Rs. 66-12-0 per 100 and the latter being collected from the forests and gardens. An average unit processed annually 219 bamboos purchased for Rs. 157-10-0 and 56.7 headloads of creepers estimated to be worth Rs. 43-10-0.

The only tools used were knives; an average unit owned three of these, costing Rs. 3. The knives require annual replacement.

The output consists in the main of bamboo baskets and baskets made of creepers. A few miscellaneous articles, such as winnows, sieves and flower baskets are also produced. The annual output of an average unit comprised 900 bamboo baskets valued at Rs. 390, 258 creeper baskets valued at Rs. 68 and 40 miscellaneous articles valued at Rs. 28.

The labour force of an average unit consisted of 1.4 men and 1.6 women. The industry provided employment for 241.1 days in the year or 81.7 per cent of the level of full employment.

The only costs incurred in the industrial process are the cost of bamboos and that of replacement of equipment. This amounted to Rs. 160-10-0 per unit per annum. The total sale value of annual output was Rs. 486 leaving an income of Rs. 325-6-0 per unit and Rs. 67-15-0 per capita.

The bulk of the products (85.1 per cent) was sold locally and the remainder in urban centres. The annual income of an average family was Rs. 487-8-0 of which income from the industry formed 66.8 per cent and income from agricultural labour 32.6 per cent. The annual expenditure amounted to Rs. 492-13-0. The families had little assets besides the thatched huts in which they lived valued at Rs. 44 per unit and none was indebted.

RECOMMENDATIONS.

1. There should be a central organization to look after the production and marketing of the goods. A co-operative society on the lines of the one formed at Vellore for the Korava basket-makers should be formed with headquarters at Kasaragod and branch depots at the important villages.

The workers in the other villages should be linked to the nearest big village. The co-operative society which will be composed mainly of the Koravas will have to be financed entirely by the Government as the people are too poor even to subscribe the share capital. This should be collected later on from the wages to be paid to the workers. It would be useful to admit a few outsiders who are well-wishers of the community as members of the society so that local initiative, talent and goodwill can be secured in the running of the society and the depots. The society should supply the workers with raw materials like bamboos and creepers and also the tools required by them, purchase the finished products

outright and dispose of them either locally through the branch depots or through the main office at Kasaragod. It would require a working capital of about Rs. 5,000 for the purchase of raw materials and payment of wages to all the 44 families. This will be equivalent to the value of about three months' output for the firka.

2. Basket making is now even less remunerative than agricultural or other ordinary labour. It is being continued only because of the force of tradition and there is no alternative avenue of employment available. To make the industry more remunerative, the cost of production should be reduced. This is possible if the workers are supplied with their requirements of bamboos free of cost or at a nominal price. Their dependence on the local merchant, contractor or estate owner should be removed. The forest regulations governing the removal of bamboos only for bona fide domestic purposes should be relaxed in favour of the co-operative society which should be enabled to get its supply from the reserve forest without any impediment and for a nominal price.

3. So long as the workers are producing crude and rough articles required for daily use, they will have only a limited market and it will not be possible to raise their income beyond the present low level to any appreciable degree. A multitude of articles described as "artistic utilities" can be made from bamboos. As it will not be possible to give training to the Korava men and women in any technical school, ocular demonstration should be the best means of teaching the latest technique and methods of production. A sample of the more important of the artistic utilities for which there is good demand within the district and outside should be made available to them in the first instance to widen their vision and later on, when their curiosity is roused, they should be encouraged to produce them. If they require special instruction, it should be imparted to them by peripatetic parties.

4. It should be the primary aim of the co-operative society to find markets for the goods manufactured. The society should not only exploit the existing demand but should attempt to create new demand for its superior products by adequate propaganda. This is an important aspect which cannot be ignored as many a society started under favourable auspices has come to grief mainly because it is unable to market its goods in competition with other manufacturers.

5. Although the Koravas have permanent houses in some village or other, they do not make it a point to stay there permanently but often move from place to place plying their hereditary craft of basket making under the shade of trees or any other shelter. This habit is a handicap for the progress of the industry which can be removed only by giving them a stake in the village. Being backward communities, Government should allot to each family reasonable extent of land for building their houses and also for carrying on some cultivation. As at Vellore, there should be scope for carrying on supplementary occupations like poultry keeping, dairy, etc.

6. The children of the community should be given special facilities for education and training in their hereditary craft which should be taught sufficiently early in their career to make them interested in it.

7. In the three high schools at Kasaragod, basket making should be made one of the important crafts of study so that children of other communities can also take to it.

8. Under the Indian Constitution, the welfare of the scheduled castes and tribes is a special responsibility cast on the Union Government. The expenses to be incurred in connexion with the organization of the Korava community can be made a legitimate charge on the funds earmarked for the amelioration and welfare of backward classes and tribes.

COTTON CAP MAKING INDUSTRY OF KASARAGOD FIRKA.

Introduction.—The preliminary survey of the cottage industries in Kasaragod firka in South Kanara district revealed that cotton cap making is one of the most important cottage industries in the centre. It was taken up in lieu of the umbrella manufacturing industry as originally intended as this had become almost extinct. The cap making industry is concentrated in Talangere, a village included in Kasaragod panchayat, and situated about a mile from Kasaragod town. The village owes its prosperity, in a large measure, to this industry. Out of about 800 families in the village, nearly 450 or 56·3 per cent depend on it for their livelihood. Besides, it forms a subsidiary occupation to a large number of Muslim women in the neighbouring coastal villages in the taluk. The cap industry is also important from the export point of view. These caps are very popular with the Muslims in Africa and Middle East and there is a steady export to such centres as Aden, Zanzibar and Dar-es-Salam, the value of the export in 1951-52 (August to September) being about Rs. 6 lakhs.

The cap making industry is of comparatively recent origin. According to local tradition, it owes its existence to an accidental meeting in 1920 between one of the Talangere merchants and a Zanzibar Cotton Cap Merchant at Bombay. A small export trade in caps was then going on through Bombay between India and Africa. As a result of this meeting, the Talangere merchant manufactured some caps locally and sent them to an Agent at Bombay for export to Zanzibar. As these caps were superior to Bombay makes and also cheaper, they grew in popularity. Within two or three years, nearly 20 persons had taken to the industry. In 1924, as some of them came into contact with exporters at Kozhikode, the export trade was diverted from Bombay to that Centre. 1927 witnessed the beginning of direct export trade from Kasaragod. The industry seems to have made good progress up to 1939. With the outbreak of war, there was a cessation of exports which continued till 1942 when a small consignment was sent through Bombay. Although direct export was revived by 1944, the industry was handicapped by the control over cloth and yarn. The producers, numbering about 75, formed themselves into a union to get controlled cloth and yarn. A new pattern of cap known as "Picture" cap made of superior cloth and art-silk yarn with beautiful designs was evolved and it soon found favour with the foreign customers. But with the relaxation of control, competition became keen and the industry fell into a parlous state. At the time of the survey, there was none of that *esprit de corps* which existed between 1944 and 1948.

2. *Organization of the industry.*—The seventy-five manufacturers can be broadly grouped into two classes, viz., (1) Exporters-cum-manufacturers and (2) Non-exporting manufacturers. Each of these can be subdivided into (a) family units and (b) employer units, i.e., family units employing outside labour. The first class is relic of the system of export control. Out of 75 units, only 23 or 30·7 per cent were exporters; the others had to sell their goods only to these 23 persons. The second classification into family units and employer units is only one of degree. In view of the complicated nature of the work, and the large number of processes involved, outside labour is engaged both by the family units and employer units for carrying out certain operations; but in the case of operations carried on in the homes of the manufacturers, the family units rely solely on the labour of the members of the families while the employer units engage outside labour on a wage basis even for such purposes.

The statement below shows the classification of the 75 industrial units :—

2.1. *Classification of the industrial units.*

Type of unit.	Family unit.	Employer unit.	Total.
1 Exporters-cum-manufacturers	4	19	23
2 Non-exporting manufacturers	39	13	52
	—	—	—
Total ..	43	32	75
	—	—	—

There were on the whole 43 family units and 32 employer units. Of the exporters, employer units formed 82·6 per cent and family units 17·4 per cent.

In addition to these two broad categories, there were also a few workers who owned their own sewing machines and worked in their own homes on the raw materials supplied by the manufacturers. There was also a class of intermediaries called Agents who in return for a commission, took the unfinished caps from the manufacturers, distributed them among the workers in the cottages in the coastal villages and returned the finished caps.

3. *Selection of sample.*—On the whole, 45 units out of 75 or 60 per cent were selected for detailed study on the principle of random sampling. It included 13 exporters and 32 non-exporters. Out of 43 family units, 27 units or 62·8 per cent and out of 32 employer units, 18 or 56·3 per cent were investigated.

4. *Composition of the family.*—A statement showing the composition of the families of an average family unit and employer unit is given in Appendix 12·9. The average size of a family was 6·3 comprising 2·2 men, 1·7 women, 1·1 boy and 1·3 girl of whom 3·2 or 50·5 per cent were workers and 3·1 or 49·5 per cent dependents. Out of the workers, 63·6 per cent were men, 28·7 per cent women, 1·4 per cent boys and 6·3 per cent girls.

There were some significant variations in the composition of the families among the family units and employer units. An average family unit consisted of 6·5 persons as against 6 persons in an employer unit. The working members formed 62·9 per cent in the case of the former against 30·6 per cent in the case of the latter. Only a few children or 10·4 per cent of the total were employed in the industry. In the case of the family units, 18·2 per cent of the children were employed as against 2 per cent in the case of the employer units. The same distinctive feature characterizes the employment of women. Whereas 68·6 per cent of the women in the family units were workers, the corresponding percentage for employer units was only 22·2 per cent. All these variations are indicators of the higher economic status of the employer units.

5. *Housing.*—All the units had their own houses which were tiled buildings and the work places were generally located in the houses. Five families out of the 45 surveyed, carried on the work in rented premises. The men work in the hall or verandas of the houses which are usually provided with raised parapets. The women, who observe gosha,

work in the inner apartments. The average area of the work place was 73 square feet as against 75 square feet for a family unit and 71 square feet for an employer unit. The statement below shows the average rent of the industrial portion :—

5.1. *Rent per industrial unit per annum.*

Description.	Family unit.	Employer unit.	Average for all units.
(1)	(2)	(3)	(4)
	RS. A. P.	RS. A. P.	RS. A. P.
Rent paid	6 10 8	19 1 8	11 10 3
Estimated rent	44 10 8	45 5 4	44 14 11
Repairs and maintenance	3 0 0	5 0 0	4 0 0
Total ..	54 5 4	69 7 0	60 9 2

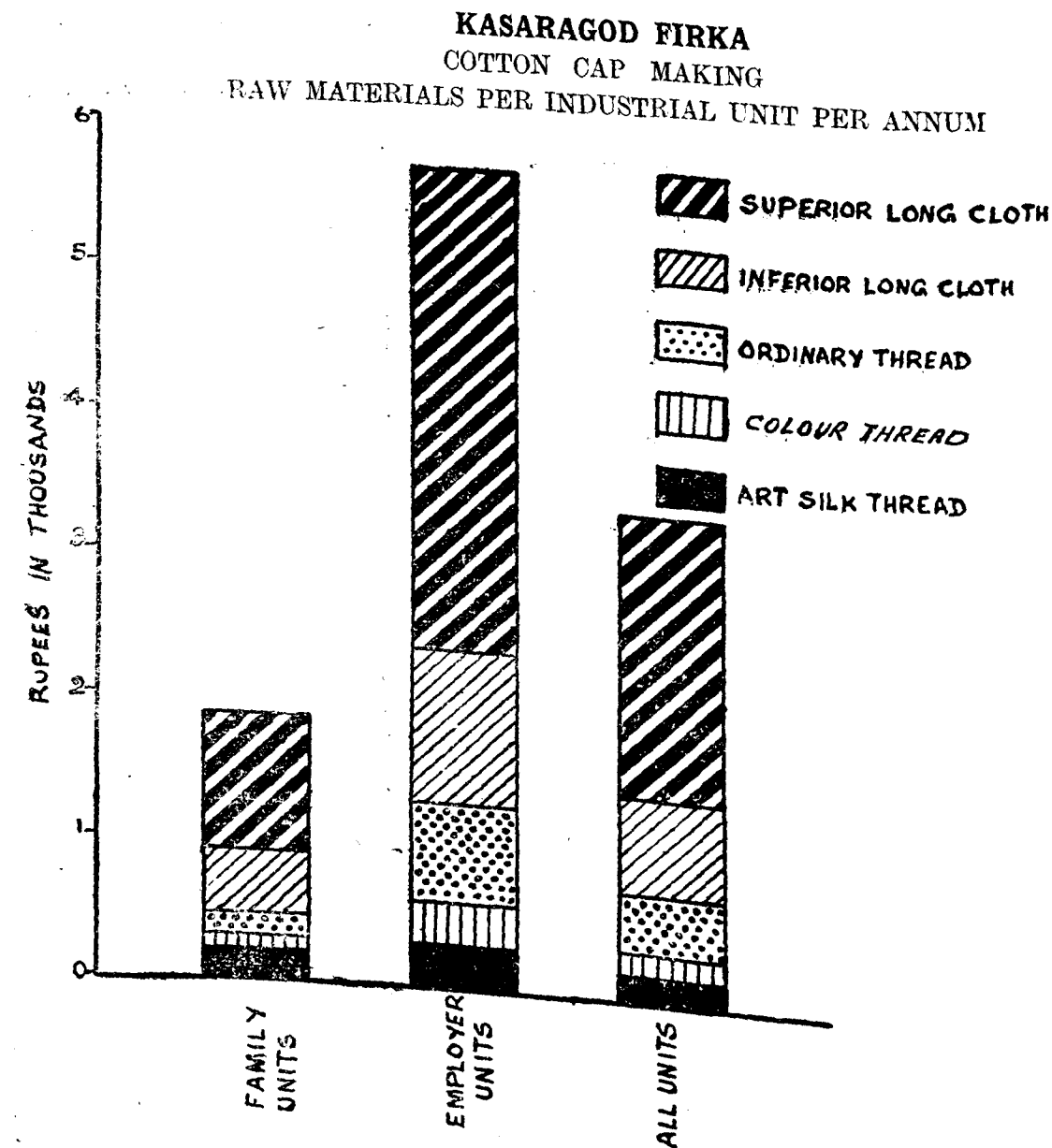
6. *Types of articles manufactured.*—Two kinds of cotton caps are manufactured, one of ordinary variety and the other known as “Picture” caps. The former is made of inferior cotton cloth with coloured cotton thread for stitching and contains plain designs. It involves making and stitching of many hundreds of holes. The “Picture” cap, as its name suggests, is made of finer cloth, with art silk thread for stitching and involves elaborate designs; the more popular patterns are peacocks, flowers, flower pots, etc. No holes are made in these caps as in the case of ordinary caps.

7. *Raw materials.*—The chief raw materials used in the industry are cloth and yarn. Generally two yards of superior long cloth, three yards of rough cloth, one-eighth lb. of ordinary thread and $\frac{1}{4}$ lb. of coloured thread are required for the production of a score of ordinary caps while three yards of superior long cloth, two yards of inferior cloth $\frac{1}{4}$ lb. of ordinary thread and $\frac{1}{4}$ lb. of art silk thread are necessary for the production of a score of “Picture” caps. While art silk thread is not used for ordinary caps, coloured thread is not used for picture caps. The table below shows the quantity and value of raw materials used by an average industrial unit during the year :—

7.1. *Raw materials per industrial unit per annum.*

Description.	Unit.	Family units.			Employer units.			All units.		Average price.	Percentage to total value.
		Quantity.	Value.	Percentage total.	Quantity.	Value.	Percentage total.	Quantity.	Value.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			RS.			RS.			RS.	RS. A. P.	
Superior long cloth	Yard.	822	974	52·8	2,876	3,312	58·4	1,564	1,909	1 3 6	56·5
Inferior long cloth	..	547	408	22·1	1,406	1,041	18·4	891	661	0 11 10	19·6
Total cloth ..		1,369	1,382	74·9	4,082	4,353	76·8	2,455	2,570	1 0 9	76·1
Ordinary thread	Lb.	68	209	11·3	232	686	12·1	133	400	3 0 0	11·8
Coloured thread	..	21	83	4·5	80	307	5·4	44	173	3 14 5	5·2
Art silk thread	..	25	172	9·3	45	327	5·7	33	234	7 1 10	6·9
Total yarn ..		114	464	25·1	357	1,320	23·2	210	807	3 15 3	23·9
Grand total value ..			1,846	100·0		5,673	100·0		3,377		100·0

The average value of raw materials consumed by an industrial unit in a year was Rs. 3,377. An average family unit consumed raw materials valued at Rs. 1,846 as against



Rs. 5,673 by an employer unit or nearly one-third of the latter. The value of raw materials consumed per worker in a family unit was Rs. 12-8-5 as compared to Rs. 51-9-2 in an employer unit. An average unit consumed in a year 2,455 yards of long cloth valued at Rs. 2,570 and 210 lb. of thread valued at Rs. 807.

In the case of family units as compared with employer units, the average consumption of superior long cloth was 822 yards against 2,676 yards, that of inferior cloth 547 yards against 1,406 yards, that of ordinary thread 68 lb. against 232 lb., that of coloured thread 21 lb. against 80 lb. and that of art silk thread 25 lb. against 45 lb.

In the case of family units, the value of superior long cloth formed 52.8 per cent, inferior cloth 22.1 per cent ordinary thread 11.3 per cent art silk thread 4.5 per cent and coloured thread 9.3 per cent, of the total cost while in the case of employer units the value of superior long cloth formed 58.4 per cent, inferior cloth 18.4 per cent, ordinary thread 12.1 per cent, coloured thread 5.4 per cent and art-silk thread 5.7 per cent of the total cost. Thus the employer units spent a larger proportion on superior long cloth, ordinary thread and, coloured thread than the family units while they spent a smaller proportion on inferior cloth and art silk thread.

There was no difficulty, at the time of the enquiry, in regard to the purchase of the raw materials as the control over cloth and yarn had been removed. The manufacturers buy their requirements as and when necessary from Kasaragod shops and there is no question of transport charge. Nor is there any need to stock the raw materials as they can be obtained easily. The price of superior long cloth per yard varied from Re. 1-4-0 to Re. 1-6-0 and of inferior long cloth from Re. 0-11-0 to Re. 0-12-0, the price of ordinary thread was Rs. 3 per lb., of coloured thread Rs. 4 per lb., and of art silk thread Rs. 7 to Rs. 7-8-0 per lb. In view of the large quantities of cloth and yarn required by the industry, there are some possibilities of effecting economies by the adoption of bulk purchase system.

8. *Tools, machinery and equipment.*—The tools, machinery and equipment used in the industry are similar to those formed in any tailor shop. The statement below gives the details of the tools and machinery owned by an average unit :—

8.1. *Number and value of tools, machinery and equipment per industrial unit.*

Serial number.	Description.	Number.	Cost of a new machine.	Initial cost.	Replacement cost.	Present market value.	Annual maintenance charges.	Annual depreciation charges.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			RS.	RS.	RS.	RS.	RS.	RS.
1	Sewing machine.	3.4	300	500	660	386	158	20
2	Scissors ..	1.8	10	16	14	9	..	3
3	Others—Tables, stools, almirah, etc.	..	150	164	210	128	..	6
	Total ..	..	460	680	884	523	158	29

An average unit owned 3.4 sewing machines, 2 scissors and equipment consisting of tables, stools and almirahs whose initial cost was Rs. 680, replacement cost Rs. 884 and present value Rs. 523. The average annual maintenance charges amounted to Rs. 158 and depreciation charges Rs. 29.

The details for family units and employer units will be found in Appendix 130. The initial cost of investment of a family unit was Rs. 661 as against Rs. 711 of an employer unit. Compared to other cottage industries, the amount of investment on tools and machinery

by a unit in this industry is significantly large. The sewing machine is the costliest of the machines used in the industry forming 73.6 per cent of the total initial cost. The average number of sewing machines per unit was 3.4 as against 2.7 owned by a family unit and 4.4 by an employer unit. The maximum number of machines used by any unit was 8 and the minimum one. Almost all the machines were purchased second hand; as much as 17.5 per cent had served for more than 20 years, 53.9 per cent between 10 and 20 years and 28.6 per cent less than 10 years. Replacement of old machines by new ones had not kept pace with the progress of the industry. This is especially the case in respect of employer units where, since the wages are paid by the piece rate, the owners have not the same incentive to replace old machines by new ones as in the case of family units.

Another important tool was scissors, the average number per unit being 1.8. Other equipment consisted of tables, stools, almirahs, etc., found in tailoring establishments. In addition, each manufacturer had a set of card board designs for drawing pictures on the surface of the caps. Repairs to the tools and machines consist mainly of replacement of worn-out parts and maintaining them in proper working order by oiling them every day. The average expenses amounted to Rs. 158 per annum of which the cost of replacement of parts was Rs. 94 and cost of oiling Rs. 64. The average expenditure by a family unit was Rs. 122 against Rs. 212 by an employer unit. The average consumption of coconut oil per unit amounted to 1.8 tins costing Rs. 51 and that of kerosene oil 2.2 tins costing Rs. 11. The consumption of coconut oil per annum per machine amounted to 0.5 tin and that of kerosene oil 0.7 tin.

The average cost of depreciation of tools for a family unit was Rs. 28 per annum, for an employer unit Rs. 30 and for the sample as a whole Rs. 29.

9. *Manufacturing processes.*—Many of the processes of manufacture are common to both ordinary caps and "Picture" caps. In the case of the ordinary caps, the first process is to cut the long cloth into strips. This is an important process which is usually attended for by the proprietor himself. Inferior cloth is used for the inner lining and superior cloth of superior cloth costing about Re. 1-5-0 per yard are required for the manufacture of a score of caps. Twenty strips measuring 21" × 8" are first cut from the inferior cloth and an equal number measuring 20" × 7" from the superior cloth. They form the sides of the cap. For the top, square pieces of 8" inferior cloth and 7" superior cloth are cut. Second process is drawing the design.

The second process is design drawing. This is done on the outer surface of fine cloth with the help of card-board designs of which each producer has a large number. The designs are rather simple things like flowers and fruits. This process also is done by the proprietor himself as it is vitally important in maintaining his reputation. The third process is joining the two varieties of cloth pieces and stitching along the designs with ordinary thread. The four sides will be stitched and then the two ends so as to form a cylindrical shape. The joining will also give stiffness to the cap. Similarly the top portion of the cap is stiffened by joining the rough and fine bits. At this stage, the top portion and the side portion are kept separate. These two items of work, viz., joining the two varieties of cloth and stitching over the designs are done with the help of sewing machines either by the family members or workers paid on piece-rate. Sewing machines are, in the latter case, supplied by the proprietors. The fourth process is making button holes for of holes in a cap. This monotonous work is not done in the houses of the manufacturers. There are agents who take the unfinished caps, distribute them among the manufacturers, in the various villages and collect and return them to the manufacturers. The women make very small holes with the help of needles and stitch round them with ordinary yarn. The holes do not follow any definite pattern but are found all over the cap in all places left

unstitched. The fifth process is to stitch the same holes with coloured yarn supplied by the manufacturers. This work is also entrusted to agents who get it done through Muslim women in their homes. This work is important next only to design drawing. Though not calling for much skill, it requires considerable patience. It is more elaborate than the stitching with ordinary yarn. These two processes are the most monotonous and least remunerative. Almost all the poor Muslim women in the coastal villages in the taluk are engaged in them. The next process is joining the side portion and the upper portion of the cap. This is done with the help of sewing machine. The seventh process is washing the caps with soap and applying starch. Soap and starch are supplied by the manufacturers. The next process is polishing them with conch shell to make them look brighter. The last process is pressing the caps. As the pressing machine is costly, none of the manufacturers possesses it. They get the caps pressed by paying a charge of 2 annas per score.

The processes connected with picture caps are less numerous and complicated; they do not involve the most tedious process of making hundreds of holes and stitching each one of them as in the case of ordinary caps. But designs here are more elaborate, the common patterns being peacocks, flowers and flower pots. But as these are drawn with the help of designs made of card boards, no special skill is required. Another difference is that art-silk thread is used for stitching over the designs instead of coloured thread. A third peculiarity is that for making a score of picture caps, 3 yards of fine cloth 45" wide and 2 yards of inferior cloth 54" wide are used instead of 2 yards of the former and 3 yards of the latter as in the case of ordinary caps. All these make the "Picture" caps more costly.

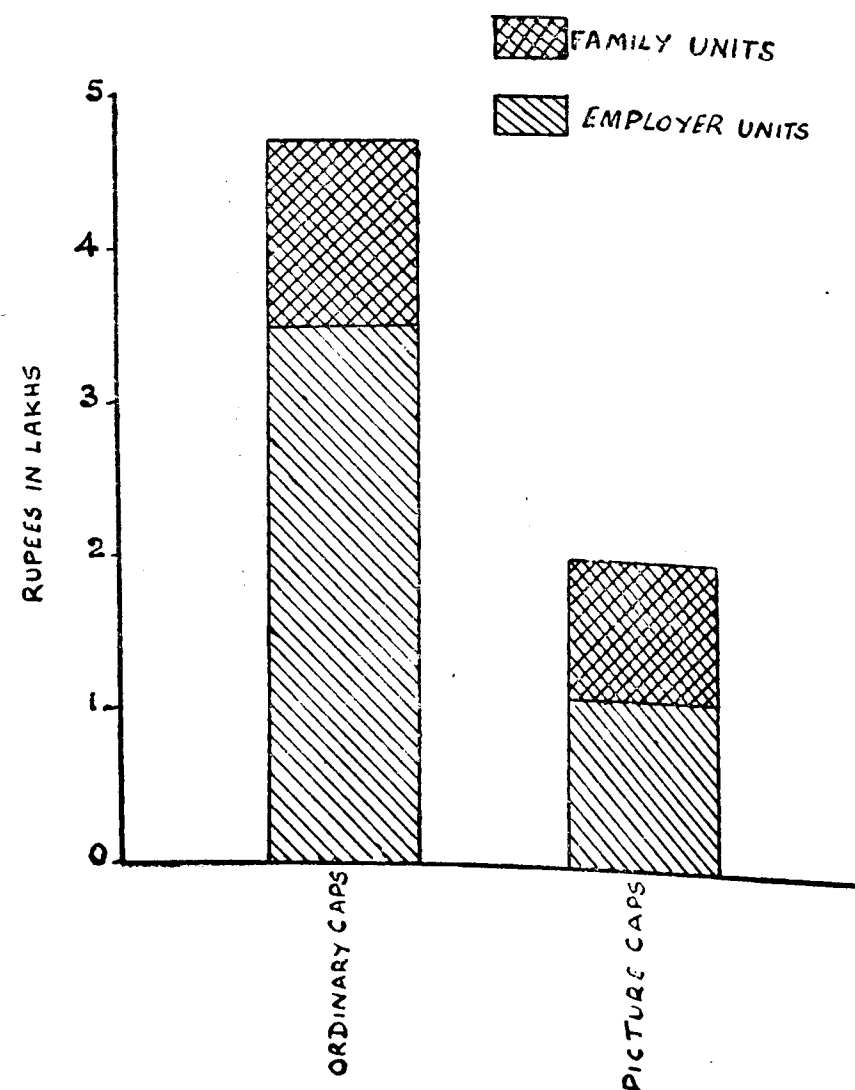
10. *Production.*—The statement below gives the average annual production per industrial unit :—

10.1. *Production of caps per industrial unit per annum.*

Description.	Ordinary caps.			Picture caps.			Total.		
	Quantity (scores).	Value per score.	Total value.	Quantity (scores).	Value per score.	Total value.	Quantity (scores).	Value per score.	Total value.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		RS. A. P.	RS.		RS. A. P.	RS.		RS. A. P.	RS.
1 Family units.	177.4	15 7 2	2,740	103	19 9 0	2,016	280.4	16 15 2	4,756
2 Employer units.	689.7	15 13 7	10,930	167.9	20 10 9	3,471	857.6	16 12 9	14,401
Average for all units.	382.2	15 11 10	6,016	129	20 2 2	2,598	511.2	16 13 8	8,614

Each family unit produced 280.4 scores of caps valued at Rs. 4,756 as against 857.6 scores of caps valued at Rs. 14,401, by an employer unit. Both in regard to quantity and value, production of an employer unit was nearly three times that of a family unit. This wide variation in the daily output of the units is the result of several factors such as the number of persons employed, the number of sewing machines and the efficiency of the workers. The adult labour force in a family unit was 3.9 and in an employer unit (including outside labour) 5.3. Production per adult worker in a family unit was 71.9 scores of caps valued at Rs. 1,219 per annum as against 162 scores of caps valued at Rs. 2,717 in an employer unit. As there was some variation in the level of employment, productivity per adult worker per working day would be a better criterion of efficiency. Productivity per adult worker per working day was 0.3 score of caps valued at Rs. 4-15-0 in the case of a family unit compared with 0.6 score of caps valued at Rs. 9-14-0 in an employer unit. The employer units were definitely more efficient than the family units. The average

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annual production per unit for the sample as a whole worked out to 511.2 scores of caps valued at Rs. 8,614, per adult worker 113.5 scores of caps valued at Rs. 1,914 and per adult worker per working day 0.4 score of caps valued at Rs. 7-6-0.

Another method of assessing the efficiency in production would be by calculating the productivity per sewing machine in the case of the two types of units. The annual production per machine in the case of family units was 104 scores of caps valued at Rs. 1,761 as against 195 scores of caps valued at Rs. 3,273 in the case of employer units. Production per machine per working day was 0.4 score of caps valued at Rs. 7 in the case of a family unit as compared with 0.7 score of caps valued at Rs. 12 in the case of an employer unit. On the above basis also the employer unit seems to be more efficient. Taking the sample as a whole, annual production per machine was 150 scores of caps valued at Rs. 2,534 and per machine per working day 0.6 score of caps valued at Rs. 10.

The statement below shows in one view the relative efficiency in output of the different types of units :—

10.2. Relative efficiency in output.

Type of industrial unit.	Production per adult worker per working day.		Production per machine per working day.	
	Quantity score.	Value.	Quantity score.	Value.
	(2)	(3)	(4)	(5)
(1)		RS. A. P.		RS.
1 Family unit	0.3	4 15 0	0.4	7
2 Employer unit	0.6	9 14 0	0.7	12
3 Average for all units	0.4	7 6 0	0.6	10

The pattern of production by the two types of units can be seen from the table below :—

10.3. Pattern of production per industrial unit per annum.

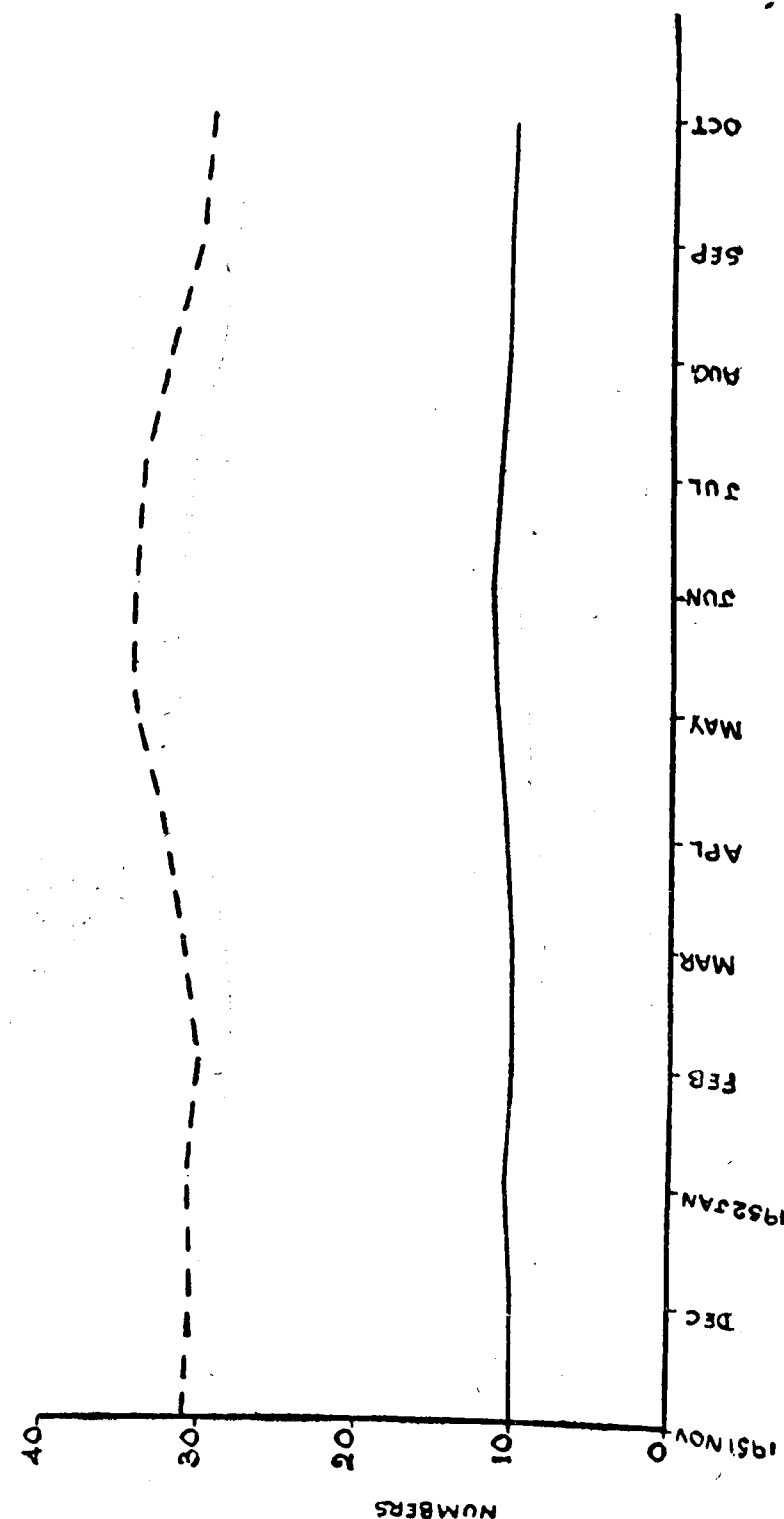
Type of industrial unit.	Quantity of caps.			Value of caps.		
	Ordinary caps percentage.	Picture caps percentage.	Total percentage.	Ordinary caps percentage.	Picture caps percentage.	Total percentage.
	(2)	(3)	(4)	(5)	(6)	(7)
1 Family unit	63.3	26.7	100.0	57.6	42.4	100.0
2 Employer unit	80.4	19.6	100.0	71.0	29.0	100.0
Average for all units	74.8	25.2	100.0	69.8	30.2	100.0

Out of the total production, the production of ordinary caps formed 63.3 per cent of the quantity and 57.6 per cent of the value in the case of family units against 80.4 per cent of the quantity and 71.0 per cent of the value in the case of employer units. The family units manufactured a larger percentage of picture caps while the employer units a larger percentage of ordinary caps. For the sample as a whole, the average production of ordinary caps was 74.8 per cent of the quantity and 69.8 per cent of the value as against 25.2 per cent of the quantity and 30.2 per cent of the value in the case of picture caps.

The selling price of ordinary caps varied from Rs. 14 to Rs. 18 per score in the case of family units and from Rs. 14 to Rs. 20 per score in the case of employer units. The selling price of picture caps varied from Rs. 18 to Rs. 20 in the case of family units and from Rs. 18 to Rs. 25 in the case of employer units. Thus the employer units were able to command

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better price than family units. The average selling price of ordinary caps was Rs. 15-7-2 in the case of family units as against Rs. 15-13-7 in the case of employer units while that of picture caps was Rs. 19-9-0 in the former case as against Rs. 20-10-9 in the latter case.

11. *Estimated production for the firka.*—On the above basis, the production for the entire firka may be estimated as follows :—

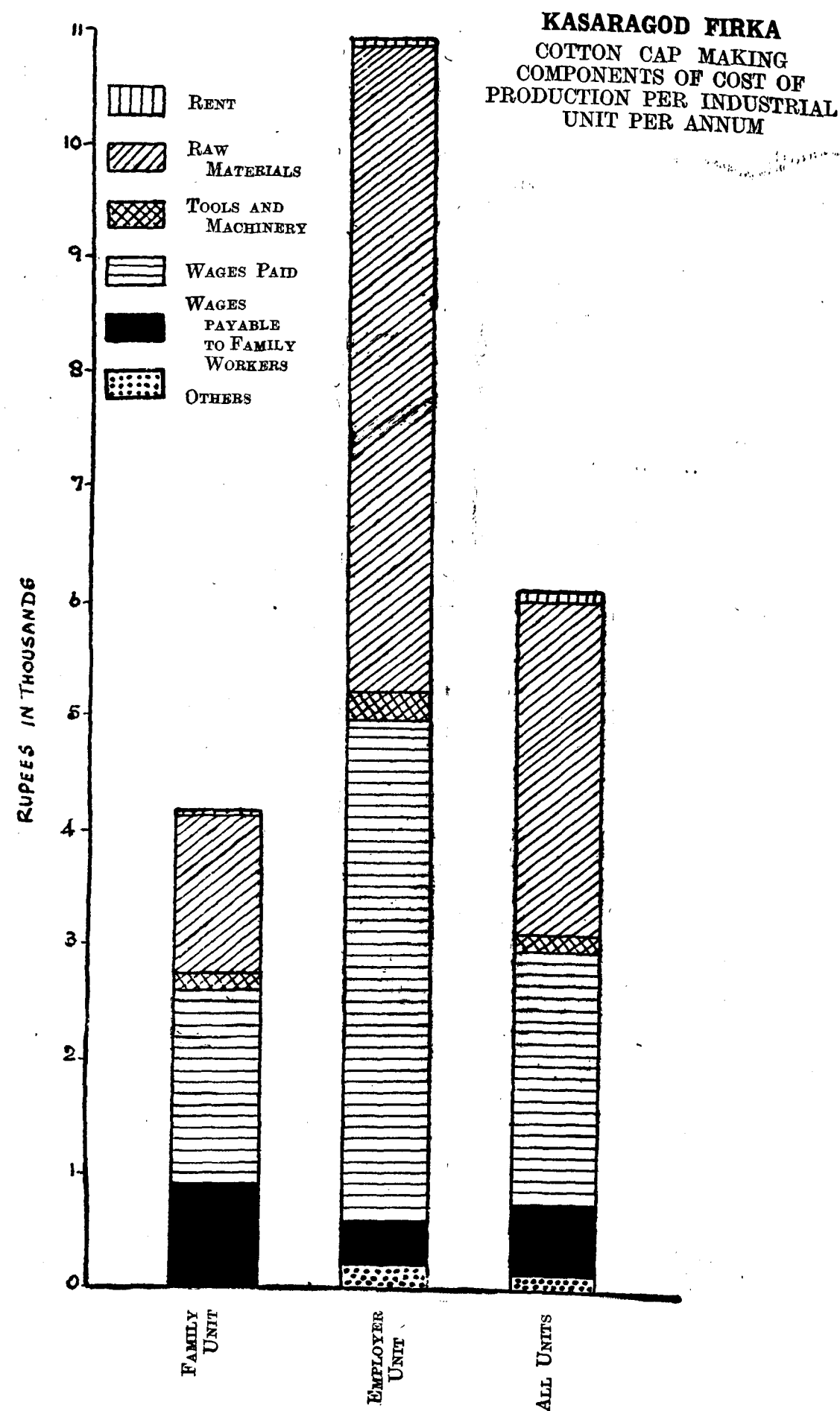
Description.	Ordinary caps.		Picture caps.		Total.	
	Quantity scores.	Value.	Quantity scores.	Value.	Quantity scores.	Value.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
		RS.		RS.		RS.
Family units	7,628	1,17,820	4,429	86,688	12,057	2,04,508
Employer units	22,070	3,49,760	5,373	1,11,072	27,443	4,60,832
Total	29,698	4,67,580	9,802	1,97,760	39,500	6,65,340

The total estimated production was 39,500 scores of caps valued at Rs. 6.7 lakhs.

12. *Fluctuations in output.*—There is only slight fluctuation in the monthly production of ordinary and picture caps. A statement showing the variations in output is given in Appendix 131. The average monthly output by a unit of ordinary caps was 31.9 scores and of picture caps 10.8 scores. Output of ordinary caps varied from 29.8 scores in February to 34.4 scores in June. It showed an upward trend from April to July and declined from August with a slight spurt in November. The production of picture caps rose gradually from December and attained its peak in June. The production of picture caps showed a more gradual rise and fall than that of ordinary caps, although the busy season for both coincided.

13. *Labour force and employment potential.*—The average number of workers in a family unit—vide Appendix 129 was 4.1 made up of 2.4 men, 1.3 women, 0.1 boys and 0.3 girls. On the other hand the average number of workers belonging to the family in an employer unit was only 1.8 comprising 1.4 men, 0.3 woman and 0.1 girls. Besides family labour, an average employer unit engaged 4.3 persons from outside consisting of 2.6 men, 0.1 woman and 1.6 boys. Among the employer units, 22.2 per cent employed only one outsider, 22.2 per cent employed two to three persons, 33.4 per cent employed four to six persons and the remaining 22.2 per cent employed seven to eight persons each. This does not of course take into account the large number of women in the coastal villages who earn a small amount by making holes in the caps and stitching them with ordinary and coloured thread. For the sample as a whole, the average number of workers was 4.9 made up of 3.2 family members and 1.7 outsiders. It consisted of 3.1 men, 0.9 woman, 0.7 boy and 0.2 girl.

Assuming that a woman's work is equal to that of a man and a child's half that of an adult, the total adult labour force of a family unit was 3.9 against 5.3 for an employer unit and 4.5 for the sample as a whole.



The statement below shows in one view the average number of workers per unit and the average number of days they were employed :—

13.1. *Labour force and level of employment in the industry.*

Description.	Number of workers.			Number of days employed.		
	Family members.	Outsiders.	Total.	Adult labour.	Ordinary caps.	Picture caps.
Family unit	4.1	..	4.1	3.9	102	145
Employer unit	1.8	4.3	6.1	5.3	147	128
Average for the sample ..	3.2	1.7	4.9	4.5	120	138

A larger proportion of the members of the family was employed in the industry in an average family unit than in an employer unit. Judged by the number of people employed and the number of days they were able to get employment, the employer units were the more efficient.

14. *Wages.*—As already stated, there are a number of processes connected with the industry and the cap passes through several hands before it takes its final shape. It will not be possible to carry out all the operations in one and the same family especially in the case of ordinary caps which involve making hundreds of holes and stitching them. While labour is employed by all the units, the difference between the family and employer units lies in the fact that while the latter employ outside labour within their own premises for certain items of work, the former carry out those items of work also by the labour of the family members. Family units generally attend to all the operations connected with the picture caps and most of the operations connected with the ordinary caps except making holes and stitching them with coloured yarn. In the case of employer units, who belong to a more prosperous class, the proprietor generally attends to cutting the cloth and drawing designs on them while all other operations are attended to by outside labour.

A statement showing the rates of wages paid or payable for each process of work and the time taken is given in Appendix 132. The wages for making a score of ordinary caps amounted to Rs. 6-2-0 as against Rs. 6-6-0 for a score of picture caps. But the time taken for making a score of the former variety is nearly 38 days against 6 days in the case of the latter. Of the total wages for ordinary caps, wages for making and stitching the holes absorbed 62.2 per cent. This process is usually allotted to the unorganized outside labour which is practically sweated. This requires rectification by suitable legislation prescribing minimum rates for such work. In the case of picture caps, nearly 65 per cent is taken up by stitching with artistic thread and the family units do this work themselves.

The following statement shows the rates of wages payable and paid by each type of unit :—

14.1. *Wages for cap making per industrial unit per annum.*

Description.	Ordinary caps.		Picture caps.		Total.		Balances available for family worker.
	Total wages payable.	Wages paid to outsiders.	Total wages payable.	Wages paid to outsiders.	Payable.	Paid to outside labour.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Family unit	1,042	693	552	23	1,594	716	878
Employer unit	2,934	3,676	811	693	4,745	4,369	376
Average for all units ..	2,199	1,886	655	291	2,854	2,177	677

The average wage payable to a family unit was Rs. 1,594 as against Rs. 4,745 to an employer unit and Rs. 2,854 for the sample as a whole. The family unit paid to outside labour a sum of Rs. 716 as wage or 44.9 per cent of the total while an employer unit paid to outside labour Rs. 4,369 or 92 per cent. The wage paid to outside labour for the sample as a whole was 78.6 per cent of the total wages payable.

In other words the average wage received by a family unit was Rs. 878, by an employer unit Rs. 376 and by an average unit in the sample Rs. 677. Distributed among the adult equivalents of workers, an adult worker in a family unit received Rs. 226 per annum as against Rs. 208 by one in an employer unit and Rs. 211 by one in the entire sample.

Calculated per adult worker per working day, the average wage received by an adult worker in a family unit for a working day was Re. 0-14-7 compared with Re. 0-13-2 in an employer unit and Re. 0-13-0 by one in the entire sample. Judged on the wage earned per day, the family unit got more remuneration. But as already pointed out, the employer units were making up for the less amount of income they got as wage by the larger scale of their operations and the consequential greater profit from the industry.

15. *Transport.*—No transport charges were incurred by the families. But they had to incur some expenses towards tax and packing charges. The average amount incurred by a family unit was Rs. 14, by an employer unit Rs. 206 and for the sample as a whole Rs. 91.

16. *Cost of production.*—A statement showing the cost of production of a score of ordinary cap and picture cap is given in Appendix 133.

The statement below shows the cost of production incurred by an average unit during the year under survey :—

16-1. *Components of cost of production and profit realized per industrial unit per annum.*

Components.	Family unit.	Percentage to total cost.	Employer unit.	Percentage to total cost.	All units.	Percentage to total cost.
	RS.		RS.		RS.	
1 Rent—						
(a) Paid	7	0.2	19	0.2	12	0.2
(b) Estimated	45	1.2	45	0.5	45	0.7
(c) Maintenance	3	0.1	5	..	4	0.1
2 Raw materials	1,846	50.5	5,673	51.9	3,377	51.3
3 Tools and machinery—						
(a) Maintenance	122	3.3	212	1.9	158	2.5
(b) Depreciation	28	0.8	30	0.3	29	0.4
4 Wages—						
(a) Paid	716	19.5	4,369	40.0	2,177	33.1
(b) Payable to family workers.	878	24.0	376	3.4	677	10.3
5 Others—Tax, etc.	14	0.4	206	1.8	91	1.4
Total	3,659	100.0	10,935	100.0	6,570	100.0
Total sale value	4,756	..	14,400	..	8,614	..
Gross profit	1,097	27	3,465	31.7	2,044	31.1

Raw materials and wages constitute the two major items in the cost of production forming 51.3 per cent and 43.4 per cent respectively of the total for an average unit. The pattern of cost structure is almost the same for both types of units except in the matter

of wages paid and payable. In the case of a family unit, wages paid formed 19.5 per cent of the total cost against 40 per cent in the case of an employer unit; the percentages of wages payable for the two types of units were 24.0 per cent and 3.4 per cent respectively.

The cost of production of a score caps in the case of a family unit amounted to Rs. 13-0-8 compared with Rs. 12-12-0 in the case of an employer unit and Rs. 12-13-7 in the case of an average unit for the entire sample. Judged on the basis of cost of production per unit of output, an employer unit may be said to be the more efficient type of unit.

The following table shows the relative cost of manufacture by the two types of industrial units :—

16-2. *Relative cost of manufacture.*

	Family unit.	Employer unit.
1 Raw materials (taken as 100) ..	100	100
2 Wages	86.3	83.6
3 Other incidental charges	11.7	9.0
Total cost ..	198.0	192.6

It will be seen from the above that the employer unit is the more economical of the two.

17. *Profit and loss.*—The gross profit amounted to Rs. 1,097 or 27.1 per cent of the cost for a family unit and Rs. 3,465 or 31.7 per cent for an employer unit and Rs. 2,044 or 31.1 per cent for the entire sample. Profit per score of caps was Rs. 3-14-6 and Rs. 4-0-8 respectively for the two types of units and Rs. 4 for the sample as a whole.

18. *Capital.*—Investment in the industry consisted of buildings, machines and working capital. The statement below shows the amount of investment under these different categories :—

18-1. *Investment per industrial unit per annum.*

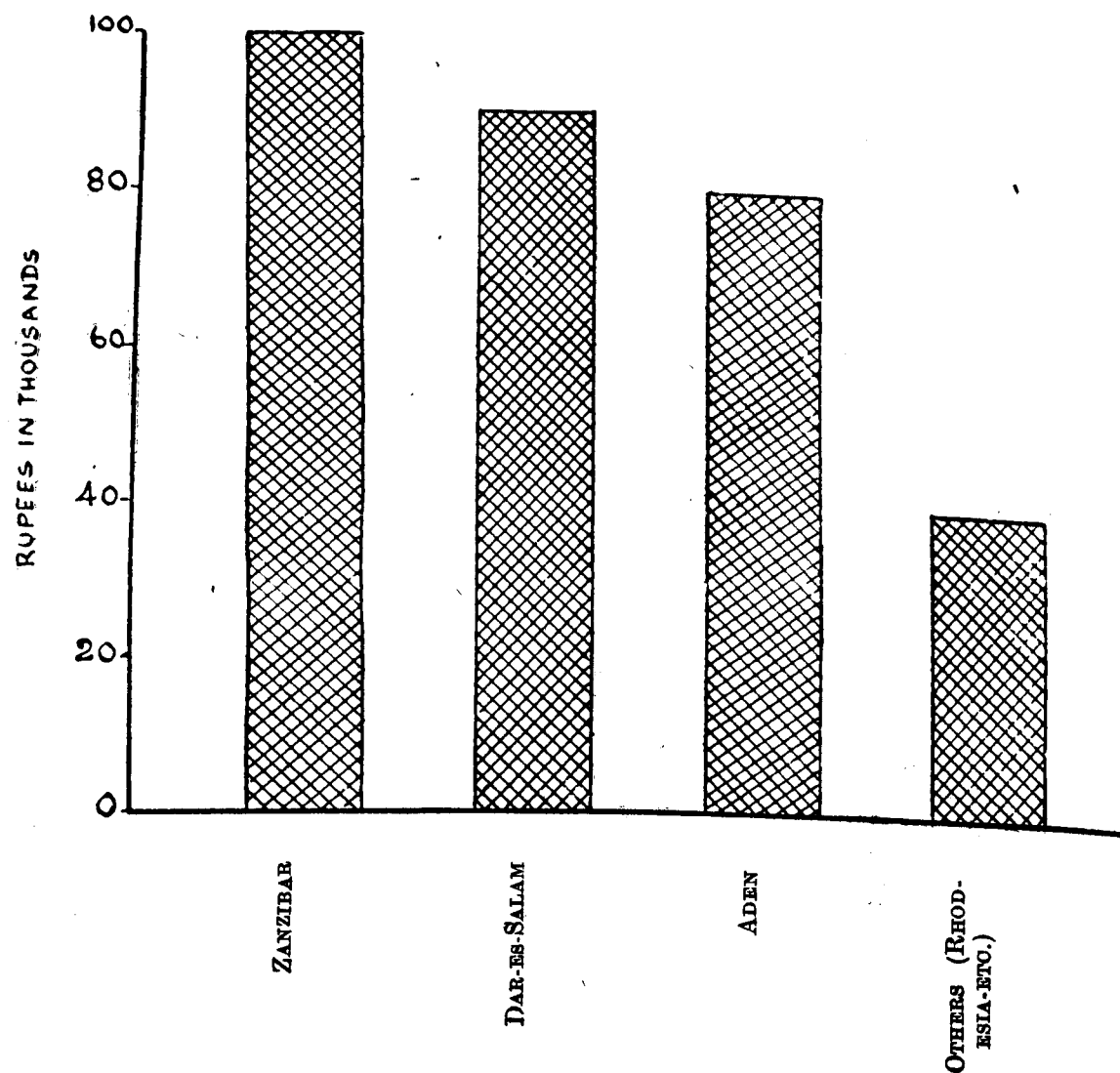
Description.	Family unit.		Employer unit.		Average for all units.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	RS.		RS.		RS.	
1 Buildings*	407	35.6	439	21.2	420	21.7
2 Tools, machinery, etc.	589	51.4	812	39.3	678	44.8
3 Working capital	149	13.0	817	39.5	416	27.5
Total	1,145	100.0	2,068	100.0	1,514	100.0

* Work portion (estimated).

Provision for rent and maintenance has already been made in the cost of production. The families depended on their own resources for their working capital very little of which was borrowed. Interest on the working capital at 6 per cent per annum amounted to Rs. 8-15-0 for an average family unit, Rs. 49 for an employer unit and Rs. 25-9-0 for all the units.

19. *Net profit and income from the industry per industrial unit per annum.*—The net profit from the industry after deducting the interest on own capital amounted to Rs. 1,088-1-0 for a family unit, Rs. 3,416 for an employer unit and Rs. 2,018-7-0 for all the units. The net income from the industry inclusive of imputed items such as interest

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on own capital, wages payable to family workers, depreciation and estimated rent amounted to Rs. 2,048 and Rs. 3,916 and Rs. 2,795 respectively for the two types of units and for the sample as a whole. The average annual income per capita worked out to Rs. 315-1-0 for a family unit and Rs. 652-11-0 for an employer unit and Rs. 443-13-0 for the sample as a whole.

20. *Marketing.*—Of the 75 manufacturers, only 23 held export licences ; the others had to sell their goods to the licence holders. The exports in 1949-50 (September to August) is estimated at Rs. 3.6 lakhs, in 1950-51 at Rs. 4.1 lakhs and in 1951-52 at Rs. 6.6 lakhs. The estimated value of the goods exported in 1951-52 and their destinations were broadly as follows :—

Estimated distribution of export trade.

Name of centre.	Value of export. RS. IN LAKHS.	Percentage.
1 Zanzibar	2.0	30.3
2 Dar-es-Salam	1.8	27.3
3 Aden	1.8	27.3
4 Others (e.g., Rhodesia, etc.)	1.0	15.1
Total	6.6	100.0

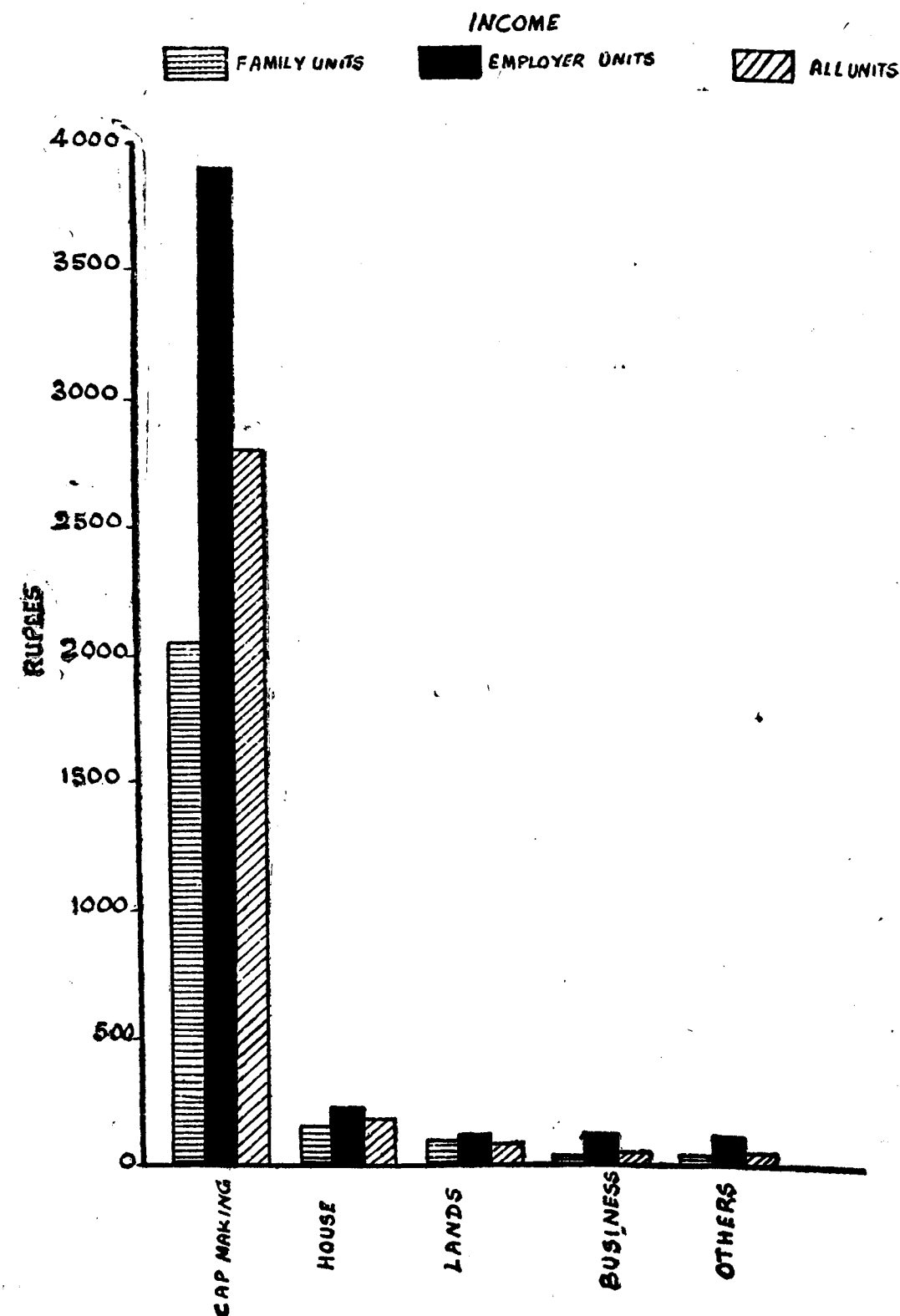
African countries absorb nearly 75 per cent of the total export while Arabia and Middle East which get their export through Aden absorb 25 per cent of the total.

The exporters have little knowledge about the conditions of the foreign market, none of them having visited any of the centres. The exports are made only on the basis of orders received and are despatched by parcel post, the local Canara Bank acting as the Agent of the Imperial Bank for forwarding the postal receipt and disbursement of the amount when it is realized. There is some scope for the development of the export market for these caps in the countries of Africa and Middle East if the export trade is more systematically organized and the conditions of the foreign markets are studied by an on-the-spot survey.

Another defect that has, of late, crept into the export trade is the unhealthy competition among the exporters. The disunity among the exporters is taken advantage of by the merchants in the foreign markets who use it for bargaining strength. This has resulted in under quoting, deterioration of quality and reduction in wages of the workers leading to labour discontent. The labourers, especially those engaged in sewing machine work, have now joined together into a union and demand control of export, fixation of reasonable prices, restoration of wages at the scale prevalent in December 1951 and raising of the wage rate for the sweated female labour in the village.

21. *Role of co-operation.*—Co-operation has not yet been tried in this industry. There is now a genuine desire among the workers and most of the manufacturers to form a co-operative society in view of the serious situation prevalent in the industry. According to them, the co-operative society should be entrusted with the sole right of export so that it might be an effective check on the machinations of the foreign merchants. The co-operative society can also organize production on better lines, supply the producers with new machines and purchase raw materials in bulk and distribute them to members and market the finished goods after grading them according to quality. It will then be possible to regulate prices and give a better deal to the labourers. But, a few of the rich exporters were opposed to any system of organization as they feared loss of profit to themselves. Their solution was to reduce the number of licence holders from 23 to 4, the number in 1948. Their opposition will have to be faced. If export licence is given only to the society instead

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of to the individual manufacturers, dissidents will be forced to come into the society. Without some sort of collective action among the manufacturers, there is little prospect for better conditions to prevail.

22. *Income of the families.*—Although cap making industry formed the main source of income to these families, they had a few supplementary sources of income such as lands, houses, other businesses, etc. The statement below shows the average income received by a unit:—

22-1. *Income per industrial unit per annum.*

Description.	Family unit.		Employer unit.		Average for all units	
	Amount.	Percentage to total.	Amount.	Percentage	Amount.	Percentage
	(1)	(3)	(4)	(5)	(6)	(7)
			RS.		RS.	
1 Cap making	2,048	87.6	3,916	87.8	2,795	87.7
2 Houses	146	6.2	212	4.7	172	5.4
3 Lands	90	3.8	107	2.4	97	3.0
4 Business	18	0.8	121	2.7	59	1.9
5 Others	36	1.6	106	2.4	63	2.0
Total	2,338	100.0	4,462	100.0	3,186	100.0

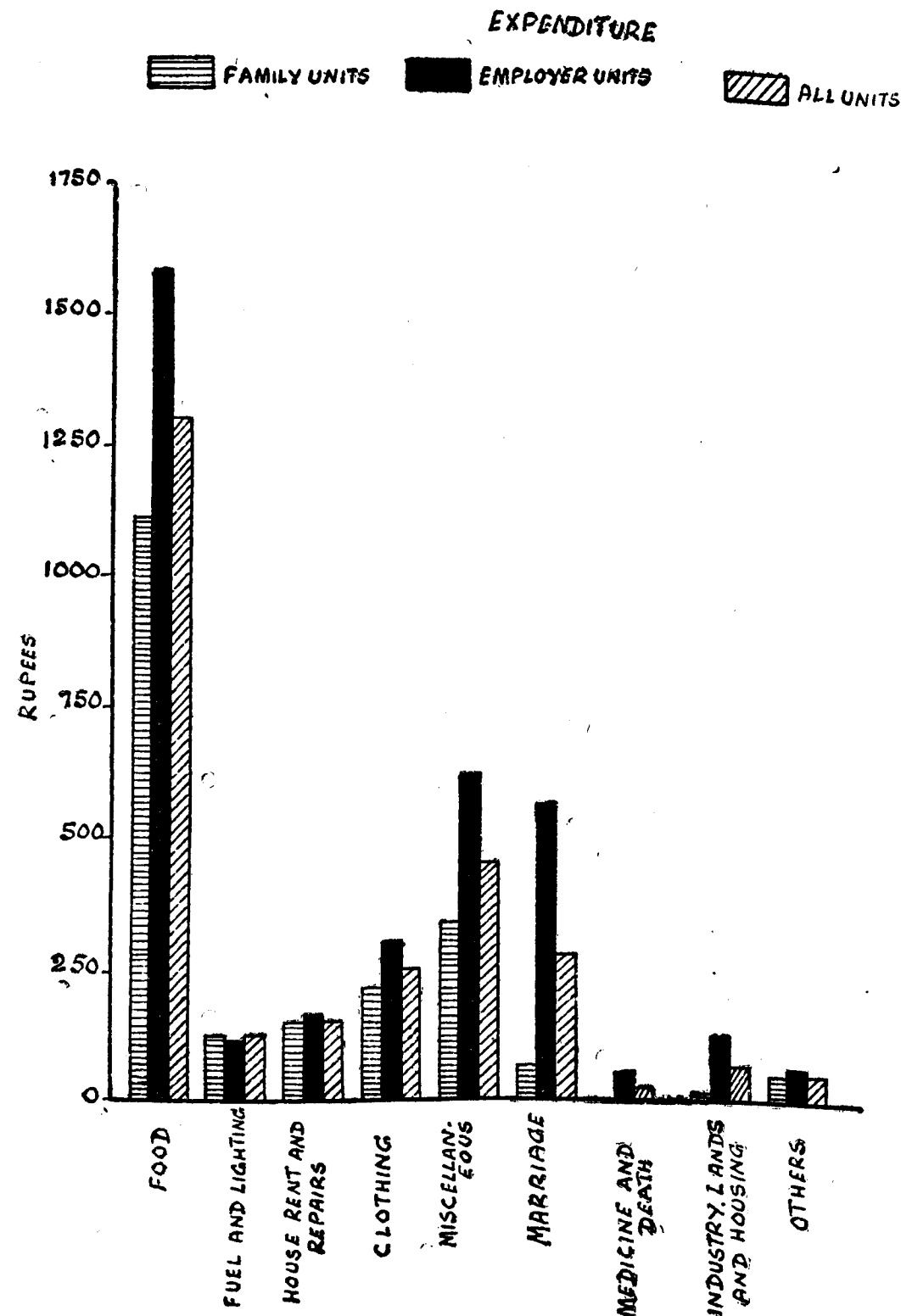
The average annual income of a family unit amounted to Rs. 2,338 as against Rs. 4,462 of an employer unit and Rs. 3,186 for the sample as a whole. The corresponding per capita annual incomes were Rs. 359-11-10 and Rs. 743-11-0 respectively and Rs. 601-2-0 for the sample as a whole. All the families lived in their own houses which were substantial buildings indicative of the remunerative nature of the cottage industry. Out of 27 family units 12 families or 44.4 per cent and out of 18 employer units 6 or 33.3 per cent derived income from lands. In the majority of cases, the lands were only gardens surrounding the houses and only in some cases were there any paddy lands. Income from small business such as pansupari shops, etc., was derived by one family among the 27 family units and by four families out of 18 employer units.

23. *Expenditure.*—Appendix 134 gives the pattern of expenditure of the two sets of units.

The average expenditure for a family unit was Rs. 2,081 against an average income of Rs. 2,338 leaving a surplus of Rs. 257. Of the total, expenditure on ordinary items formed 93.5 per cent and on extraordinary items 6.5 per cent. In the case of the employer units, the average annual expenditure amounted to Rs. 3,573 against an average income of Rs. 4,462 leaving a surplus of Rs. 889. Of the total, ordinary items formed 77.7 per cent and extraordinary items 22.3 per cent. The employer units spent more on extraordinary items than the family units. For the sample as a whole, the average expenditure amounted to Rs. 2,678 against an income of Rs. 3,186 leaving a surplus of Rs. 508.

24. *Assets.*—Appendix 135 gives the average asset of the two types of units and for the entire sample. The average asset of a family unit was Rs. 7,354 against Rs. 23,880 of an employer unit while the average for the entire sample was Rs. 13,965. An employer unit had more than 3 times the average asset of a family unit. The assets consisted mainly of houses (75 per cent) and lands (10.25 per cent) industrial equipment (3.7 per cent) and deposits, loans and jewels (8.7 per cent). The average asset of a family unit formed 3.1 times its income as against 5.1 times in the case of an employer unit and 4.4 times for the entire sample.

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25. *Liabilities.*—Appendix 136 gives the liabilities of an average unit. Out of 27 family units surveyed, 5 or 18·5 per cent were indebted, the average debt per indebted family being Rs. 840. Out of 18 employer units 3 or 16·7 per cent were indebted, the average debt per indebted family being Rs. 717. For the sample as a whole out of 45 families 8 or 17·8 per cent were indebted, the average debt per indebted family being Rs. 794. The average liability for a family unit was Rs. 152 against Rs. 119 in an employer unit and Rs. 141 for the sample as a whole. The debt load was insignificant compared to the assets. Only 4·8 per cent of the debt in the case of a family unit and 18·6 per cent in the case of an employer unit and 9·4 per cent in the case of the entire sample were taken for business purposes.

26. *Economic condition of wage earners.*—The picture of the industry will not be complete without an idea of the conditions of the two categories of workers, the wage earners and the agents. The position of the wage earners was briefly as follows :—

They receive raw materials from the employer units and stitch caps for wages. A very small number among them, viz., seven, owning industrial equipment, work in their own houses while the majority work in the houses of the employers on the machinery provided by the latter. Thus while the wages received by the latter units represent the net receipts from cap-making, those of the former represent gross wages as they have to incur some incidental expenses such as cost of maintaining the machinery, etc. There were only seven such units in the former category of whom 3 were selected for detailed study. Among the workers who worked at the houses of the employers, four were selected.

The average size of a family in these cases was 4·9. The wage earners working in their own houses had industrial equipment, the average value for a unit being Rs. 186-10-8, made up of one sewing machine, 1 scissors and some miscellaneous equipment. The average maintenance charges were Rs. 41-5-4. As they were receiving orders from all the employer units their employment position was more satisfactory than that of pure wage-earning units. The average income received by an independent wage unit from the industry amounted to Rs. 651 against Rs. 560 received by a purely wage earning family. The average per capita income in the former case was Rs. 133 compared with Rs. 114 in the latter case. Thus those families which owned sewing machines of their own got nearly Rs. 100 more than those who had none. The average annual income of a wage unit both from the industry and other sources was Rs. 955 or Rs. 195 per capita against Rs. 2,338 of a family unit. The income from cap making formed 65·9 per cent, from lands 13·0 per cent, from houses 12·1 per cent and from other sources 9·0 per cent. The average annual expenditure amounted to Rs. 1,114 leaving a deficit of Rs. 158 per annum.

27. *Agents.*—There is insufficient data about the actual number of agents employed by the several manufacturers as they come from the interior villages and none resides at Kasaragod. The case of three agents was taken up for detailed study. They combine a number of functions being petty land owners and businessmen in a small way while their women folk work in the cap making industry like other Muslim women in the villages. The chief function of the agent is to distribute the unfinished product to the women workers for making holes and stitching them with thread and return the stitched caps to the producers. For this service, they are paid at the rate of Re. 0-2-0 per score. This does not provide full-time occupation to the members and the income from this source is only supplementary to their main occupation, viz., agriculture and small business.

The average income of an agent's family was Rs. 1,047 of which a sum of Rs. 147 or 14 per cent was derived from his work as agent, Rs. 113 or 10·8 per cent from stitching caps by the women members of the family, Rs. 480 or 45·9 per cent from lands, Rs. 200 or 19·1 per cent from miscellaneous sources such as running of betel shops, etc., and Rs. 107 from house property. The income from cap making industry amounted to Rs. 260 or 24·8 per cent of the total income.

28. *Efficiency assessment.*—From the point of view of providing employment the survey has shown that an average employer unit engaged larger number of persons for greater number of days. An average employer unit employed 5.3 adult workers for 275 days as against 3.9 adult workers for 247 days by an average family unit.

From the point of view of output per worker per day the employer unit was the more efficient. An adult worker in an employer unit produced on the average per working day 0.6 score of caps as against 0.3 score of caps by one in a family unit.

From the point of view of economy in the cost of production, the employer unit was the more economical unit as its cost of production per score of caps worked out to Rs. 12-12-0 against Rs. 13-0-8 in the case of family unit.

The real criterion of efficiency is the cost of production and, judged by this test, the employer unit may be deemed to be the more efficient and economical unit of production.

SUMMARY.

29. The manufacture of cotton caps is one of the important cottage industries in Kasaragod firka both from the point of view of employment and export possibilities. There were on the whole 75 units engaged in cap-making, both ordinary and picture caps. Besides these, there was a large number of families in the coastal villages to whom this industry provided subsidiary occupation. The survey was confined to 45 units in Kasaragod of whom 27 were family units and 18 employer units and also 7 wage earning families.

The average annual outlay on raw materials per industrial unit was Rs. 3,377. The value of long cloth, both superior and inferior, formed 76.1 per cent of the total value and threads ordinary, coloured, and art silk 23.9 per cent. An average unit owned 3.4 sewing machines and other accessories whose initial cost amounted to Rs. 680. Annual average production per unit was 511.2 scores of caps valued at Rs. 8,614 of which 382.2 scores were ordinary caps and 129 scores picture caps valued at Rs. 6,016 and Rs. 2,598 respectively. On the above basis, the annual production for the firka has been estimated at 39,500 scores of caps valued at Rs. 6.7 lakhs. Excluding the large number of women in the villages employed in making holes and stitching them, an average unit employed 4.9 adult workers made up of 3.2 family members and 1.7 outsiders. Of these workers, men formed 63.2 per cent, women 18.4 per cent, boys 14.3 per cent and girls 4.1 per cent. The average wage payable to a family unit was Rs. 878, to an employer unit Rs. 376 and Rs. 677 to an average unit for the whole sample.

The annual cost of production per unit was Rs. 6,570 against the sale value of Rs. 8,614 leaving a gross profit of Rs. 2,044. The net income from the industry inclusive of the imputed items such as interest on own capital, wages payable to family workers, depreciation and estimated rent amounted to Rs. 2,795 compared to Rs. 651 for a purely wage unit.

The annual income of an average cap manufacturer's family was Rs. 3,186 of which the income from cap making industry alone formed 87.7 per cent. The average annual expenditure per unit was Rs. 2,678 of which expenditure on ordinary items formed 84.9 per cent and extraordinary items 15.1 per cent. This leaves a surplus of Rs. 508 per average family per annum. The average asset of a family was Rs. 13,965 and the average liability Rs. 141.

RECOMMENDATIONS.

1. The development of this industry is handicapped by lack of organization. Out of the 75 manufacturers only 23 hold export licences. This has resulted in a sort of monopoly for a few and severe heart burnings for others. As the control over cloth and yarn has been removed, there is no longer any need for restriction of export. The system of issue of export licences and all control over export of these caps may be abolished.

2. In order to avoid undue competition among the manufacturers, an export promotion committee composed of all the manufacturers may be set up to control and regulate the export trade. All manufacturers who want to export must sell their goods only to this committee. This will prevent some of the rich merchants who do not want to join any organization from seceding from the export organization. The export organization suggested above should deal with the different aspects of the industry such as study of foreign markets, establishments of fresh contacts in those countries, quality control and fixation of reasonable prices. It can with advantage arrange for the bulk purchase of raw materials like cloth and yarn and their distribution among the members, help the manufacturers with the supply of new sewing machines in the place of the old second-hand machines now in use so that cost of production would be reduced and the productivity per worker stepped up. It should also tackle the problem of the wage structure in the industry. At present, the Muslim women in outlying villages form a class of sweated labour. Wage rates should be reorganized in such a way as to benefit this class of labour.

3. The establishment of fresh foreign contacts is a vital need of the industry which has not received as much attention as it should. None of the exporters has so far visited any of the foreign markets and made a first hand study of their requirements. They have been relying solely on the orders received from the foreign importers. One or two of the members of the export Promotion Committee should be selected and deputed to the Middle East and African countries with a view to gain intimate knowledge of those markets and establish new contacts and suggest new methods of developing the industry.

APPENDICES

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA).

APPENDIX 1.

Statement showing the village-wise distribution of number of families in different Cottage Industries.

Serial number and names of the cottage industries.	Kumbakonam.	Number of families.						Total.
		Valaya-pet.	Darasuram.	Swami-malai.	Thiruvananthi.	Koranttu Karup-pur.	Pala-vathan Kattalai.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Brass wares ..	346	41	46	..	..	22	15	448
2 Brass spoons ..	..	..	..	..	..	..	..	22
3 Copper idols ..	3	..	..	8	3	..	..	14
4 Leadwares ..	39	..	..	..	..	..	..	39
5 Cutlery ..	6	..	..	..	..	..	..	6
6 Goldsmith ..	238	3	5	15	8	1	..	270
7 Blacksmith ..	41	..	..	..	2	..	6	49
8 Carpentry ..	79	4	4	15	8	9	7	126
9 Tailoring ..	168	7	12	15	..	1	12	215
10 Oil crushing ..	47	..	2	5	8	2	..	64
11 Cobbler ..	19	..	..	..	..	..	..	19
12 Uthubathis ..	11	..	..	..	..	..	..	11
13 Dyeing ..	75	..	..	..	..	..	..	75
14 Arecanut Seeval manufacture.	28	..	..	..	..	..	3	31
15 Bamboo baskets.	11	..	2	4	4	..	..	21
16 Soap manufacture	15	..	..	..	..	..	..	15
17 Silk and cotton weaving.	1,289	..	235	247	134	..	..	1,905
18 Tinker ..	18	..	..	..	..	..	..	18
19 Pottery ..	10	2	2	..	7	8	..	29
20 Rice and flour mill.	45	..	2	9	9	2	8	75
21 Picture Painting.	13	..	..	1	..	2	..	16
22 Photo artists ..	12	..	..	..	..	..	..	12
23 Printing Press ..	30	..	..	..	..	..	..	30
24 Keys and Locks manufacture.	7	..	..	..	..	6	..	13
25 Chalk-piece manufacture.	24	..	..	..	..	..	..	24
26 Others ..	444	1	9	7	23	30	44	558
Total ..	3,018	58	319	326	206	83	95	4,105
Total number of families.	16,971	557	703	721	907	747	188	20,794
Percentage of families engaged in Cottage industries to total families.	71.7	1.04	45.4	45.2	22.7	11.1	50.5	19.7

APPENDIX 2.

Cost of rent and repairs per unit per annum.

Description.	Family units.	Employer units.	Merchant-cum-manufacturer units.	Average of for all the units.
	RS.	RS.	RS.	
Rent paid ..	5	9	..	7
Estimated rent ..	23	39	138	36
Repairs ..	6	24	25	17
Total ..	34	72	163	60

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA)—cont.

APPENDIX 3.

Proportion of principal raw materials and auxiliary raw materials required per 100 seers (vessels weighing 100 seers).

Per 100 seers of vessels.	Brass sheets.	Brass circles.	Brass scraps.	Spelter.	Borax.	Lac.	Aluminium.	Black lead.	Copper.	Sulphuric Acid.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	SEERS.	SEERS.	SEERS.	SEERS.	SEERS.	SEERS.	SEERS.	SEERS.	SEERS.	OZ.
1 Kudam ..	45	25	30	1-1	1	1	1	..	..	..
2 Iddilipalai ..	33	13	54	1	1	1	1	..	..	..
3 Koppalai ..	30	Nil.	70	1	1	1	1	..	..	..
4 Annakudai ..	30	Nil.	70	1	1	1	1	..	..	..
5 Harikanchatti ..	60	40	Nil.	1	1	1	1	..	..	..
6 Kuvalai ..	70	30	Nil.	1	1	1	1	..	..	..
7 Marakkal ..	60	40	Nil.	1	1	1	1	..	..	..
8 Chombu or Uru-padi.	60	40	Nil.	1	1	1	1	..	..	..
9 Barathu ..	Nil.	100	Nil.	1	1	1	1	..	..	..
10 Panai ..	70	30	Nil.	1	1	1	1	..	..	..
11 Drum ..	60	40	Nil.	1	1	1	1	1-1	1	4
12 Coffee filter ..	75	25	Nil.	1	1	1	1	..	..	..
13 Vanachati ..	60	40	Nil.	1	1	1	1	..	..	..

APPENDIX 4.

Quantity and value of raw materials used per unit per annum.

	Family units.		Employer units.		Merchant-cum-manufacturer units.		All units	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	SEERS.	RS.	SEERS.	RS.	SEERS.	RS.	SEERS.	RS.
Principal raw materials—								
1 Brass sheets ..	2,723	2,723	7,878	7,878	14,013	13,575	6,084	6,071
2 Brass circles ..	589	486	3,342	2,689	3,091	2,511	2,275	1,836
3 Brass scraps ..	956	539	2,430	1,732	6,511	3,159	2,574	1,130
Auxiliary metals—								
1 Aluminium ..	3	2	24	14	44	26	16.4	9
2 Copper ..	7	5	5	4	9	8	5.8	5
3 White lead ..	4	2	0.5	2	1	4	1.7	2
4 Zinc ..	5	3	27	10	50	17	19.5	7
5 Spelter ..	22	20	151	93	186	175	72.4	68
Auxiliary chemicals—								
1 Borax ..	15	5	53	22	65	41.0	28.1	16
2 Sulphuric acid. *	7*	1	56	17	105*	32	7.7	12
3 Ammonium chloride.	1	..	..	..	..	..	0.3	..
Others—								
1 Lac ..	4	3	19	17	35	31.0	13.6	12
2 Wax ..	..	..	2	1	3	2	1.1	1
Total raw materials.	..	3,789	..	12,479	..	19,581	..	9,169

* In ounces.

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA)—cont.

APPENDIX 5.

Machinery and equipment per unit.

Description.	Per family unit.			Per employer unit.		
	Number.	Initial value.	Percentage to total.	Number.	Initial value.	Percentage to total.
	(2)	RS. (3)	(4)	(5)	RS. (6)	(7)
Karavai	5	44	19.2	8	123	31.16
Panaiyal	1	13	5.6	1	25	6.31
Crowbars	2	5	2.2	2	21	5.30
Stones	1	10	4.3	5	61	15.40
Plier	2	4	1.9	5	16	4.04
Bellows	1	8	3.5	2	22	5.55
Hammers	11	18	7.9	30	30	7.67
"Kadamaram" (polishing machines).	1	12	5.4	1	37	9.69
Crucibles	1	7	3.2	1	23	5.80
Files	1	4	1.7	1	5	1.36
Miscellaneous	9	102	45.1	6	32	8.18
Total	..	227	100.0	..	395	100.0

Description.	Per merchant-cum-manu- facturer unit.			Average for all units.		
	Number.	Initial value.	Percentage to total.	Number.	Initial value.	Percentage to total.
	(8)	RS. (9)	(10)	(11)	RS. (12)	(13)
Karavai	35	350	41.3	7.9	99	28.9
Panaiyal	3	65	7.8	1.1	21	6.2
Crowbars	10	35	4.1	2.4	14	4.1
Stones	2	38	4.6	3.4	41	11.8
Plier	8	45	5.3	3.8	13	3.6
Bellows	2	22	2.7	1.6	17	4.8
Hammers	100	87	10.5	19.5	27	7.9
"Kadamaram" (polishing machines).	2	35	4.2	0.9	28	8.2
Crucibles	3	60	7.1	0.9	18	5.3
Files	4	12	1.4	1.5	5	1.4
Miscellaneous	32	96	11.33	10.4	61	17.8
Total	..	845	100.0	..	344	100.0

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA)—cont.

APPENDIX 6.

Cost of manufacturing an "Iddilipanai" weighing 12 seers.

Description.	Quantity.	Cost per unit (seer).	Total cost.
		RS. A. P.	RS. A. P.
I. Principal raw materials—			
1 Brass sheets	4½ seers.	1 0 0	4 8 0
2 Brass circles	1½ "	0 13 0	1 3 6
3 Brass scraps	6 seers and 3 palams.	0 8 0	3 3 0
Auxiliary raw materials—			
4 Spelter	½ palam.	0 14 0	0 1 5
5 Borax	½ "	0 5 4	0 0 2
6 Aluminium	½ "	0 8 0	0 0 6
7 Copper	½ "	0 12 0	0 0 5
8 Sulphuric acid	½ oz.	0 2 6*	0 1 3
Total			9 2 3
* (per oz.).			

Processes.	Time taken.	Wage payable for each process.
	Hours.	RS. A. P.
II. Labour—		
1 Cutting of sheets to the required size and making grooves	1½	0 5 0
2 Bending and jointing	1½	0 3 0
3 Revetting and darning	2	0 6 0
4 Melting and moulding	1½	0 3 0
5 Fitting and revetting	1	0 3 0
6 Drilling and polishing	1	0 4 0
Total	8	1 8 0
III. Other items of cost—		
1 Blowing the furnace		0 2 0
2 Fuel		0 6 0
3 Wastage		0 3 0
4 Transport		0 0 6
5 Depreciation of tools		0 0 6
Total		0 12 0
Grand total cost		11 6 3
Total selling price		13 8 0

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA)—*cont.*

APPENDIX 7.

Cost of production for a lamp (Kuthuvillakku) weighing 15 seers.

Description.	Quantity.	Cost per unit.	Total cost.
		RS. A. P.	RS. A. P.
I. Raw materials—			
(a) Principal Raw materials—			
1 Brass scraps	15½ seers	0 8 0 per seer.	7 12 0
2 Zinc	½ palam.	0 1 0 per palam	0 0 6
3 White lead	½ "	0 8 0 "	0 4 0
4 Aluminium	1 "	0 1 0 "	0 1 0
	Total ..		8 1 6
(b) Auxiliary raw materials—			
1 Ammonium chloride	½ palam.	0 8 0 per palam	0 2 0
2 Brasso	..	..	0 1 0
	Total ..		0 3 0
II. Manufacturing cost—			
1 Blowing the furnace	..	..	0 2 0
2 Charcoal	½ maund	1 8 0	0 12 0
3 Wastage	½ seer.	..	0 4 0
4 Transport	..	..	0 0 6
5 Depreciation of tools and equipment	..	..	0 1 6
	Total ..		1 4 0
III. Wages—			
Process—	Time taken.	Wage payable for each process.	
	Hours.	RS. A. P.	
1 Melting and moulding	3½	0 12 0	
2 Filing and drilling	2½	0 8 0	
3 Fitting	1	0 4 0	
4 Polishing	1	0 4 0	
	8	1 12 0	
Grand total cost			11 4 6
Total selling price of the lamp (kuthuvillakku) weighing 15 seers.			14 1 0

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA)—*cont.*

• APPENDIX 8.

Statement showing the quantity and value per unit and average price of important articles.

Name of the article.	Quantity (seers) per unit.	Average price (per seer).	Value.
		RS. A. P.	RS. A. P.
Kudam	2,409	1 2 0	2,710 2 0
Iddilipalai	1,204	1 2 0	1,354 8 0
Palai	964	1 2 0	1,084 8 0
Kuvalai	843	1 2 0	948 6 0
Kopparai	723	1 0 0	723 0 0
Urupadi	723	1 6 0	944 2 0
Harikkanchatti	723	1 2 0	813 6 0
Vanachatti	602	1 3 0	714 14 0
Annakudai	602	1 4 0	752 8 0
Coffee filter	602	1 6 0	827 12 0
Drum	482	1 8 0	723 0 0
Barathu	361	1 3 0	428 11 0
Marakkal	361	1 8 0	541 8 0
Kuthuvillakku	602	0 15 0	564 6 0
Others	843	1 1 6	921 10 0
Total ..	12,044	1 2 9	14,102 5 0

APPENDIX 9.

Monthly fluctuations in output of 65 units.

Month and year.	Quantity (in seers).	Quantity per unit (seers).	Percentage to total.
November 1951	47,079	724	6.0
December 1951	53,246	819	6.8
January 1952	63,193	972	8.1
February 1952	65,786	1,012	8.4
March 1952	68,065	1,047	8.7
April 1952	68,604	1,055	8.8
May 1952	75,478	1,161	9.6
June 1952	87,005	1,339	11.1
July 1952	76,530	1,177	9.8
August 1952	70,862	1,090	9.1
September 1952	57,414	883	7.3
October 1952	49,638	766	6.3
Total ..	782,900	12,044	100.0

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA)—*cont.*

APPENDIX 10.

Rates of wages payable for different articles. Piece wage rate for important articles.

Name of the utensil and weight in seers.	Piece rate per 10 seers as given by the merchant to the chief worker.		Piece rate as given by the chief worker to the labourer under him.		Outturn per day of 8 hours per worker (seers).	Remuneration per day of 8 hours per worker.	
	RS.	A. P.	RS.	A. P.		RS.	A. P.
1 Kudam, 10 seers	1	12 0	0	12 0	20	1	8 0
2 Idili panai	2	0 0	1	4 0	12	1	8 0
3 Koppurai	2	12 0	1	0 0	15	1	8 0
4 Annakudi	3	2 0	1	8 0	10	1	8 0
5 Urupudi	2	5 6	1	8 0	12	1	12 0
6 Kuvalai	1	6 0	0	12 0	24	1	11 0
7 Harikanchatt	1	6 0	0	12 0	24	1	11 0
8 Panai	1	14 0	1	4 0	15	1	11 0
9 Barathu	1	6 0	0	15 0	25	2	5 0
10 Drum	4	0 0	2	4 0	10	2	4 0
11 Coffee filter	3	0 0	2	0 0	10	2	0 0
12 Marakkal	2	8 0	1	9 0	12	1	14 0
13 Vanachatti	1	12 0	1	0 0	15	1	8 0

APPENDIX 11.

Machinery and equipment with the Palavathankattalai Co-operative metal works.

Power-run.	Numbers.	Price.	Estimated life in years.
		RS.	
Machinery and equipment—Machinery—			
1 (a) Toggle Press	1	20,000	30
(b) Electric motor 15 h.p.	1	1,400	25
2 (a) Spinning lathes	4	8,000	25
(b) Electric motors, each 3 h.p.	3	1,100	25
3 (a) Polishing machines	2	800	25
(b) Electric motor 3 h.p.	2	600	25
4 (a) Workshop lathe	1	5,000	25
(b) Electric Motor 3 h.p.	1	600	25
5 Myfold lathe including electric motor 33 h.p.	1	1,400	25
6 (a) Hacksaw cutting machine	1	500	25
(b) Electric motor 1.75 h.p.	1	300	25
7 (a) Drilling machine	1	1,000	25
(b) Electric motor 1.5 h.p.	1	300	25
8 (a) Grinding machine	1	400	25
(b) Motor 1.7 h.p.	1	300	25
9 (a) Flexible shaft grinder	1	418	25
(b) Electric motor 0.75 h. p.	1	200	25
Hand driven machines—			
1 Circle cutting machine	1	600	25
2 Swaging machine	1	480	25
3 Bending rolls	1	480	25
4 Guillotine shear	1	1,700	25
5 Hand fly press	1	1,500	25
6 Hand punching machine	1	45	25
7 Air blower	2	245	15
Tools—			
1 Foundry tools	25	1,200	10
2 Turning tools	37	913	10
3 Copper smith's tools	3	114	10
4 Carpenter's, tin ker's and fitter's tools	90	1,303	10
5 Belt fasteners	4 boxes.	18	10
6 Belts	350 feet.	500	10
Total		51,386	

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA)—*cont.*

APPENDIX 12.

Expenditure (per family per annum).

Description.	Per family unit.	Percentage to total.	Per employer unit.	Percentage to total.	Per merchant-cum-manufacturer unit.	Percentage to total.	Average for all units.	
							Amount.	Percentage to total.
	RS.		RS.		RS.		RS.	
Ordinary—								
1 Food	698	66.0	1,020	50.8	2,460	33.9	941	52.1
2 Fuel and lighting.	57	5.4	57	2.8	213	2.9	62	3.4
3 House rent and repairs.	99	9.4	126	6.2	298	4.1	121	6.7
4 Clothing	82	7.7	187	9.3	400	5.5	153	8.5
5 Miscellaneous	45	4.2	273	13.6	400	5.5	189	10.5
Extraordinary—								
6 Marriage	10	0.9	98	4.9	300	4.1	73	4.1
7 Medical	32	3.0	88	4.4	100	1.4	12	0.6
8 Death	19	1.8	3	0.1	100	1.4	194	10.7
9 Others	17	1.6	158	7.9	3,090	42.6	194	10.7
Total	1,059	100.0	2,010	100.0	7,261	100.0	1,806	100.0

APPENDIX 13.

Assets of the families (per family.)

Description.	Per family unit.	Percentage to total.	Per employer unit.	Percentage to total.	Per merchant-cum-manufacturer unit.	Percentage to total.	All units.	
							Amount.	Percentage to total.
	RS.		RS.		RS.		RS.	
Houses and work sheds.	1,713	67.8	1,565	45.3	11,100	44.2	1,915	49.7
Wet lands	424	16.8	844	24.4	2,100	8.4	721	18.7
Dry lands	37	1.5	3	0.1	..	..	16	0.4
Garden lands	19	0.8	16	0.5	..	..	17	0.4
Industrial equipment.	227	9.0	381	11.0	845	3.4	344	8.9
Raw materials in stock.	..	..	41	1.2	3,500	14.0	132	3.4
Livestock	7	0.3	42	1.2	150	0.6	32	0.8
Cart	..	..	6	0.2	150	0.6	8	0.2
Deposits	36	1.4	..	..	1,750	7.0	68	1.8
Loans	40	1.5	285	8.2	4,500	17.9	321	8.3
Jewels	24	0.9	257	7.4	1,000	3.9	273	7.1
Others	..	..	16	0.5	..	..	8	0.3
Total	2,527	100.0	3,456	100.0	25,095	100.0	3,855	100.0

BRASS WARE INDUSTRY (KUMBAKONAM FIRKA)—cont.

APPENDIX 14.

Liabilities of industrial units (per unit).

Description.	Per family unit.	Per employer unit.	Per merchant-cum-manufacturer.	All units.
	RS.	RS.	RS.	
1 Mortgage with possession	60	..	..	23
2 Simple mortgage	84	105	..	180
3 Pronote	65	118	3,000	94
4 Hand loan	78	..	..	30
5 Pawn	..	..	..	..
Total ..	287	223	3,000	327

BRASS SPOONS INDUSTRY (KUMBAKONAM FIRKA).

APPENDIX 15.

Number and value of tools owned by an average unit.

Description.	Number.	Initial cost.	Replacement cost.	Present market value.	Annual maintenance cost.	Cost of a new tool.	Percentage of initial cost to total initial cost.
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
1 Karavai	1-0	20 0 0	28 12 0	22 4 0	5 8 0	28 12 0	14-4
2 Adaiyal	3-5	48 12 0	66 12 0	64 8 0	..	19 0 0	35-1
3 Bellows	1	11 12 0	13 12 0	4 12 0	4 8 0	13 8 0	8-4
4 Pliers	3-5	7 8 0	9 0 0	4 0 0	1 12 0	2 14 6	5-4
5 Hammer	8-25	11 8 0	15 8 0	9 4 0	2 4 0	1 14 6	8-3
6 Moulds	11-5	15 4 0	18 0 0	11 8 0	..	1 9 9	11-0
7 Crucible	0-75	8 12 0	8 8 0	4 4 0	4 8 0	11 4 9	6-3
8 Pattarai	0-50	3 0 0	4 0 0	1 12 0	0 12 0	8 0 0	2-1
9 Miscellaneous	10-0	12 8 0	18 0 0	8 8 0	3 8 0	1 12 9	9-0
Total ..	40-0	139 0 0	182 4 0	131 12 0	22 12 0	..	100-0

APPENDIX 16.

Monthly fluctuations in output of an average unit.

Month and year.	Quantity	Month and year.	Quantity.
	MAUND.		MAUND.
November 1951	29-25	May 1952	37-00
December 1951	37-50	June 1952	30-75
January 1952	38-75	July 1952	30-00
February 1952	45-75	August 1952	23-25
March 1952	38-50	September 1952	17-00
April 1952	39-00	October 1952	17-75
		Total	384-50

IDOL MANUFACTURING INDUSTRY (KUMBAKONAM FIRKA).

APPENDIX 17.

Number and value of tools and implements.

Description.	Numbers.	Number of tools per unit.	Cost of a new tool.	Initial cost.	Initial cost per unit.	Replacement cost.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			RS.	RS.	RS. A. P.	RS.
1 Karavai	8	0.8	9	48	4 12 10	71
2 Pannaiyal	6	0.6	18	72	7 3 3	107
3 Plier	57	5.7	5	235	23 8 0	270
4 Hammer	76	7.6	2	122	12 3 3	163
5 Cutter	676	67.6	7	224	22 6 5	306
6 Crucible	134	13.4	16	546	54 9 8	546
7 File	49	4.9	3	111	11 1 8	133
8 Bellows	24	2.4	13	248	24 12 10	315
9 Miscellaneous tools	100	10.0	..	245	24 8 0	283
Total	1,130	113	..	1,851	185 1 1	2,202

Description.	Replacement cost per unit.	Present market value.	Present market value per unit.	Annual maintenance charges.	Annual maintenance charges per unit.	Percentage of initial cost to total.
(8)	(9)	(10)	(11)	(12)	(13)	
	RS. A. P.	RS.	RS. A. P.	RS.	RS. A. P.	
1 Karavai	7 1 8	43	4 4 10	31	3 1 8	2.6
2 Pannaiyal	10 11 3	70	7 0 0	4	0 6 5	3.9
3 Plier	27 12 10	95	9 8 0	29	2 14 5	12.7
4 Hammer	16 4 10	104	10 6 5	39	3 14 5	6.6
5 Cutter	30 9 8	126	12 9 8	45	4 8 0	12.4
6 Crucible	54 9 8	209	20 14 5	128	12 12 8	29.4
7 File	13 4 10	29	2 14 5	27	2 11 3	5.9
8 Bellows	31 8 0	78	7 12 10	69	6 14 5	13.3
9 Miscellaneous tools	28 4 10	165	16 8 0	60	6 0 0	13.2
Total	220 3 7	919	91 14 7	432	43 3 3	100.0

IDOL MANUFACTURING INDUSTRY (KUMBAKONAM FIRKA)—cont.

APPENDIX 18:

Cost of manufacturing a single idol—"Lord Nataraja" weighing 25 seers.

Description.	Unit.	Quantity.	Cost per unit.	Total cost.
		SEERS.	RS. A. P.	RS. A. P.
1 Raw materials—	Seer.	22	0 12 0	16 8 0
(a) Copper	"	2½	0 9 0	1 6 6
(b) Brass scraps	"	1½	0 8 0	0 10 0
(c) Black lead	"	1½	4 0 0	5 0 0
(d) White lead	"	3	2 0 0	6 0 0
(e) Kungilium, wax and oil	"	1/8	0 12 0	0 1 6
(f) Lac	"	..	..	..
Total				29 10 0
2 Fuel—	Maunds.	2	1 8 0	3 0 0
Charcoal	Seer.	2	0 12 0	1 8 0
3 Wastage	..	..	..	1 0 0
4 Transport	..	..	..	1 8 0
5 Depreciation of tools	..	..	..	0 12 0
6 Wage paid to a furnace blower	..	..	..	..
Total				7 12 0

Name of the process.	Time taken for each process (days).	Wage rate for self-labourer per day.	Total wages.
		RS. A. P.	RS. A. P.
7 Labour—	1½	4 0 0	6 0 0
(i) Preparing a wax model	1½	4 0 0	6 0 0
(ii) Preparing the mould	1	3 0 0	3 0 0
(iii) Melting and pouring the metal	2	3 8 0	7 0 0
(iv) Chiselling	4	5 4 0	21 0 0
(v) Carving	2	3 8 0	7 0 0
(vi) Polishing	..	..	..
Total, Labour	12	..	50 0 0

Grand total cost	87 6 0
Amount received at the rate of Rs. 4 per seer	100 0 0

Profit .. 12 10 0

IDOL MANUFACTURING INDUSTRY (KUMBAKONAM FIRKA)—cont.

APPENDIX 19.

Types of idols manufactured.

Description.	Production.		
	Quantity SEERS.	Per unit. SEERS.	Percentage.
1 Nataraja	2,989	298.9	22.4
2 Mariamman	2,318	231.8	17.4
3 Vinayagar	1,534	153.4	11.5
4 Valli and Deivayanai	1,079	107.9	8.1
5 Sri Ramar	945	94.5	7.1
6 Kaliamman	850	85.0	6.4
7 Ayyanar	788	78.8	5.9
8 Dhandayuthapani	703	70.3	5.3
9 Sivakami Amman	520	52.0	3.9
10 Lakshmi	400	40.0	3.0
11 Sambandar	320	32.0	2.4
12 Sri Krishna	208	20.8	1.6
13 Sundara Moorthi	180	18.0	1.3
14 Rajarajeswari	158	15.8	1.2
15 Amman Prabhai	130	13.0	1.0
16 Saraswathi	94	9.4	0.7
17 Nachiar Vilakku	88	8.8	0.7
18 Anai Muga Vilakku	30	3.0	0.1
Total ..	13,334	1,333.4	100.0

APPENDIX 20.

Fluctuations in output.

Month and year.	Total quantity. SEERS.	Quantity per unit. SEERS.	Percentage to total.
November 1951	1,217	121.7	9.01
December 1951	1,196	119.6	8.87
January 1952	1,364	136.4	9.84
February 1952	2,247	224.7	16.71
March 1952	1,526	152.6	11.34
April 1952	1,062	106.2	7.89
May 1952	644	64.4	4.77
June 1952	467	46.7	3.48
July 1952	845	84.5	6.44
August 1952	685	68.5	5.13
September 1952	860	86.0	6.73
October 1952	1,220	122.0	9.74
Total ..	13,334	1,333.4	100.0

IDOL MANUFACTURING INDUSTRY (KUMBAKONAM FIRKA)—cont.

APPENDIX 21.

Expenditure of the families.

Description.	Amount.	Amount per unit.	Percentage to total.
	RS.	RS. A. P.	
Ordinary—	13,960	1,396 0 0	61.4
1 Food	704	70 6 2	3.1
2 Fuel and lighting	1,498	149 12 10	6.6
3 House rent and repairs	1,820	182 0 0	8.0
4 Clothing	1,736	173 9 8	7.6
5 Miscellaneous			
Total, Ordinary ..	19,718	1,971 12 8	86.7
Extraordinary—	600	60 0 0	2.6
6 Marriage	300	30 0 0	1.4
7 Medical			
8 Death	2,103	210 4 10	9.3
9 Others			
Total, Extraordinary ..	3,003	300 4 10	13.3
Grand total ..	22,721	2,272 1 6	100.0

APPENDIX 22.

Assets.

Description.	Amount.	Amount per unit.	Percentage to total.
	RS.	RS.	
1 House	24,110	2,411	60.9
2 Lands—	5,000	500	12.6
(a) Wet lands	3,000	300	7.6
(b) Dry lands	1,851	185	4.7
3 Industrial equipment	150	715	0.4
4 Livestock	30	3	0.1
5 Deposits	1,450	145	3.7
6 Loans given	3,740	374	9.5
7 Jewels	200	20	0.5
8 Others			
Total ..	39,531	3,953	100.0

LEAD WARE INDUSTRY (KUMBAKONAM FIRKA).

APPENDIX 23.

Cost of production of a lead vessel weighing 10 seers.

Description.	Unit.	Quantity.	Cost per unit.	Total cost.
			RS. A. P.	RS. A. P.
1 White lead	Seers.	10	3 4 0	32 8 0
2 Fuel	Maund.	1/5	1 8 0	0 5 0
3 Lead for wastage	Seer.	1/4	3 4 0	0 13 0
			Total ..	33 10 0
4 Labour—				
Name of the process.	Time taken for each process.	Wage rate.	Total wages.	
	HOURS.	RS. A. P.	RS. A. P.	
(i) Transporting raw materials and finished goods ..	1½	0 4 0	1 6 0	
(ii) Melting	1	0 4 0		
(iii) Beating	3½	0 8 0		
(iv) Polishing	2	0 6 0		
Total cost of production				35 0 0
Total sale value at Rs. 4 per seer				40 0 0
			Profit ..	5 0 0

APPENDIX 24.

Monthwar production.

Name of the month.	Quantity of output.	Percentage to total.
1951—	SEERS.	
November	628	7.47
December	752	8.94
1952—		
January	739	8.79
February	807	9.60
March	806	9.59
April	803	9.58
May	802	9.54
June	721	8.57
July	596	7.09
August	615	7.32
September	606	7.20
October	532	6.33
Total ..	8,407	100.0

LEAD WARE INDUSTRY (KUMBAKONAM FIRKA)—cont.

APPENDIX 25.

Expenditure per unit.

Description.	Family unit.	Employer unit.	Merchant-cum-manu-facturer unit.	Average for all units.	Percentage to total.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
Ordinary—					
1 Food	560 0 0	900 0 0	1,980 0 0	1,085 0 0	48.1
2 Fuel and lighting	50 0 0	75 0 0	170 0 0	92 8 0	4.1
3 House rent and repairs	36 0 0	153 8 0	380 0 0	180 12 0	8.0
4 Clothing	60 0 0	152 8 0	900 0 0	316 4 0	14.0
5 Miscellaneous	38 0 0	139 0 0	600 0 0	229 0 0	10.1
Total ..	744 0 0	1,420 0 0	4,030 0 0	1,903 8 0	64.3
Extraordinary—					
6 Marriage	10 0 0		500 0 0	125 0 0	5.6
7 Medical		75 0 0	190 0 0	50 0 0	2.2
8 Others			565 0 0	178 12 0	7.9
Total ..	10 0 0	75 0 0	1,255 0 0	353 12 0	15.7
Grand total ..	754 0 0	1,495 0 0	5,285 0 0	2,257 4 0	100.0

APPENDIX 26.

Assets per unit.

Description.	Family unit.	Employer unit.	Merchant-cum-manu-facturer unit.	Average for all units.	Percentage to total.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
1 House	130 0 0	1,910 0 0	5,250 0 0	2,300 0 0	54.5
2 Lands—					
(a) Wet		500 0 0		250 0 0	5.9
(b) Garden lands		75 0 0		37 8 0	0.9
3 Industrial equipments	200 0 0	189 12 0	600 8 0	245 0 0	5.8
4 Livestock		25 0 0	200 0 0	112 8 0	2.7
5 Loans given	50 0 0	200 0 0	1,750 0 0	537 8 0	12.7
6 Jewels		262 8 0	2,375 0 0	737 8 0	17.5
Total ..	380 0 0	3,162 4 0	10,175 8 0	4,220 0 0	100.0

APPENDIX 27.

Liabilities per unit.

Description.	Family unit.	Employer unit.	Merchant-cum-manu-facturer unit.	Average for all units.	Percentage to total.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
1 Simple mortgage	300 0 0	1,000 0 0	750 0 0	687 8 0	47.4
2 Pro-note		125 0 0	1,500 0 0	512 8 0	35.4
3 Handloans			1,000 0 0	250 0 0	17.2
Total ..	300 0 0	1,125 0 0	3,250 0 0	1,450 0 0	100.0

CUTLERY INDUSTRY (KUMBAKONAM FIRKA).

APPENDIX 28.

Number and value of tools owned by an average unit.

Description.	Number used.	Initial cost.			Replace- ment cost.			Present market value.			Annual mainten- ance cost.			Cost of new tools.	Percentage of initial cost to total initial cost.			
		RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.			RS.	A.	P.
Karavai	0.5	2	8	0	2	8	0	2	8	0	16	0	0	2	8	0	6.1	
Pannaiyal	3.0	10	0	0	15	0	0	10	0	0				5	0	0		24.1
Hand-vice	2.0	6	0	0	7	0	0	5	0	0				3	4	0		12.8
Plier	0.5	0	8	0	1	8	0	1	0	0				3	0	0		1.2
Hammer	4.5	3	4	0	6	0	0	3	8	0				1	4	0		8.0
File	1.0	2	4	0	3	0	0	1	8	0				3	0	0		5.0
Bellows	1.0	11	0	0	12	0	0	6	0	0	12	0	0	27.0				
Miscellaneous	1.5	5	8	0	5	0	0	3	0	0						13.8		
Total	14	41	0	0	52	0	0	32	8	0	16	0	0	..		100.0		

APPENDIX 29.

Quantity and value of output of an average unit.

Description.	Quantity	Value per maund.		Total value.	Percentage to total.
		MAUNDS. *	RS. A. P.		
1 Aruvamanai	10		15 0 0	150	11.3
2 Murukkachu	27.5		13 11 0	375	28.3
3 Padlock (big size)	13		19 9 0	252	19.0
4 Do. (small size)	8.75		24 4 0	228	17.2
5 Keys	16.0		20 0 0	320	24.2
Total	75.25			1,325	100.0

*(Maund = 8 viss).

FINE MAT INDUSTRY IN PATTAMADAI (MELACHAVEL FIRKA).

APPENDIX 30.

Families engaged in cottage industries.

Serial number.	Village.	Total number of families.	Families engaged in mat and reed products.	Families engaged in other cottage industries.	Total families engaged in cottage industries.	Percentage of column (6) to column (3).
		(3)	(4)	(5)	(6)	(7)
1	Pattamadai	1,026	168	266	434	42.3
2	Chockalingapuram	196	5	23	28	14.3
3	Gopalasamudram	791	47	40	87	11.0
4	Omanallur	75	3	41	44	58.7
5	Kesavasamudram	516	136	48	184	35.6
6	Ulagankulam	249	15	99	114	45.8
	Total	2,853	374	517 *	891	31.2

* Vide Appendix 30 'A' below.

APPENDIX 30-A.

Families engaged in other cottage industries in the six villages.

Serial number.	Village.	Handloom weaving.	Palmyra jaggery.	Carpentry.	Blacksmithy.	Goldsmithy.	Tailoring.	Leather manufac- turing, etc.	Pottery.	Brick manufacture ing.	Oil manufacture.	Lime kiln.	Dairy.	Total.
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1	Pattamadai	193	..	28	7	11	7	2	5	..	9	3	1	266
2	Chockalingapuram	2	..	5	3	1	..	..	10	..	..	2	..	23
3	Gopalasamudram	6	..	8	12	3	3	..	6	..	1	1	..	40
4	Omanallur	32	9	..	..	..	..	..	..	..	..	..	..	41
5	Kesavasamudram	..	11	9	8	..	..	..	4	2	14	..	..	48
6	Ulagankulam	..	93	1	..	2	1	..	..	..	1	1	..	99
	Total	233	102	53	31	25	11	2	25	2	25	7	1	517

FINE MAT INDUSTRY IN PATTAMADAI (MELACHAVEL FIRKA)—*cont.*

APPENDIX 31.

Annual consumption of korai grass per family and per loom.

Type of unit.	Number of families.	Number of looms.	Quantity of korai per unit.		Average per unit.		Average per loom.	
			Purchased (bundles).	Supplied by Mat Weavers' Association (bundles).	Quantity (bundles).	Value.	Quantity (bundles).	Value.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
						RS. A. P.		RS. A. P.
Family units	4	7	8.5	5.5	3.5	49 8 0	2	28 4 7
Family units employing outsiders.	10	24	37.5	14.3	5.2	84 2 5	2.0	35 1 0
Merchant-cum-manufacturers.	6	16	42	11	8.8	127 2 8	3.3	47 11 0
Average for all units ..	20*	24	4.4	1.5	5.9	90 2 0	2.5	38 5 7

* Total families.

APPENDIX 32.

Statement showing the time taken for the manufacture of each variety of fine mats.

	100 counts.		110 counts.		120 counts.		130 counts.		140 counts.	
	DAYS.	HRS.	DAYS.	HRS.	DAYS.	HRS.	DAYS.	HRS.	DAYS.	HRS.
1 Yarn preparation	1—2		1—2		1—4		1—4		2—0	
2 Selection of good korai from purchased variety.	0—1		0—1		0—1½		0—1½		0—1½	
3 Drying the Korai in the sun-work for one hour daily for 30 days.	3—6		3—6		3—6		3—6		3—6	
4 Korai soaking in water for 7 days at 15 minutes per day (6, 7, 8, 9 and 11 times respectively).	1—2½		1—4½		1—6		1—7½		2—3½	
5 Korai splitting	6—0		7—0		8—0		9—0		11—0	
6 Korai dyeing	0—½		0—½		0—½		0—½		0—½	
7 Weaving	12—0		14—0		16—0		18—0		22—0	
8 Tightening the weft	3—0		3—4		4—4		4—4		5—4	
9 Edge binding	1—0		1—2		1—4		2—0		2—0	
10 Polishing	0—1½		0—2		0—2½		0—3		0—3	
Total man-days of 8 hours per day ..	28—5½		32—5½		37½		41—2½		49—2½	

FINE MAT INDUSTRY IN PATTAMADAI (MELACHAVEL FIRKA)—*cont.*

APPENDIX 33.

Cost of manufacture of one fine mat.

Description.	100s.		110s.		120s.		130s.		140s.	
	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.
A. Raw materials—										
Korai	1 12	0	1 13	0	1 14	0	1 15	0	2 0	0
Yarn	0 9	3	0 9	7	0 10	8	0 11	3	0 12	10
Dyestuff	0 3	4	0 3	4	0 3	4	0 3	4	0 3	4
Fuel	0 1	4	0 1	4	0 1	4	0 1	4	0 1	4
Total A	2 9	11	2 11	3	2 13	4	2 14	11	3 1	6
B. Manufacturing cost—										
Drying (self-labour)	0 5	9	0 6	0	0 6	8	0 7	0	0 8	0
Twisting warp yarn	3 0	0	3 8	0	4 0	0	4 8	0	5 8	0
Splitting										
Dyeing (self labour)	3 0	0	3 8	0	4 0	0	4 8	0	5 8	0
Weaving	3 0	0	3 8	0	4 0	0	4 8	0	5 8	0
Tightening the weft	0 8	0	0 10	0	0 12	0	1 0	0	1 0	0
Edge binding	0 6	0	0 6	0	0 7	0	0 7	0	0 8	0
Polishing										
Total B	10 3	9	11 14	0	13 9	8	15 6	0	18 8	0
Grand total—A and B	12 13	8	14 9	3	16 7	0	18 4	11	21 9	6
Minimum selling price	15 0	0	20 0	0	25 0	0	30 0	0	35 0	0
Profit per mat	2 2	4	5 6	9	8 9	0	11 11	1	11 6	6

APPENDIX 34.

Average income of a family per annum.

Source.	Amount.	Per cent to total.
A. From occupation—	RS.	
1 Mat weaving	415	34.1
2 Mat business	165	13.6
3 Priesthood	24	2.0
4 Agricultural land	25	2.0
5 Fishing	10	0.8
6 Professional (Lawyer)	120	9.9
7 Remittances from outside India	229	18.8
Total from occupation	988	81.2
B. From assets—		
8 House	47	3.8
9 Land	149	12.3
10 Livestock	18	1.5
11 Interest on loans	14	1.2
Total from assets	228	18.8
Grand total of A and B	1,216	100.0

FINE MAT INDUSTRY IN PATTAMADAI (MELACHAVEL FIRKA)—cont.

APPENDIX 35.

Average expenditure of a family.

Item.	Amount.	Percentage to total.
A. Ordinary—		
RS.		
1 Food	797	53.4
2 Fuel and lighting	78	5.3
3 Rent and repairs	55	3.7
4 Clothing	97	6.5
5 Miscellaneous	61	4.1
Total, Ordinary ..	1,088	73.0
B. Extraordinary—		
6 Marriages	150	10.0
7 Medicine	38	2.5
8 Death	7	0.5
9 Improvements to land	53	3.5
10 House	23	1.5
11 Others	135	9.0
Total, Extraordinary ..	406	27.0
Grand total ..	1,494	100.0

FINE MAT INDUSTRY IN PATTAMADAI (MELACHAVEL FIRKA)—cont.

APPENDIX 36.

Average value of assets of a family.

Description.	Value.	Percentage to total.
RS.		
House	2,559	47.3
Wet land	1,042	19.2
Dry land	225	4.1
Garden land	545	10.1
Industrial equipment	112	2.1
Raw materials in stock	20	0.4
Livestock	50	0.9
Cart	12	0.2
Share deposit in the Mat Weavers' Association	28	0.5
Loans given	125	2.3
Jewels	237	4.8
Others	462	8.5
Total ..	5,417	100.0

APPENDIX 37.

Average liability of a family.

(i) Classification by source.

Description.	Amount.
RS.	
1 Mortgage with possession	25
2 Simple mortgage	165
3 Pro-note	126
4 Handloans	133
5 Pawn	14
Total ..	463

(ii) Classification by purpose.

(a) Taken for business purposes	53
(b) Taken for domestic purposes	410
Total ..	463

PRAYER AND COARSE MATS WEAVING IN PATTAMADAI (MELACHAVEL FIRKA).

APPENDIX 38.

Cost of manufacturing prayer and coarse mats.

Description.	Cost of manufacturing prayer mat.		Coarse mat. Count.				
	Short.	Long.	16s.	18s.	20s.	22s.	26s.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
Raw materials—							
Korai ..	0 3 0	0 4 0	0 8 0	0 8 0	0 9 0	0 10 0	0 10 0
Twisted yarn ..	0 1 6	0 2 3*	0 2 0*	0 2 3*	0 2 6*	0 2 9*	0 3 0
Dyestuff ..	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6
Total ..	0 5 0	0 6 9	0 10 6	0 10 9	0 12 0	0 12 3	0 13 6
Weaving ..	0 1 0	0 1 6	0 3 0	0 3 0	0 6 0	0 6 0	0 9 0
Binding Edge ..	..	..	0 1 6	0 1 6	0 1 9	0 1 9	0 2 0
Total ..	0 1 0	0 1 6	0 4 6	0 4 6	0 7 9	0 7 9	0 11 0
Grand total ..	0 6 0	0 8 3	0 15 0	0 15 3	1 3 9	1 4 0	1 8 6
Selling price ..	0 6 0	0 8 6	1 2 0	1 4 0	1 6 0	1 8 0	1 12 0
Profit ..	..	0 0 3	0 3 0	0 4 9	0 2 3	0 4 0	0 3 6

* Represents cost of aloe fibre.

APPENDIX 39.

Income per unit per annum.

Description.	Income per unit.	
	Amount.	Percentage to total.
	RS.	
1 Mat weaving	45	9.6
2 Agricultural and other labour	59	12.2
3 Fishing	2	0.4
4 Remittances from outside	302	64.7
5 Mat business	53	11.4
6 Others	7	1.7
Total ..	468	100.0

PRAYER AND COARSE MATS WEAVING IN PATTAMADAI (MELACHAVEL FIRKA)—cont.

APPENDIX 40.

Expenditure per unit per annum.

Description.	Amount.	Percentage to total.
	RS.	
A. Ordinary—	429	53.5
1 Food	38	4.8
2 Fuel	7	0.9
3 Lighting	33	4.1
4 House rent and repairs	71	8.9
5 Clothing	37	4.6
6 Miscellaneous pan and tobacco	1	0.1
7 Others	..	..
Total, Ordinary ..	616	76.9
B. Extraordinary—	92	11.5
8 Marriage	41	5.0
9 Medicine	14	1.8
10 Death	11	1.3
11 Land improvement	13	1.6
12 House	6	0.8
13 Festivals	9	1.1
14 Others	..	..
Total, Extraordinary ..	186	23.1
Grand total ..	802	100.0

APPENDIX 41.

Average asset of a family.

Description.	Amount.	Percentage to total.
	RS.	
1 House	1,161	52.5
2 Land—	610	27.6
(a) Wet	84	3.8
(b) Dry	22	0.9
3 Industrial equipment	18	0.8
4 Raw materials in stock	8	0.4
5 Livestock	75	3.4
6 Loans given	234	10.6
7 Jewels	..	..
Total ..	2,212	100.0

APPENDIX 41-A.

Average liability of a family.

Description.	Amount.	Percentage to total.
	RS.	
1 Simple mortgage	40	6.6
2 Pro-note	110	18.2
3 Handloan	352	57.9
4 Pawn	105	17.3
Total ..	607	100.0

SUNHEMP MAT WEAVING IN PATTAMADAI (MELACHAVEL FIRKA).

APPENDIX 42.

(a) Cost of cultivating an acre with sunhemp.

Items.	Man days required.	Expenses.	Percentage of expenditure to total.
		RS. A. P.	
1 Lease amount	..	62 8 0	26.1
2 Ploughing	2½	6 4 0	2.6
3 Bundling	4	5 0 0	2.1
4 Watering	1	1 4 0	0.5
5 Sowing	1	1 4 0	0.5
6 Cost of seeds	..	26 12 0	11.2
7 Weeding	36	18 0 0	7.5
8 Insect removal	50	25 0 0	10.4
9 Water-lifting from tanks and irrigation channel.	30	48 0 0	20.0
10 Harvesting	24	15 8 0	6.5
11 Transporting harvested bundles to house.. .. .	..	15 0 0	6.3
12 Watchmen's charges	..	15 0 0	6.4
Total	148½	239 8 0	100.0

(b) Income from cultivation.

Item.	Quantity.	Value per unit.	Total receipts.	Percentage to total.
		RS. A. P.	RS. A. P.	
1 Sun-hemp fibre	25 thulam or 357.1 lb. ..	5 0 0	125 0 0	48.8
2 Waste stalk	30 thulams or 428.6 lb. ..	0 6 0	11 4 0	4.3
3 Seeds	2 kottai	..	120 0 0	46.9
Total, Receipts	..	..	256 4 0	100.0

One Kottai = 112 Madras Measures.

APPENDIX 43.

Time taken for manufacture of a hose and a screen canvas.

Description.	Kamalai val.		Screen canvas.	
	Days.	Hours.	Days.	Hours.
1 Preparatory processes	0	5.1/3	1	0
2 Warp preparing	0	2½	0	3
3 Spinning	2	0	3	2
4 Weaving	0	4	0	6
5 Giving finishing touches	0	1	0	2
Total	3	4.5/6	5	5

SUNHEMP MAT WEAVING IN PATTAMADAI (MELACHAVEL FIRKA)—cont.

APPENDIX 44.

Cost of manufacture of a hose and a screen canvas.

Description.	Hose.	Screen canvas.
	RS. A. P.	RS. A. P.
Cost of raw materials—		
Sunhemp fibre	0 14 4	1 8 0
Rice	0 1 8	0 3 4
	1 0 0	1 11 4
Manufacturing cost—		
Spinning	0 4 9	0 8 0
Warp preparing and weaving	0 6 6	0 8 0
	0 11 3	1 0 0
Grand total	1 11 3	2 11 4
Average selling price	1 14 7	3 0 0
Profit	0 3 4	0 4 8

APPENDIX 45.

Family expenditure per unit per annum.

Items.	Amount.	Percentage to total.
	RS.	
A. Ordinary—	431	50.8
Food	40	4.7
Fuel	7	0.8
Lighting	18	2.1
House rent, etc.	64	7.5
Clothing	39	4.6
Miscellaneous	..	..
Total, Ordinary	599	70.5
B. Extraordinary—	27	3.1
Medical	224	26.4
Improvements to land	..	..
Total, Extraordinary	251	29.5
Grand total	850	100.0

APPENDIX 46.

Distribution of assets per unit.

Description.	Amount.	Percentage to total.
	RS.	
1 House	283	11.4
2 Land	1,617	70.2
3 Industrial equipment	10	0.4
4 Raw materials	18	0.8
5 Livestock	15	0.6
6 Deposits	73	3.2
7 Jewels	309	13.4
Average for all units	2,305	100.0

PALMYRA ROUGH MATS INDUSTRY IN RAMANATHAPURAM.

APPENDIX 47.

Number of families engaged in the four different palmyra products industries and other cottage industries.

Name of the village.	Total number of families in the area under survey.	Number of families engaged in				Total number of families in all palmyra products industries.	Total number of families engaged in all the cottage industries.
		In rough mats industry.	Palm leaf fancy articles.	Palm fibre industry.	Palm gur industry.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 Rameswaram	1,090	25	87	..	..	112	227
2 Pamban	998	2	..	..	..	2	15
3 Dhanushkodi	735	..	..	..	..	..	12
4 Palangulam	133	12	..	..	..	12	12
5 Peravur	239	6	..	..	..	6	10
6 Kusavangudi	149	43	..	18	3	64	614
7 Kanjirangudi	514	18	..	..	104	122	126
8 Kilakarai	3,810	11	..	..	217	228	303
9 Pattanamkathan	416	22	..	..	2	24	25
10 Tirupullani	908	29	71	..	39	139	158
11 Kalukurani	149	17	..	..	..	17	17
12 Chittarkottai	929	21	185	..	26	232	236
13 Ramanathapuram	5,062	..	54	..	..	54	144
14 Devipatnam	704	8	6	..	32	46	61
15 Athangarai	660	1	..	..	2	3	13
16 Alagankulam	1,386	2	..	..	34	36	47
17 Pudhumadm	894	129	..	9	48	186	189
18 Karan	453	4	..	..	18	22	23
19 Athiyuthu	163	..	2	..	7	9	10
20 Valantharavai	782	15	..	..	17	32	32
21 Kudhakottai	943	17	..	47	100	164	164
22 Sakkaraiottai	715	116	..	..	..	116	116
23 Rettaiyurani	483	165	..	..	53	218	218
24 Mantapam	2,019	21	..	..	40	61	61
25 Periapatnam	602	..	..	..	..	..	103
26 Regunathapuram	614	41	..	..	14	55	67
27 Sathakonevalasai	269	10	..	..	6	16	16
28 Uchipuli	1,024	39	..	21	19	79	84
29 Vannangundu	571	215	..	..	16	231	250
Total	27,414	989	405	95	797	2,286	2,812

1 Percentage of families engaged in cottage industries to total number of families—10.3

2 Percentage of families engaged in palmyra products industries to total number of families engaged in cottage industries—81.3

PALMYRA ROUGH MATS INDUSTRY IN RAMANATHAPURAM—cont.

APPENDIX 48.

Area under palmyra palm in Madras (Composite) State in 1951-52.

Name of the district.	Acres.	Percentage.
(1)	(2)	(3)
1 Srikakulam	878	1.2
2 Visakhapatnam	1,136	1.5
3 East Godavari	100	0.1
4 West Godavari	609	0.8
5 Krishna	661	0.9
6 Guntur	3,221	4.4
7 Kurnool	..	..
8 Bellary	692	1.0
9 Anantapur	592	0.8
10 Cuddapah	670	0.9
11 Nellore	1,074	1.5
12 Chingleput	1,445	2.0
13 South Arcot	1,360	1.8
14 Chittoor	784	1.1
15 North Arcot	1,762	2.4
16 Salem	640	0.9
17 Coimbatore	1,511	2.0
18 Tiruchirappalli	516	0.7
19 Tanjavur	2,411	3.3
20 Madurai	1,252	1.6
21 Ramanathapuram	8,228	11.1
22 Tirunelveli	35,210	47.6
23 Malabar	8,662	11.7
24 South Kanara	520	0.7
25 The Nilgiris	..	..
Total	73,934	100.0

Source—Season and Crop Report of the Madras State, 1951-52, page 53.

APPENDIX 49.

Names of villages selected for survey and the number of families engaged in rough mat industry.

Names of villages.	Number of families engaged in rough mats industry.	Number of families selected for survey.
(1)	(2)	(3)
1 Chittarkottai	21	4
2 Pudumadam	129	9
3 Uchipuli	39	8
4 Valantharavai	15	2
5 Rameswaram	25	3
6 Pattinamkathan	22	2
7 Tirupullani	29	3
8 Kudhakottai	17	2
9 Kusavangudi	43	5
10 Kanjirankudi	18	2
11 Vannangundu	215	21
12 Regunathapuram	41	5
Total	614	66

PALMYRA ROUGH MATS INDUSTRY IN RAMANATHAPURAM—cont.

APPENDIX 50.

Quantity and value of export of rough mats by two merchants of Uchipuli.

Month.	Quantity bundles.	Value.
(1)	(2)	(3)
	Nos.	RS.
1952—		
January	1,117	6,702
February	1,531	9,186
March	2,863	17,178
April	1,956	11,736
May	2,086	12,516
June	2,096	12,576
July	2,513	15,078
August	2,172	13,032
September	2,834	17,004
October	4,039	24,234
November	2,239	13,434
December	1,829	10,974
Total ..	27,275	1,63,650

1 bundle = 30 mats.

APPENDIX 51.

Income per family per annum.

Sources.	Amount.	Percentage to total.
(1)	(2)	(3)
	RS.	
1 Income from rough mats	152	24.7
2 Agricultural labour	285	46.2
3 Non-agricultural labour	13	2.2
4 Sweet toddy tapping	6	0.9
5 Palm gur manufacture	1	0.2
6 Remittances from outside	4	0.6
7 Drumming	1	0.2
8 Land	58	9.5
9 House	12	1.9
10 Livestock	1	0.1
11 Others	84	13.5
Total ..	617	100.0

PALMYRA ROUGH MATS INDUSTRY IN RAMANATHAPURAM—cont.

APPENDIX 52.

Expenditure per family per annum.

Item.	Average per family.	Percentage to total.
(1)	(2)	(3)
	RS.	
I. Ordinary—	490	77.1
1 Food	16	2.4
2 Fuel and lighting	21	3.3
3 Rent and repairs	75	11.8
4 Clothing		
Total ..	602	94.6
II. Extraordinary—	11	1.7
5 Marriage	2	0.3
6 Medical	21	3.4
7 Others		
Total ..	34	5.4
Grand total ..	636	100.0

APPENDIX 53.

Assets per family.

Description.	Average per family.	Percentage to total.
(1)	(2)	(3)
	RS.	
Houses	242	22.0
Wet lands	9	0.8
Dry lands	692	62.9
Gardens	7	0.6
Livestock	89	8.1
Carts	9	0.8
Deposit	3	0.3
Loans given	16	1.5
Jewels	30	2.7
Others	3	0.3
Total ..	1,100	100.0

APPENDIX 54.

Liabilities per family.

Description.	Business.	Domestic.	Total.	Percentage to total.
(1)	(2)	(3)	(4)	(5)
	RS.	RS.	RS.	
1 Mortgage with possession	9	164	173	53.2
2 Simple mortgage		2	2	0.6
3 Pro-note		67	67	20.6
4 Handloans		82	82	25.3
5 Pawn		1	1	0.3
Total ..	9	316	325	100.0

PALMYRA LEAF FANCY ARTICLES IN RAMANATHAPURAM.

APPENDIX 55.

Distribution of families engaged in palmyra leaf fancy articles in the centres surveyed.

Centre.	Centres with units engaged in palmyra leaf fancy products.				Number of units selected for survey.			
	Family units.	Merchant units.	Co-operative society.	Total.	Family units.	Merchant units.	Co-operative society.	Total.
Chittarkottai ..	179	6	..	185	19	2	..	21
2 Rameswaram ..	75	12	..	87	5	..	..	5
3 Ramanathapuram.	50	4	1	55	5	..	1	6
4 Tirupullani ..	69	2	..	71	4	2	..	6
Total ..	373	24	1	398	33	4	1	38

APPENDIX 56.

Composition of a family unit.

	Workers in palmyra leaf fancy products.	Workers in other occupations.	Dependents.	Total.
Men ..	0.5	0.4	0.1	1.0
Women ..	2.0	..	0.1	2.1
Boys ..	0.2	..	0.6	0.8
Girls ..	0.2	..	0.6	0.8
Total ..	2.9	0.4	1.4	4.7

PALMYRA LEAF FANCY ARTICLES IN RAMANATHAPURAM—cont.

APPENDIX 57.

Fluctuations of output per family unit.

Description.	November 1951.	December 1951.	January 1952.	February 1952.	March 1952.	April 1952.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Fancy baskets ..	132	128	135	144	151	135
2 Square fancy mats ..	50	50	50	52	52	50
3 Fancy hats ..	21	21	21	23	23	21
4 Fancy hand bags ..	10	10	10	11	10	10
5 Winnows ..	56	56	59	61	59	56
6 Boxes (a set of three) ..	9	9	9	10	10	9
7 Fancy leaf trunk box ..	3	3	3	3	3	3
8 Hand fans ..	34	30	25	35	320	400
Total ..	315	307	312	339	628	684

Description.	May 1952.	June 1952.	July 1952.	August 1952.	September 1952.	October 1952.	Total.
(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1 Fancy baskets ..	135	128	125	135	135	136	1,619.
2 Square fancy mats ..	50	49	49	51	50	50	602
3 Fancy hats ..	21	21	21	21	21	21	256
4 Fancy hand bags ..	10	10	10	10	10	10	121
5 Winnows ..	56	55	56	53	53	53	673
6 Boxes (a set of three) ..	8	9	9	9	8	8	107
7 Fancy leaf trunk box ..	2	3	3	3	3	3	35
8 Hand fans ..	280	260	210	200	110	100	2,004
Total ..	562	535	483	482	390	381	5,418

APPENDIX 58.

Statement showing the cost of production of the palmyra leaf fancy products and the number of articles that can be produced in a day by an average adult worker.

articles than can be produced

Description of raw materials.	Cost of manufacture.												Palmyra leaf trunk boxes (2 boxes).		
	Hand bags (a set of four).			Hand fans (60 fans).			Winnows (6 winnows).			Hats (6 hats).					
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
	0	4	0	0	5	0	0	4	0	0	3	0	0	6	0
1 Palm tender leaves	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2 Palm tender ribs	..	..	..	..	0	1	6	0	1	6	..	..	..	0	0
3 Palm stems	..	..	..	..	0	0	6	..	..	..	..	..	..	0	4
4 Palm coir	..	..	..	..	0	0	6	..	..	..	..	..	..	0	1
5 Palm green leaves	..	..	..	..	0	0	6	0	0	6	..	..	..	..	..
6 Dyes	..	..	..	..	0	0	3	..	..	..	0	1	6	..	..
7 Turmeric	..	..	..	..	..	..	..	..	..	..	0	1	3	..	..
8 Thread	..	..	..	..	..	..	..	..	..	..	0	0	3	..	..
9 Paints	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10 Varnish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	0	5	3	0	8	3	0	6	0	0	6	0	0	6	6
Wages ..	0	7	6	0	7	6	0	7	6	0	7	6	0	7	6
Total cost ..	0	12	9	0	15	9	0	13	6	0	13	6	0	14	9
Merchants' selling price ..	1	0	0	1	4	0	1	2	0	1	2	0	1	2	0
Profit ..	0	3	3	0	4	3	0	4	6	0	4	6	0	4	0

PALMYRA LEAF FANCY ARTICLES IN RAMANATHAPURAM—cont.

APPENDIX 61.

Assets of a family unit and a merchant unit.

Description.	Family units.		Merchant units.			
			Tirupullani.		Chittarkottai.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS.		RS.		RS.	
1 House	1,002	78.8	325	76.3	6,000	53.0
2 Land	102	8.1	..	..	4,020	35.7
3 Industrial equipment	3	0.2	1	0.2	25	0.2
4 Jewels	122	9.7	100	23.5	700	6.2
5 Loans given	18	1.4	..	..	..	..
6 Raw materials in stock	2	0.2	..	..	550	4.9
7 Others	6	0.6	..	..	..	..
Total ..	1,255	100.0	426	100.0	11,315	100.0

APPENDIX 62.

Liabilities of a family unit and a merchant unit.

Description.	Family units.				Merchant units	
					Tirupullani.	
	Business.	Domestic.	Total.	Percentage to total.	Business.	Domestic.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	RS.	RS.	RS.		RS.	RS.
1 Mortgage with possession ..	..	15	15	11.4	..	..
2 Pro-note loan	..	5	5	3.8	..	225
3 Hand-loans	15	97	112	84.8	..	..
Total ..	15	117	132	100.0	..	225

Merchant units—cont.

Description.	Tirupullani—cont.		Chittarkottai.			
	Total.	Percentage to total.	Business.	Domestic.	Total.	Percentage to total.
	(8)	(9)	(10)	(11)	(12)	(13)
	RS.		RS.	RS.	RS.	
1 Mortgage with possession ..	..	..	..	..	..	..
2 Pro-note loan	225	100	150	..	150	100
3 Hand-loans	..	..	..	..	..	..
Total ..	225	100	..	..	150	100

C.I.—40



PALMYRA LEAF FANCY ARTICLES IN RAMANATHAPURAM—cont.

APPENDIX 59.

Statement showing the net income from the palmyra leaf fancy articles of an average merchant unit at Tirupullani and Chittarkottai.

Description.	Tirupullani.		Chittarkottai.	
	Quantity.	Value.	Quantity.	Value.
		RS. A. P.		RS. A. P.
I. Raw materials and fuel—				
1 Palmyra tender leaves	1,868 leaves.	58 8 0	660 leaves.	20 10 0
2 Dyes	36 tolas.	18 0 0	112½ tolas.	56 14 0
3 Turmeric	3-1/10 viss.	3 15 0	..	..
4 Thread	..	..	31½ reels.	35 1 0
5 Varnish	..	..	..	101 12 0
6 Paints	..	..	..	36 0 0
7 Turpentine	..	..	..	4 8 0
II. Fuel	..	..	..	2 0 0
III. Rent and pairs—	..	..	..	..
Rent (estimated)	..	12 0 0	..	12 0 0
Repairs	..	4 4 0	..	4 4 0
IV. Tools and machinery—	..	..	..	..
Maintenance	..	..	..	..
Depreciation	..	5 15 0	..	5 15 0
V. Wages payable	..	250 10 8	..	250 10 8
VI. Cost of goods purchased	..	2,832 3 6	..	2,072 2 0
Total cost ..	..	3,189 8 2	..	2,601 1 8
Sale value—	..	..	..	..
Main product	..	3,952 11 0	..	4,048 4 0
Waste materials	..	4 0 0	..	2 0 0
Total ..	..	3,956 11 0	..	4,050 4 0
Profit ..	..	767 2 10	..	1,449 1 4

APPENDIX 60.

Expenditure per family and merchant unit per annum.

Description.	Family unit.		Merchant unit.			
			Tirupullani.		Chittarkottai.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS.		RS.		RS.	
I. Ordinary—						
1 Food	562	84.5	556	62.8	1,250	52.9
2 Fuel and lighting	21	3.2	12	1.4	60	2.5
3 House rent and repairs	10	1.5	29	3.3	90	3.8
4 Clothing	52	7.8	85	9.6	275	11.6
5 Miscellaneous	15	2.2	190	21.4	250	10.6
Total ..	660	99.2	872	98.5	1,925	81.4
II. Extraordinary—						
6 Marriages	..	..	..	..	350	14.8
7 Medicine	5	0.8	9	1.0	90	3.8
8 Others	..	..	5	0.5	..	..
Total ..	5	0.8	14	1.5	440	18.6
Grand total ..	665	100.0	886	100.0	2,365	100.0

PALMYRA FIBRE INDUSTRY IN RAMANATHAPURAM.

APPENDIX 63.

Statement showing the number of families engaged in palmyra fibre industry.

Name of the village.	Number of families engaged in palmyra fibre industry.	Number of families engaged in all the cottage industries.	Percentage of (2) to (3).
(1)	(2)	(3)	(4)
1 Kusavangudi	18	64	28.1
2 Kudhakottai	47	127	37.0
3 Pndhumadam	9	190	5.0
4 Uchipuli	21	86	24.4
Total ..	95	467	20.3

APPENDIX 64.

Composition of a family.

Description.	Workers in palm fibre industry.	Workers in other occupations.	Dependents.	Total.
1 Men	1.7	..	..	1.7
2 Women	1.3	..	..	1.3
3 Boys	..	0.2	1.0	1.2
4 Girls	0.1	..	0.5	0.6
Total ..	3.1	0.2	1.5	4.8

APPENDIX 65.

Income per family per annum.

Source.	Amount RS.	Percentage to total.
1 Palmyra fibre industry	200	33.4
2 Agricultural labour	352	58.9
3 House (estimated rent)	17	2.8
4 Dry land	29	4.9
Total ..	598	100.0

PALMYRA FIBRE INDUSTRY IN RAMANATHAPURAM—cont.

APPENDIX 66.

Expenditure per family per annum.

Description.	Amount. RS.	Percentage to total.
1 Food	501	78.5
2 Fuel and lighting	13	2.1
3 House rent (estimated) and repairs.	24	3.8
4 Clothing	60	9.4
5 Miscellaneous	40	6.2
Total ..	638	100.0

APPENDIX 67.

Assets per family.

Description.	Amount. RS.	Percentage to total.
1 House	187	32.4
2 Dry land	335	58.0
3 Industrial equipment	2	0.4
4 Livestock	37	0.5
5 Loans given	16	2.7
Total ..	577	100.0

APPENDIX 68.

Liabilities per family.

Description.	Amount. RS.	Percentage to total.
1 Mortgage with possession	50	27.8
2 Pro-note	70	38.8
3 Hand-loans	60	33.4
Total ..	180	100.0

PALM GUR INDUSTRY IN RAMANATHAPURAM.

APPENDIX 69.

Composition of an average family.

Description.	Workers in palm gur industry.	Workers in other industries.	Dependents.	Total.
Men	1.3	..	0.2	1.5
Women	1.8	..	0.3	2.1
Boys	0.1	0.3	1.2	1.6
Girls	0.2	..	0.5	0.7
Total	3.4	0.3	2.2	5.9

APPENDIX 70.

Tools and equipment per family.

Description.	Number of tools.	Initial cost.	Replacement cost.	Present market value.	Maintenance charges.	Depreciation.
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Big knives	1.7	2 5 10	2 6 9	1 3 10	0 2 0	0 6 4
2 Small knives	0.6	0 8 9	0 8 9	0 4 9	..	0 1 9
3 "Kadippus"	2.8	8 15 10	9 0 0	2 15 11	..	1 12 9
4 Big pots	18.6	5 5 9	5 5 9	1 1 7	5 5 9	..
5 Small pots	113.0	8 14 0	8 14 0	2 2 3	8 14 0	..
6 Ladder	0.5	0 12 9	0 12 9	0 4 0	..	0 3 2
7 Laddle	1.6	0 2 0	0 2 0	..	0 2 0	..
8 Tins	0.7	1 5 10	1 5 10	0 10 6	..	0 10 11
Total	..	28 6 9	28 7 10	8 10 10	14 7 9	3 2 11

APPENDIX 71.

Fluctuations in output of palm gur per unit per annum.

	Average quantity per family (in viss).	Percentage to total.
March 1952	107.7	9.8
"	236.9	21.5
"	237.8	21.6
"	228.6	20.7
"	167.8	15.2
1st	123.2	11.2
Total	1,102.0	100.0

PALM GUR INDUSTRY IN RAMANATHAPURAM—cont.

APPENDIX 72.

Income per family per annum.

Description.	Average per family.	Percentage to total.
	RS.	
I. Occupations—		
Palm gur	537	58.6
Agricultural labour	233	25.4
Remittances from outside	14	1.5
Mat weaving	79	8.6
Others	9	1.0
II. Assets—		
House	9	1.0
Land	28	3.1
Livestock	1	0.1
Loans given	2	0.2
Others	5	0.5
Total	917	100.0

APPENDIX 73.

Expenditure per family per annum.

Description.	Amount.	Percentage to total.
	RS.	
I. Ordinary—		
Food	713	78.3
Fuel and lighting	24	2.2
Rent and repairs	16	1.9
Clothing	80	8.9
Miscellaneous	22	2.5
Total	855	93.8
II. Extraordinary—		
Marriage	43	4.8
Medical	5	0.6
Others	6	0.8
Total	54	6.2
Grand total	909	100.0

CONCH SHELL INDUSTRY IN RAMANATHAPURAM.

APPENDIX 76.

Statement showing the number of families engaged in conch shell works and all the cottage industries.

Name of the village.	Total number of families.	Number of families engaged in conch shell works.	Number of families engaged in all the cottage industries.	Percentage of families engaged in conch shell works to the total engaged in all cottage industries.
				(5)
(1)	(2)	(3)	(4)	(5)
1 Kilakkarai	3,810	30	303	9.9
2 Periapatnam	602	25	103	24.3
3 Rameswaram	1,090	6	227	2.6
4 Tirupullani *	908	6	168	3.8
Total	6,410	67	791	8.5

* In Tirupullani all the families manufacture only conch bead garlands.

APPENDIX 77.

Raw materials used by an average merchant unit per annum.

Description.	Quantity purchased.	Cost.	Percentage of cost to total.
			(4)
(1)	(2)	(3)	(4)
		RS.	
A. Conch varieties—			
1 Small conches (patti)	5,714	686	10.9
2 Medium conches (jathi)	13,729	1,647	26.3
3 Special conches	170	213	3.4
4 Sangu mani	310 (M.M.)	305	..
5 Five-finger conches	2,857	223	3.6
6 Ceylon paper weight conches	2,357	707	11.3
7 Cowries	46,571	61	1.0
Total	..	3,842	61.3
B. Colours, thread, acid, etc.—			
8 Colours	24.4 lb.	92	1.5
9 Glazing thread (three varieties)	2.6 bundles, 8.6 lb. and 21.4 lb. }	296	4.7
10 Kadal Norai	18.4 bags	92	1.5
11 Hydrochloric acid	3 cwt. and 32 lb.	229	3.6
Total	..	709	11.3
C. Others—			
Garland materials	..	1,720	27.4
Rock plantain seeds	..	..	..
Lotus seeds	..	..	..
“Ruduraksha seeds”	..	..	..
Palmyra seeds	..	..	..
Sandalwood beads, etc.	..	..	..
Total	..	1,720	27.4
Grand total	..	6,271	100.0

PALM GUR INDUSTRY IN RAMANATHAPURAM—cont.

APPENDIX 74.

Assets per family.

Description.	Value.	Percentage to total.
	RS.	
1 House	260	33.5
2 Land	334	43.2
3 Garden land	14	1.9
4 Industrial equipment	8	0.8
5 Livestock	26	3.2
6 Loans given	39	5.0
7 Jewels	91	11.8
8 Others	5	0.6
Total	777	100.0

APPENDIX 75.

Liabilities per family.

Description.	Business purpose.	Domestic purpose.	Total per family.	Percentage to total.
	RS.	RS.	RS.	
1 Mortgage with possession	7	30	37	15.6
2 Simple mortgage	..	11	11	4.5
3 Pro-note	11	52	63	26.5
4 Hand-loans	34	93	127	53.4
Total	52	186	238	100.0

CONCH SHELL INDUSTRY IN RAMANATHAPURAM—cont.
APPENDIX 78.

Statement showing the cost of cleaning a dozen conches of small, medium and special varieties and the time taken.

Description.	Small (patti) and Medium (Jathi) variety conches.						Special varieties.							
	Price per unit.			Cost.			Price per unit.			Cost.				
	RS. A. P.			RS. A. P.			RS. A. P.			RS. A. P.				
I. Raw materials—														
(a) Conch shells	12	per	100	1	7	0	1	4	0	15	0	0	(each)	(12 conches)
				(per 12 conches)						(12 conches)				
(b) Hydrochloric acid ..	0	10	0	0	1	3	0	10	0	0	2	6	(per lb.)	(per lb.)
			(per lb.)											
Time taken by a worker														
	Days.		Hours.	Wages.			Days.		Hours.	Wages.				
				RS. A. P.						RS. A. P.				
II. Wages—														
(a) Chiselling			4½	0	4	6	3			1	8	0		
(b) Rubbing			3	0	3	0	3			1	8	0		
(c) Filing			3	0	3	0	3			1	8	0		
(d) Carving			1½	0	1	3	2			1	0	0		
(e) Polishing with the acid solution.			½	0	0	3	..	1		0	1	6		
Total ..	1		4	2	4	3	11		1	20	11	0		
Total sale value ..				2	8	6				24	0	0		
Profit per dozen ..				0	4	3				3	5	0		

APPENDIX 79.

Income per unit (family and merchant units) per annum.

Description.	Family unit.		Merchant unit.		Average for all units.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	(2)	(3)	(4)	(5)	(6)	(7)
	RS.		RS.		RS.	
1 Conch shell industry ..	365	66.0	524	20.4	404	38.8
2 Other conches			1,880	73.2	454	43.6
3 Houses	16	2.9	10	0.4	15	1.5
4 Lands	2	0.4	11	0.4	4	0.4
5 Remittances from outside.	129	23.3	21	0.8	103	9.9
6 Agricultural labour ..	4	0.8	122	4.8	32	3.1
7 Others	37	6.4	1	..	28	2.7
Total ..	553	100.0	2,569	100.0	1,040	100.0

CONCH SHELL INDUSTRY IN RAMANATHAPURAM—cont.
APPENDIX 80.

Expenditure per unit (family and merchant unit) per annum.

Description.	Family unit.		Merchant unit.		Average for all units.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	(2)	(3)	(4)	(5)	(6)	(7)
	RS.		RS.		RS.	
I. Ordinary—						
1 Food	447	78.4	1,402	64.1	678	70.6
2 Fuel and lighting ..	15	2.6	45	2.0	22	2.3
3 Rent and repairs ..	21	3.7	31	1.4	23	2.3
4 Clothing	64	11.2	207	9.5	99	10.3
5 Miscellaneous	23	4.1	90	4.1	39	4.1
Total ..	570	100.0	1,775	81.1	861	89.6
II. Extraordinary—						
6 Marriage			89	4.1	21	2.2
7 Medicine			57	2.6	14	1.5
8 Death			14	0.7	3	0.3
9 Others			252	11.5	61	6.4
Total ..			412	18.9	99	10.4
Grand total ..	570	100.0	2,187	100.0	960	100.0

APPENDIX 81.

Asset of a unit (family and merchant unit).

Description.	Family unit.		Merchant unit.		Average for all units.	
	Value.	Percentage to total.	Value.	Percentage to total.	Value.	Percentage to total.
	(2)	(3)	(4)	(5)	(6)	(7)
	RS.		RS.		RS.	
1 House	593	61.5	3,136	38.8	1,207	45.0
2 Land	150	15.6	757	9.4	297	11.1
3 Industrial equipment ..	6	0.6	8	0.1	7	0.3
4 Raw materials	212	22.0	3,583	44.3	864	32.2
5 Jewels	3	0.3	544	6.7	292	10.8
6 Livestock			21	0.2	8	0.3
7 Others			43	0.5	10	0.3
Total ..	964	100.0	8,092	100.0	2,685	100.0

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS.

APPENDIX 82.

Family engaged in sericulture in Hosur firka.

Village.	Total number of families.	Number of families engaged in sericulture.	Number of families engaged in other cottage industries.	Total engaged in cottage industries [columns (3) + (4)].	Percentage of columns (3) to (5).
(1)	(2)	(3)	(4)	(5)	(6)
1 Muthuganapalli	360	8	22	30	26.7
2 Bagalur	590	1	63	64	1.6
3 Mugalur	232	1	8	9	11.1
4 Mathigiri	890	1	25	26	3.9
5 Thorapalli Agraharam ..	236	1	18	19	5.3
6 Geleverapalli	117	5	6	11	45.5
7 Onnalvadi	241	8	3	11	72.7
8 Zuzuvadi	251	7	9	16	43.8
9 Gopanapalli	158	1	1	2	50.0
10 Avalapalli	188	1	10	11	9.1
11 Nagondapalli	225	2	6	8	25.6
12 Poonapalli	225	2	3	5	40.0
13 Mookondapalli	246	1	8	9	11.1
14 Nallur	356	3	18	21	14.3
15 Sennathur	195	1	4	5	20.0
Total	4,510	43	204	247	17.4

APPENDIX 82-A.

Families engaged in sericulture in Kollegal firka.

Village.	Total number of families.	Number of families engaged in sericulture.	Number of families engaged in other cottage industries.	Total engaged in cottage industries [columns (3) + (4)].	Percentage of columns (3) to (5).
(1)	(2)	(3)	(4)	(5)	(6)
Villages surveyed—					
1 Hosamangalangi	276	153	27	180	85.0
2 Tagarapuram	374	181	32	213	85.0
3 Alahalli	341	175	41	216	81.0
4 Chilkuvadi	238	120	52	172	69.8
5 Kunthur	531	178	63	241	73.9
6 Kunigalli	515	127	54	181	70.2
Total	2,275	934	269	1,203	77.6
Villages not surveyed—					
7 Teramballi	219	39			
8 Uthamaballi	186	21			
9 Mullur	528	17			
10 Hanapuram	232	22			
11 Mudikondam	402	45			
12 Thimmarajapuram	250	42			
13 Lingapuram	353	51			
14 Bastipuram	203	10			
15 Kollegal	2,000	3			
16 Siddianapuram	218	1			
Total	4,591	251			
Grand total	6,866	1,185			

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

APPENDIX 82-B.

Abstract showing the classification of cottage industrial families in Hosur firka village-wise and industry-wise.

Serial number and name of the village.	Silk-weaving.	Silk-worm rearing.	Black-smithy.	Gold-smithy.	Car-pentry.	Pottery.	Mat-weaving.	Basket-weaving.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Muthuganapalli	5	8	3	..	2	3	2	2
2 Bagalur	33	1	3	4	4	6	5	2
3 Mugalur	..	1	2	..	..	..	..	..
4 Mathigiri	..	1	4	..	..	4	..	2
5 Thorapalli Agraharam ..	1	..	1	..	2	1	8	6
6 Geleverapalli	..	5	..	..	4	..	..	..
7 Onnalavadi	..	8	2	..	..	1	..	..
8 Zuzuvadi	1	7	3	3	2	..	..	..
9 Gopanapalli	..	1	1	..	..	..	..	..
10 Avalapalli	..	1	2	..	3	..	..	5
11 Nagondapalli	..	2	4	..	1	1	..	..
12 Poonapalli	..	2	3	..	..	..	..	..
13 Mookondapalli	..	1	3	2	1	..	..	2
14 Nallur	..	3	5	5	3	1	..	..
15 Sennathur	..	1	2	2	..	..	..	..
Total	40	43	38	16	22	17	15	19

Serial number and name of the village.	Tailoring.	File-making.	Rope-making.	Cumbly manufacture.	Shoe-making.	Sawing.	Total.
(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1 Muthuganapalli	5	..	..	..	..	..	30
2 Bagalur	5	1	..	..	..	..	64
3 Mugalur	..	..	..	6	..	..	9
4 Mathigiri	15	..	..	..	..	..	26
5 Thorapalli Agraharam ..	..	..	..	..	..	..	19
6 Geleverapalli	..	..	..	..	2	..	11
7 Onnalavadi	..	..	..	..	..	..	11
8 Zuzuvadi	..	..	..	..	..	..	16
9 Gopanapalli	..	..	..	..	..	..	2
10 Avalapalli	..	..	..	..	..	..	11
11 Nagondapalli	..	..	..	..	..	..	8
12 Poonapalli	..	..	..	..	..	..	5
13 Mookondapalli	..	..	..	..	..	..	9
14 Nallur	4	..	..	..	..	..	21
15 Sennathur	..	..	..	..	..	..	5
Total	29	1	..	6	2	..	247

APPENDIX 83.

Composition of an average family.

Description.	Workers in sericulture.	Other occupations.	Total.	Dependents.	Total.
(1)	(2)	(3)	(4)	(5)	(6)
Men	1.4	0.8	2.2	0.2	2.4
Women	0.5	0.5	1.0	0.8	1.8
Boys	0.3	0.2	0.5	0.5	1.0
Girls	0.4	0.1	0.5	0.6	1.1
Total	2.6	1.6	4.2	2.1	6.3

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

APPENDIX 84.

Frequency distribution of families cultivating mulberry in Hosur firka.

Group (cents).	Number of families.	Group (cents).	Number of families.
0—10	Nil.	51—60	2
11—20	1	61—70	Nil.
21—30	8	71—80	2
31—40	8	81—90	Nil.
41—50	Nil.	91—100	1
		Total	22

APPENDIX 85.

Note on the processes connected with silk worm rearing and spinning.

(i) *Cultivation of mulberry.*—The cultivation of mulberry carried on as a rain-fed crop in Kollegal and Hosur areas does not call for any special skill. The land is ploughed four to five times, as in the case of other dry crops. The mulberry cuttings are planted at a distance of three feet from one another in June-July. When the plant reaches a height of 1 to 1½ feet in the course of two months, hand-weeding is done. At this time, if any of the plants has not sprouted or withered, fresh cuttings are planted in these places. Subsequently hoeing is done every month. In the course of four or five months, the garden will be full of fresh leaves. Once the leaves are plucked, it takes another two months for the garden to be ready for harvest. In the first year, five crops of leaves are raised and in the subsequent years five to six crops depending on the rainfall. Pruning is done at the end of the second year usually in June-July and in every subsequent year and the garden will continue to yield for 10—12 years. As the silk-worms are voracious eaters, the progress of rearing depends on supply of leaves. Usually one acre of mulberry garden yields from 3,000 to 3,500 lb. of leaves which are sufficient for rearing 400 layings in a year. The layings are reared in five or six batches spread over the year, the number of layings reared for each batch depending on the yield of the leaves from the garden. The cost of cultivation of an acre of mulberry garden is as follows:—

Cost of cultivation of an acre of mulberry in Kollegal firka.

Description.	Amount.
	RS. A. P.
First year—	
1 Land assessment	1 4 0
2 Ploughing four times with two ploughs each time ..	16 0 0
3 Other incidental charges—Female labour	2 0 0
4 Making rows	3 0 0
5 Manuring with five cart-loads of manure	30 0 0
6 Cartage for above	4 0 0
7 Spreading manure	1 4 0
8 Cost of mulberry cutting	3 0 0
9 Preparing the cuttings	1 0 0
10 Planting	4 0 0
11 Hand-weeding	8 0 0
12 Hoeing ten times	30 0 0
13 Planting failed pits	4 0 0
Total	107 8 0

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

Description.	Amount.
	RS. A. P.
Second year—	
14 Land assessment	1 4 0
15 Ploughing and hoeing	36 0 0
16 Manuring	18 0 0
17 Carting the manure	2 0 0
18 Penning	3 0 0
Total	60 4 0
I. Cost incurred in the first year	107 8 0
II. Cost incurred in the subsequent nine years, Rs. 60-4-0 × 9.	542 4 0
Total for ten years	649 12 0

The total cost of cultivation for ten years would amount to Rs. 649-12-0 and the average cost of cultivation per acre per year would be Rs. 64-15-7. As the average yield per annum would be about 3,250 lb. (3,000 to 3,500 lb.) the cost of one lb. of leaf may be estimated at Re. 0-0-4.

According to the accounts maintained by the Sericultural department at Hosur the cost of cultivation for one acre of its farm of 10.89 acres is Rs. 83-9-0. As the yield per acre is 3,500 lb. of leaves, the cost per lb. works out to Re. 0-0-5.

(ii) *Preparation of seed cocoon.*—As the yield of silk from the local race of silk-worm is poor both in quality and quantity, a cross-breed of foreign and local races has been evolved. In order to preserve the vigour and vitality of the foreign races and to ensure an adequate supply of foreign race seed cocoons for hybridization, Government have established a Hill Rearing Station at Coonoor where foreign race egg layings received mainly from Japan are developed till they get acclimatized to Indian conditions and are then sent to the Government silk farms maintained at Kollegal, Thadaguni, Hosur and Palmaner for multiplication. Multiplication of foreign race-seed cocoons is done only at the Government farms.

Simultaneously arrangements have been made for the production of local variety of seed cocoons in Hosur and Kollegal areas. The Hosur Silk Farm distributed cellular layings of the local race to a number of rearers specially selected for the purpose and purchase the seed cocoons produced by them. These are sent along with an equal number of foreign race seed cocoons produced in the Government farm itself to Kollegal where cross-breed layings are prepared by pairing the male of the foreign race and the female of the local race. There is cold storage facility in the Central Grainage at Kollegal which is available for use by private grainages also on payment of rent and by this device the emergence of moths at the end of ten days can be delayed by a few days. The moths are allowed to lay eggs on newspaper sheets inside tin or plastic conicals. Moths are tested for diseases and if found to be diseased, the layings of the moths are destroyed.

These cross-breed layings are supplied to rearers by the Central Grainage at Kollegal and through sub-grainages at Kunthur, Kamakarai, Hanur and Saggium. Besides the Central Grainage at Kollegal, there are other private grainages some of which are aided by the Government.

The private grainages prepare cross-breed cellular layings by purchasing local race-seed cocoons from Kunigal area in Mysore State and the foreign race-seed cocoons either from the same Kunigal area or the Central Grainage at Kollegal. The Central Grainage at Kollegal supplies foreign race-seed cocoons to outsiders only after meeting its own requirements and that of the aided grainages. The private grainages therefore mainly depend for their local and foreign race-seed cocoons on the Kunigal area.

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

The main items in the cost of production of layings for the Central grainage are cost of cocoons, wages for labour engaged in preparation of egg layings, chemicals for washing the layings and cost of newspaper and egg sheets. In the case of private grainages additional expenditure has to be incurred on transport of seed cocoons from Kunigal area, rent on buildings, selling expenses and other contingencies. A statement showing the average cost of preparation of 100 cross-breed layings incurred by the Central grainage during the period April 1952 to January 1953 and that by a private grainage at Kollegal from November 1951 to October 1952 is given below :—

Cost of preparation of 100 cross-breed layings.

Description.	By the Central grainage at Kollegal.			By the private grainage.		
	RS.	A.	P.	RS.	A.	P.
1 Cost of cocoons	3	9	4	2	12	7
2 Wages for labour	0	5	8	0	2	0
3 Chemicals	0	0	2	0	0	8
4 Cost of newspaper and egg sheets	0	0	8	0	1	3
5 Transport	..	..	..	0	3	2
6 Rent on buildings	..	..	..	0	1	5
7 Selling expenses	..	..	..	0	0	1
8 Contingencies	..	..	..	0	0	1
Total	3	15	10	3	5	3
Deduct cost of pierced cocoons	0	11	5	0	5	0
Net cost	3	4	5	3	0	3

(iii) *Supply of disease-free cross-breed layings.*—This is the most important problem of the sericulture industry as the entire success of the industry depends on the quality of the seeds from which silk worms are reared. If the layings are not properly tested and they are infected with Pebrin, all the worms will die. On the other hand if they are infected with Flacherie, another common disease, the worms will develop dysrohea at the fourth stage just before spinning and most of them will die so that the rearer will incur a heavy loss.

With a view to the eradication of such diseases, the Sericulture department has started the system of aided grainages. Under the system, each selected grainage is supplied free of cost with a set of grainage appliances such as a microscope, two crushing sets, slides, and tin conicals. A bonus is also given at the rate of Rs. 2-8-0 per 1,000 disease free cross breed layings prepared and successfully distributed subject to a maximum of Rs. 500, i.e., for 2 lakhs of layings per year. Training is also imparted to the owners of grainages and their sons in the use of microscopes for detection of diseases.

(iv) *Commercial rearing of silk worms.*—The next process is the rearing of silk worms for production of raw silk. Ryots with mulberry gardens purchase their requirements of disease free layings either from the Central Grainage at Kollegal or from any of the sub-grainages of the department or from private grainages. The cost of 100 layings charged by the Government grainages is Rs. 4 against Rs. 5 by the private grainages. But in the case of Government grainages, cash has to be paid while the private grainages allow credit and payments can be made after the cocoons are gathered and sold.

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

The egg layings which are in loose sheets of paper are spread on bamboo trays and kept on rearing stands which are made of wood and bamboo. The main frame is made of wood and the cross beams of bamboos. The stands with 8 rows for keeping trays are mounted on ant-well stores. After ten days the eggs begin to hatch and the larvae come out. A thin sheet of paper is spread over the larvae and finely chopped tender mulberry leaves are sprinkled over it. The larvae which are in search of food come out and stick to the bottom of the paper which is then turned upside down and transferred to another bamboo tray. As all the eggs do not hatch at the same time, another thin paper is spread over the first tray so that the remaining larvae may also be transferred to fresh trays.

The worms are fed once in three hours throughout day and night with finely chopped tender mulberry leaves, till the seventh day when they go for moulting. Failure to feed even once will result in stunted growth and hence great care is taken about feedings.

The first stage of rearing is called "Chawki" rearing. Moulting is the process by which the worm gets rid of its outer skin. It is a period of inactivity when the worm does not eat anything. It lasts for a period of 36 hours and at the end of this period, the worm comes out after peeling off its old skin and then begins to eat again. This is what is known as first stage or first moult. The statement below shows the life cycle of the silk worm :—

Life cycle of the silk-worm.

Period.	Number of days.	Number of feeds in 24 hours.	Moulting period (hours).	Quantity of leaves consumed in 400 layings (lb.).	Quality of leaves given.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I	10	..	36	41	Tender leaves finely chopped.	Egg stage.
II	7	8	36	..	..	First moult.
III	4	7	24	102	Tender and half mature leaves chopped a little broader.	Second moult.
IV	5	6	24	155	Half mature leaves chopped much broader.	Third moult.
V	6	5	36	592	Seventy-five per cent mature leaves each leaf chopped into three.	Fourth moult.
VI	8	4	36	2,360	Full mature leaves given entire.	Spinning stage.
VII	10	..	..	..	..	Pupa stage.

After the worm has gone through the fourth moulting it eats voraciously and starts spinning its cocoon. It is then taken from the rearing tray and kept on a bamboo mat called "Chandrikai." It contains a number of spirals which give necessary space for the worms to spin cocoons. The worms complete the spinning of cocoons in 36 hours.

(v) *Marketing of cocoons.*—As the moths emerge piercing the cocoons after ten days of the commencement of spinning, the cocoons will have to be marketed before that period. There are two markets for the cocoons: (1) the Government market and (2) the private market. The Government cocoon markets are established at seven centres, viz., Kollegal, Hanur, Kamakarai, Chilkwadi, Basappan doddi, Talavadi and Sattagal, where cocoons are purchased for cash for the use of the Government Silk Filature. The private market caters to the private reelers.

(vi) *Reeling.*—The next process is reeling. This is done under two methods, by power-driven reeling machines and by hand driven charkas. The power-driven machine is installed at the Government Silk Filatures at Kollegal. As it is necessary to prevent the

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

pupae from coming out after the 10th day of spinning, the raw cocoons are placed in a hot air chamber so that the pupae inside the cocoons are killed. They are then dried in the shade and stored. The cocoons are first cooked in separate cooking basins. After removing the floss which is later dried and sold as waste silk. Cocoons are transferred to the reeling basin. Each cooking basin supplies two reeling basins. There is a reeler to attend to every reeling basin which is provided with a hot water and cold water tap to adjust the temperature of the water in the basin. At a time, eight or ten cocoons are fed into the reeling machine according to the deniers required.

The charka reeling method which is practised by most reelers is simple though primitive. It consists of a mud basin fixed three feet higher than the ground level with a small space behind the basin for the reeler to squat. The basin is placed over an oven which is kept burning throughout the period when reeling is in progress. Firewood is used for the purpose. There is a reel in front of the worker which is turned by means of a handle worked by a boy. As in the power reeling machine here also at a time 8 to 10 cocoons are fed to the reeling machine. This consists of a small iron plate with a hole, through which all the filaments pass and are made to wind on the reel. In the filature there are separate cooking basins and are kept separate. One of the disadvantages of the charka reeling, those basins basin and the reeling basin are one and the same with the result that it is not possible to alter the temperature of the one without altering that of the other. This results in deterioration of the quality of the silk. The charka silk is also not re-reeled as is the case with the filature silk.

The Department of Industries has introduced a scheme for the installation of an improved foot-reeling machine imported from Japan. This is intended to improve the quality of silk and the rate of production. The scheme also aims at imparting training to persons who desire to become reelers. The Department selects suitable reelers and supplies each with a set of five foot-reeling machines for a period of one year in the first instance. It also lends other technical apparatus to test the silk and gives necessary technical advice. In return the reeler is required to impart training in the improved method for a period of six months to trainees who would be given a stipend which would be shared by the Government and the reeler on a 50 : 50 basis. There are now 35 reeling machines of the improved type and against 122 charka reeling machines in Kollegal taluk. The department has made an improvement on the Japanese foot-reeling machine by making slight alterations and converting the foot-reeling machine into a hand-reeling one. It is also a labour-saving method as the reeler is able to concentrate on reeling while one boy is employed to drive all the five reeling machines.

(vii) *Twisting and doubling of raw silk.*—For purposes of weaving, the reeled raw silk has to be further twisted and doubled. The filature undertakes this process for the silk Bangalore and other places who get them twisted and doubled through what are known as "Throwing plants".

(viii) *Dyeing.*—The next process is dyeing the yarn. There are dyeing factories who undertake this work and they charge Rs. 3-8-0 to Rs. 4 for 32 yards length of warp and the required weft which weighs 4 lb. 12 oz. Fast colours are used.

(ix) *Weaving.*—Usually merchants supply master weavers with dyed yarn and also give instructions regarding the designs of the cloth to be woven. The usual rate for ordinary designs of 2½ inches lace border is Rs. 30 per warp length, i.e., 32 yards. The Filature however pays a higher rate amounting to Rs. 52-8-0 per warp length.

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

APPENDIX 86.

Monthly fluctuations in production of seed cocoons per unit.

	Month.	Quantity.	Amount.		
			(2)	(3)	
	(1)	Nos.	ES.	A.	P.
1951—					
November		3,934-3	14	12	0
1952—					
January		4,897-7	18	6	0
February		1,400-0	5	4	0
March		1,932-2	7	4	0
April		1,584-1	5	15	0
May		5,347-1	20	1	0
June		1,470-2	5	8	0
July		3,253-4	12	3	0
August		2,270-5	8	8	0
September		4,058-4	15	4	0
October		2,615-4	9	13	0
Total	..	34,400	129	0	0

Hosur Firka.

APPENDIX 87.

Annual income of an average unit.

Source.	Amount.	Percentage to total.
(1)	(2)	(3)
	ES.	
Income from the industry	77	3.5
Income from other occupations (including agriculture).	1,699	76.2
Income from assets	453	20.3
Total	2,229	100.0

APPENDIX 88.

Annual expenditure of an average unit.

Description.	Amount.	Percentage to total.
(1)	(2)	(3)
	ES.	
1 Food	1,369	71.2
2 Fuel and lighting	36	1.9
3 Housing	138	7.2
4 Clothing	220	11.4
5 Miscellaneous	46	2.4
6 Extraordinary	113	5.9
Total	1,922	100.0

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

APPENDIX 89.

Value of assets owned by an average unit.

Description.	Value.	Percentage to total.
(1)	(2)	(3)
	RS.	
1 Land	3,436	50.9
2 House	1,032	15.3
3 Livestock	1,042	15.4
4 Household equipment	49	0.7
5 Jewels	857	12.7
6 Others	341	5.0
Total ..	6,757	100.0

APPENDIX 90.

Composition of the families—Per industrial unit.

Description.	Workers in sericulture.		Workers in Agriculture and other occupations.		Dependents.		Total.	
	Family unit.	Employer unit.	Family unit.	Employer unit.	Family unit.	Employer unit.	Family unit.	Employer unit.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Men ..	1.7	1.4	0.4	1.0	0.3	0.8	2.4	3.2
Women ..	1.0	0.1	0.6	0.4	0.4	1.9	2.0	2.4
Boys ..	0.2	Nil	0.2	Nil	0.5	1.1	0.9	1.1
Girls ..	0.1	Nil	0.2	Nil	0.6	1.2	0.9	1.2
Total ..	3.0	1.5	1.4	1.4	1.8	5.0	6.2	7.9

APPENDIX 91.

Frequency distribution of families according to number of layings reared (Kollegal firka).

Number of layings.	Family units.	Employer units.	Total.
(1)	(2)	(3)	(4)
0 to 500	..	..	..
501 to 1,000	9	..	9
1,001 to 1,500	4	1	5
1,501 to 2,000	6	2	8
2,001 to 2,500	4	3	7
2,501 to 3,000	2	1	3
3,001 to 3,500	1	3	4
3,501 to 4,000	..	1	1
4,001 to 4,500	..	5	5
4,501 to 5,000	1	1	2
5,001 and over	..	3	3
Total ..	27	20	47

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

APPENDIX 92.

Seed production (Kollegal taluk).

Year.	Mulberry acreage.	Government grainage (in lakhs).	Percentage to total.	Aided grainages (in lakhs).	Percentage to total.	Private grainages estimated (in lakhs).	Percentage to total.	Total (in lakhs).
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1947-48	21,633	20.0	23.1	31.5	36.4	35.0	40.5	86.5
1948-49	20,278	15.0	18.5	38.0	41.9	28.1	34.6	81.1
1949-50	21,535	16.9	19.7	39.6	46.0	29.6	34.4	86.1
1950-51	22,397	16.4	18.3	44.6	49.8	28.6	31.9	89.6
1951-52	22,397	21.9	24.5	35.8	40.0	31.9	35.6	89.6

APPENDIX 93.

Monthwar seed production (Kollegal taluk).

	1951-52.			1952-53.		
	Government grainage.	Aided grainage.	Total.	Government grainage.	Aided grainage.	Total.
April	271,479	344,475	615,954	128,325	331,695	460,020
May	371,356	501,505	872,861	163,232	201,325	364,557
June	237,789	481,025	718,794	248,015	446,864	694,879
July	119,525	133,880	253,405	158,272	242,416	400,688
August	194,709	154,357	349,066	136,506	143,590	280,096
September	269,585	589,330	858,915	185,106	500,984	686,090
October	298,218	452,055	750,273	204,073	394,197	598,270
November	256,380	344,484	600,869	47,875	250,077	297,952
December	125,040	245,185	370,225	107,284	436,878	544,162
January	155,947	96,450	252,397	N.A.	N.A.	N.A.
February	91,381	168,512	259,893	Do.	Do.	Do.
March	191,090	68,572	259,662	Do.	Do.	Do.
Total ..	2,582,479	8,579,775	6,162,254	..	..	..

N.A. = Not available.

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

APPENDIX 94.

Kollegal firka—Machinery, tools and equipment per industrial unit.

Description.	Number.	Family units.					Percent- age of the initial cost to total initial cost.
		Initial cost.	Replace- ment cost.	Present market value.	Annual mainte- nance charges.	Deprecia- tion cost.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rearing stands	1-8	RS. 32	RS. 40	RS. 25	RS. 3	RS. 2	36.4
Trays	27.2	30	32	21	4	2	34.1
Chandrikais	6-0	15	16	11	1	4	17.0
Knives	1-8	5	7	4	..	1	5.7
Antwell stones	6-7	6	9	5	..	1	6.8
Total	..	88	104	66	8	17	100.0

Description.	Number.	Employer units.					Percent- age of the initial cost to total initial cost.
		Initial cost.	Replace- ment cost.	Present market value.	Annual mainte- nance charges.	Deprecia- tion cost.	
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Rearing stands	2-1	RS. 40	RS. 51	RS. 33	RS. 3	RS. 2	32.8
Trays	37.3	39	40	28	5	13	32.0
Chandrikais	11.7	27	27	20	2	6	22.1
Knives	2-2	7	8	5	..	1	5.7
Antwell stones	8-6	9	12	7	..	1	7.4
Total	..	122	138	93	10	23	100.0

Description.	Number.	Average for all units.					Percent- age of the initial cost to total initial cost.
		Initial cost.	Replace- ment cost.	Present market value.	Annual mainte- nance charges.	Deprecia- tion cost.	
(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Rearing stands	1-8	RS. 35	RS. 45	RS. 28	RS. 3	RS. 2	34.5
Trays	31.5	34	35	24	4	12	33.0
Chandrikais	8.4	20	20	15	2	5	19.8
Knives	2-0	6	7	5	..	1	5.7
Antwell stones	5.4	7	10	6	..	1	7.0
Total	..	102	117	78	9	20	100.0

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

APPENDIX 95.

Fluctuations in output of cocoons of an average unit.

	Family unit. MAUNDS.	Employer unit. MAUNDS.	Average for the sample. MAUNDS.	Percentage to total.
1951—				
November	6.2	14.2	9.6	15.6
December	0.3	2.5	1.1	2.0
1952—				
January	5.4	8.2	6.7	10.7
February	0.3	1.7	0.9	1.5
March	5.2	10.9	7.8	12.4
April	0.4	3.2	1.7	2.6
May	9.6	18.7	13.1	21.7
June	2.9	6.1	4.2	6.8
July	0.9	0.3	0.8	1.1
August	..	3.0	1.3	2.1
September	9.2	21.4	14.2	23.0
October	..	0.7	0.3	0.5
Total	40.4	90.6	61.7	100.0

APPENDIX 95-A.

Fluctuations in the price of cocoons in Kollegal.

	1947-48.			1948-49.			1949-50.			1950-51.			1951-52.			1952-53.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
April	1 5 6	1 4 0	1 12 0	1 5 6	1 4 0	1 12 0	1 5 6	1 4 0	1 12 0	1 5 6	1 4 0	1 12 0	1 5 6	1 4 0	1 12 0	1 5 6	1 4 0	1 12 0
May	1 6 9	1 8 0	1 14 0	1 6 9	1 8 0	1 14 0	1 6 9	1 8 0	1 14 0	1 6 9	1 8 0	1 14 0	1 6 9	1 8 0	1 14 0	1 6 9	1 8 0	1 14 0
June	1 7 0	1 6 0	1 12 0	1 7 0	1 6 0	1 12 0	1 7 0	1 6 0	1 12 0	1 7 0	1 6 0	1 12 0	1 7 0	1 6 0	1 12 0	1 7 0	1 6 0	1 12 0
July	1 7 0	1 5 0	2 0 0	1 7 0	1 5 0	2 0 0	1 7 0	1 5 0	2 0 0	1 7 0	1 5 0	2 0 0	1 7 0	1 5 0	2 0 0	1 7 0	1 5 0	2 0 0
August	1 7 3	1 6 0	2 0 0	1 7 3	1 6 0	2 0 0	1 7 3	1 6 0	2 0 0	1 7 3	1 6 0	2 0 0	1 7 3	1 6 0	2 0 0	1 7 3	1 6 0	2 0 0
September	1 7 9	1 6 0	2 2 0	1 7 9	1 6 0	2 2 0	1 7 9	1 6 0	2 2 0	1 7 9	1 6 0	2 2 0	1 7 9	1 6 0	2 2 0	1 7 9	1 6 0	2 2 0
October	1 8 3	1 6 0	2 4 0	1 8 3	1 6 0	2 4 0	1 8 3	1 6 0	2 4 0	1 8 3	1 6 0	2 4 0	1 8 3	1 6 0	2 4 0	1 8 3	1 6 0	2 4 0
November	1 9 3	1 7 0	2 4 0	1 9 3	1 7 0	2 4 0	1 9 3	1 7 0	2 4 0	1 9 3	1 7 0	2 4 0	1 9 3	1 7 0	2 4 0	1 9 3	1 7 0	2 4 0
December	1 10 0	1 10 0	1 14 0	1 10 0	1 10 0	1 14 0	1 10 0	1 10 0	1 14 0	1 10 0	1 10 0	1 14 0	1 10 0	1 10 0	1 14 0	1 10 0	1 10 0	1 14 0
January	1 9 6	1 10 0	2 4 0	1 9 6	1 10 0	2 4 0	1 9 6	1 10 0	2 4 0	1 9 6	1 10 0	2 4 0	1 9 6	1 10 0	2 4 0	1 9 6	1 10 0	2 4 0
February	1 9 9	1 10 0	2 7 0	1 9 9	1 10 0	2 7 0	1 9 9	1 10 0	2 7 0	1 9 9	1 10 0	2 7 0	1 9 9	1 10 0	2 7 0	1 9 9	1 10 0	2 7 0
March	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

N.A. = Not available.

SERICULTURE INDUSTRY IN HOSUR AND KOLLEGAL FIRKAS—cont.

APPENDIX 96.

Annual expenditure of an average unit.

Description.	Family unit.		Employer unit.		Average for entire sample.	
	Amount.	Per cent to total.	Amount.	Per cent to total.	Amount.	Per cent to total.
	RS.		RS.		RS.	
1 Food	1,029	81.5	1,649	76.0	1,292	78.5
2 Fuel and lighting	22	1.8	35	1.6	28	1.7
3 Housing	31	2.5	33	1.5	32	2.0
4 Clothing	115	9.1	206	9.5	1,154	9.3
5 Miscellaneous	24	1.9	64	2.9	41	2.4
6 Extraordinary	41	3.2	181	8.4	100	6.1
Total	1,262	100.0	2,168	100.0	1,647	100.0

APPENDIX 97.

Value of assets owned by an average unit.

Description.	Family unit.		Employer unit.		Average for entire sample.	
	Amount.	Per cent to total.	Amount.	Per cent to total.	Amount.	Per cent to total.
	RS.		RS.		RS.	
1 House	2,737	21.7	8,890	28.6	5,355	26.2
2 Land	8,333	66.1	18,425	59.6	12,627	61.7
3 Livestock	791	6.3	1,588	5.1	1,130	5.5
4 Industrial equipment	67	0.5	95	0.3	78	0.4
5 Others	682	5.4	2,035	6.6	1,258	6.2
Total	12,610	100.0	31,033	100.0	20,448	100.0

APPENDIX 98.

Liabilities of an average unit.

Description.	Family unit amount.	Employer unit amount.	Average for entire sample amount.
	RS.	RS.	RS.
Simple mortgage	450	591	510
Pro-note	170	7	101
Handloans	15	..	8
Total	635	598	619

SILK REELING INDUSTRY IN KOLLEGAL FIRKA.

APPENDIX 99.

List of silk reelers in Kollegal firka.

Serial number and name of the village.	Name of the reeler.	Number of basins or charkas working.		Government instal- led basins.
		Basins.	Charkas.	
1 Tagarapuram Kajjihundi hamlet ..	K. S. Kenchappa ..	18	5	5
2 Chilukuvadi	C. K. Mari-Mallappa ..	..	12	..
3 Kunthur	Siddappa ..	..	6	..
4 Mullur	Nanga ..	..	5	..
5 Do.	Kuppanaidda ..	..	6	..
6 Mudikundam	Rajappa ..	16	..	5
7 Do.	Devarajappa ..	15	..	..
8 Do.	Kadda ..	..	2	..
9 Kunigalli	Puttappa ..	..	5	..
10 Surapuram, hamlet of Kunigalli ..	Rachegoda ..	..	25	..
11 Do.	Kalegoda ..	..	12	..
12 Do.	Venkataramana ..	..	2	..
13 Do.	Krishna ..	..	1	..
Total		49	81	10

APPENDIX 100.

Composition of the family unit.

	Workers in silk reeling.		Workers in other occupations.		Dependents.		Total.	
	Family unit.	Employer unit.	Family unit.	Employer unit.	Family unit.	Employer unit.	Family unit.	Employer unit.
Men	1.0	1.8	..	1.3	..	0.2	1.0	3.3
Women	1.0	..	1	..	..	3.0	2.0	3.0
Boys	..	..	..	..	2.0	2.0	..	2.0
Girls	..	..	..	..	..	1.3	2.0	1.3
Total	2.0	1.8	1	1.3	2.0	6.5	5.0	9.6

SILK REELING INDUSTRY IN KOLLEGAL FIRKA—cont.

APPENDIX 101.

Number and value of tools and equipment owned by an average unit for the sample as a whole.

Description.	Number.	Cost of a new tool.			Initial cost.			Replacement cost.		
		RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
1 Charkas	10	10	0	0	66	7	0	98	10	0
2 Basins, etc. .. .	26	105	4	0	285	11	0	285	11	0
3 Balance with weights .. .	1-0	12	0	0	8	9	5	10	4	2
Total ..					360	9	2	394	9	2

Description.	Present value.			Annual maintenance cost.			Depreciation.			Percentage of initial cost to total cost.
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	
1 Charkas	54	5	0	4	8	0	14	2	0	18-4
2 Basins, etc. .. .	254	4	0	9	8	0	6	10	0	79-2
3 Balance with weights .. .	10	0	2	..	..	..	9	4	0	2-3
Total ..	318	9	2	14	0	0	21	0	0	100-0

APPENDIX 102.

Fluctuations in the output of an average unit.

Month.	Output in pounds.	Percentage to total.
1951—		
November	141	6-3
December	133	6-0
1952—		
January	160	7-2
February	143	6-4
March	171	7-7
April	244	10-9
May	288	12-8
June	284	12-7
July	132	5-9
August	129	5-8
September	265	11-9
October	143	6-4
Total ..	223-3	100-0

SILK REELING INDUSTRY IN KOLLEGAL FIRKA—cont.

APPENDIX 103.

Income of an average unit.

Source of income.	Family unit.		Employer unit.		Average for entire sample.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS.		RS.		RS.	
1 Income from the industry	342	59-0	16,861	71-8	14,515	71-6
2 Income from other occupations	188	32-4	6,521	27-6	5,597	27-7
3 Income from assets	50	8-6	142	0-6	148	0-7
Total ..	580	100-0	23,524	100-0	20,260	100-0

APPENDIX 104.

Expenditure of an average unit.

Description.	Family unit.		Employer unit.		Average for entire sample.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS.		RS.		RS.	
1 Land	550	84-7	6,764	61-4	5,877	61-7
2 Fuel and lighting	18	2-8	165	1-5	144	1-5
3 Housing	12	1-9	365	3-3	314	3-2
4 Clothing	42	6-5	750	6-8	649	6-8
5 Miscellaneous	15	2-3	752	6-8	647	6-8
6 Extraordinary	12	1-8	2,214	20-1	1,899	19-9
Total ..	649	100-0	11,010	100-0	9,530	100-0

APPENDIX 105.

Value of assets owned by an average unit.

Description.	Family unit.		Employer unit.		Average for entire sample.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS.		RS.		RS.	
1 House	399	61-2	16,666	43-8	14,328	43-9
2 Land	100	20-4	14,700	38-7	12,600	38-6
3 Livestock	10	2-0	2,223	5-9	1,920	5-9
4 Industrial equipment	80	16-4	1,943	0-7	238	0-7
5 Others	..	..	4,166	10-9	3,583	10-9
Total ..	490	100-0	39,698	100-0	32,669	100-0

COIR INDUSTRY IN KOZHIKODE FIRKA

APPENDIX 106.

Number of families engaged in cottage industries.

	Cabinet making.	Coir.	Weaving.	Copra.	Oil pressing and oil mills.	Gold- smithy.	Black- smithy.	Beedi making.
(1).	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Edakad ..	4	120	3	3	3	1	1	1
2 Puthiyangadi ..	5	132	..	4	3	10	1	4
3 Naduvattam ..	17	12	59	8	6	5	4	..
4 Cheruvannur ..	5	5	3	4	1	2	..	..
5 Nallalam ..	1	4	2	3	1	6	..	..
6 Beypore ..	14	377	3	3	..	5	2	..
7 Kommeri ..	..	22	17	..	5	..	..	..
8 Nedungathur ..	..	93	1	..	1	2	1	3
9 Katcheri ..	..	40	..	..	1	2	..	3
10 Kurumbrakattas- seri.	7	16	38	..	6	4	3	1
11 Nagaram ..	5	12	..	..	2	8	3	3
12 Panniankara ..	11	225	65	11	6	5	3	1
13 Valayanad ..	..	9	12	3	1	..	..	5
14 Khasba ..	15	18	..	..	6	7	2	42
15 Kalathankunn u	..	17	1	3	9	..	24	4
Total ..	84	1,102	204	42	51	57	46	67

COIR INDUSTRY IN KOZHIKODE FIRKA—cont.

APPENDIX 107.

Average annual expenditure of a family unit.

Head of expenditure.	Amount.	Percentage to total.
	RS.	
Food ..	394	71.4
Fuel and lighting ..	24	4.3
Housing ..	34	6.2
Clothing ..	38	6.9
Miscellaneous items ..	32	5.8
Extraordinary items ..	30	5.4
Total ..	552	100.0

APPENDIX 108.

Value of assets of an average family unit.

Description.	Amount.	Percentage to total.
	RS.	
House ..	408	50.4
Land ..	322	39.7
Livestock ..	20	2.5
Others ..	60	7.4
Total ..	810	100.0

APPENDIX 109.

Cost of manufacturing one candy (672 lb.) of yarn.

Description.	Amount.	Percentage to total.
	RS. A. P.	
1 Value of raw husks, 4,000 at Rs. 12 per 1,000 ..	48 0 0	32.2
2 Transport of husk to the retting ground ..	10 0 0	6.7
3 Pit rent ..	1 0 0	0.7
4 Soaking charges ..	7 0 0	4.7
5 Cleansing and beating into fibre ..	25 0 0	16.8
6 Spinning charges ..	37 8 0	25.5
7 Cart hire for 1 candy of yarn to Kozhikode ..	2 8 0	2.0
8 Commission to agents ..	0 8 0	0.7
9 Pressing charges ..	13 12 0	9.4
10 Profit of the Kozhikode merchant ..	3 4 0	1.3
Total ..	148 8 0	100.0
Selling price ..	170 0 0	..
Profit ..	21 8 0	..

	Mat making.	Basket weaving.	Metal works.	Fishing nets weaving.	Sweet toddy tapping.	Dairy.	Bakery.	Others.
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1 Edakad ..	..	7	1	..	..	1	..	1
2 Puthiyangadi ..	..	..	..	..	..	..	..	..
3 Naduvattam ..	48	..	..	..	15	1	..	1
4 Cheruvannur ..	..	1	..	..	..	1	..	25
5 Nallalam ..	11	..	..	..	2	4	..	..
6 Beypore ..	3	..	3	1	..	..	..	2
7 Kommeri ..	..	..	..	..	..	..	..	..
8 Nedungathur ..	..	1	..	..	..	1	1	8
9 Katcheri ..	..	4	..	..	..	..	..	5
10 Kurumbrakattas- seri.	..	..	..	..	..	..	..	5
11 Nagaram ..	..	..	..	17	..	1	..	4
12 Panniankara ..	..	..	2	..	..	17	8	27
13 Valayanad ..	1	..	8	..	..	..	..	8
14 Khasba ..	..	7	..	..	..	1	..	12
15 Kalathankunnu ..	8	3	..	..	..	57	3	12
Total ..	76	23	12	18	17	91	23	184

COIR INDUSTRY IN KOZHIKODE FIRKA—cont.

APPENDIX 110.

Average annual expenditure of a manufacturer unit.

Head.	Amount.	Percentage to total.
	RS.	
Food	2,025	54.8
Fuel and lighting	180	4.9
Housing	250	6.8
Clothing	240	6.5
Miscellaneous	750	20.2
Extraordinary	250	6.8
Total	3,695	100.0

APPENDIX 111.

Average asset of a merchant unit.

Description.	Amount.	Percentage to total.
	RS.	
1 House	12,000	59.4
2 Lands	6,033	30.0
3 Industrial equipment	251	1.2
4 Livestock	167	0.8
5 Shop	1,733	8.6
Total	20,184	100.0

COPRA INDUSTRY IN KOZHIKODE FIRKA.

APPENDIX 112.

Cost of production of one candy of copra (in 1952).

Items.	RS.	A.	P.
1 Raw nuts 2,500 at Rs. 125 per 1,000	312	8	0
2 Wages for husking at Rs. 2 per 1,000	5	0	0
3 Drying and separating kernels	2	8	0
4 Transport charges	15	0	0
Total cost	335	0	0
Value of 1 candy of copra at Kozhikode	340	0	0
Price of 2,500 husks at Rs. 10 per 1,000	25	0	0
Price of coconut shells at Rs. 6 per 1,000	15	0	0
Total	380	0	0
Profit	45	0	0

APPENDIX 113.

Average annual expenditure of a family.

Head of expenditure.	Amount.	Percentage to total.
	RS.	
1 Food	2,050	69.9
2 Fuel and lighting	121	4.1
3 Housing	279	9.5
4 Clothing	210	7.2
5 Miscellaneous	222	7.5
6 Extraordinary	52	1.8
Total	2,934	100.0

APPENDIX 114.

Value of assets owned by an average unit.

Description.	Amount.	Percentage to total.
	RS.	
1 House	5,471	59.3
2 Land	3,557	38.5
3 Industrial equipment	4	..
4 Livestock	199	2.2
Total	9,231	100.0

COCONUT OIL MANUFACTURE IN KOZHIKODE FIRKA.

APPENDIX 115.

Costs of oil production by 'chekku' and mill.

Production by chekku (ghani).			Production by mill.		
Item.	Cost.		Item.	Cost.	
	RS.	A. P.		RS.	A. P.
1 One candy of copra local price ..	300	0 0	One candy of copra Kozhikode price ..	345	0 0
2 Transport charges	2	8 0	Transport charges	2	0 0
3 Labour charges for two persons (Rs. 1-6-0, 0-10-0) Rs. 2 per day for five days.	10	0 0	Wage	2	8 0
4 Feeding charges for the bull at Rs. 2-8-0 per day for five days.	12	8 0	Fuel 58 units Electricity at 2 annas per unit.	7	4 0
Total ..	325	0 0	Total ..	356	12 0

Receipts.

Receipts.			Receipts.		
11-35 thulams of oil at Rs. 545 per candy (1 candy 20 thulams).	309	4 8	12-5 thulams of oil	340	10 0
Six thulams of punack at Rs. 6 per thulam.	36	0 0	Seven thulams of punack at Rs. 6 per thulam.	42	0 0
Total ..	345	4 8	Total ..	382	10 0
Profit for five days	20	4 8	Profit per day	25	14 0
Profit per day	4	0 11			

APPENDIX 116.

Annual income of an average family.

Source of income.			Amount.		Percentage to total.
			RS.		
Income from the industries ..	..	..	5,468		61.1
Income from other occupations ..	..	..	669		7.5
Income from assets	..	..	2,817		31.4
Total ..			8,954		100.0

COCONUT OIL MANUFACTURE IN KOZHIKODE FIRKA—cont.

APPENDIX 117.

Annual expenditure of an average family.

Head of expenditure.					Amount.	Percentage to total.
					RS.	
1 Food	..	..	..	..	4,464	69.5
2 Fuel and lighting	..	..	..	..	148	2.3
3 House rent	..	..	..	..	360	5.6
4 Clothing	..	..	..	..	508	7.9
5 Miscellaneous	..	..	..	..	534	8.3
6 Extraordinary	..	..	..	..	409	6.4
Total ..					6,423	100.0

APPENDIX 118.

Value of assets owned by an average unit.

Head.					Amount.	Percentage to total.
					RS.	
1 House	..	..	..	..	4,666	35.1
2 Land	..	..	..	..	6,900	51.9
3 Industrial equipment	..	..	..	..	160	1.2
4 Livestock	..	..	..	..	393	3.0
5 Shop	..	..	..	..	1,166	8.8
Total ..					13,285	100.0

CABINET MAKING INDUSTRY IN KOZHIKODE FIRKA.

APPENDIX 119.

Number of cabinet making units in Kozhikode firka.

Name of village.	Family units.	Employer units.	Total.
1 Edakad	4	..	4
2 Puthiyangadi	5	..	5
3 Naduvattam	17	..	17
4 Cheruvannur*	5	..	5
5 Nallalam	1	..	1
6 Beypore	14	..	14
7 Kommeri	..	..	..
8 Valayanad	..	..	..
9 Nedungathur	..	..	..
10 Katcheri*	..	..	..
11 Kurumbra Kattasseri*	4	3	7
12 Nagaram*	1	4	5
13 Pannian Kara*	10	1	11
14 Khasba*	3	12	15
15 Kalathan Kunnu	..	..	..
Total	64	20	84

*Places selected for detailed survey.

CABINET-MAKING INDUSTRY IN KOZHIKODE FIRKA—cont.

APPENDIX 119-A—cont.

Number of families engaged in cottage industries—cont.

Name of village.	Mat making.	Basket weaving.	Metal works.	Fishing nets weaving.	Sweet toddy tapping.	Dairy.	Bakery.	others.	Total.
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1 Edakad	..	7	1	..	..	1	..	1	146
2 Puthiyangadi	..	..	..	..	15	1	..	25	160
3 Naduvattam	48	..	..	..	..	1	..	..	200
4 Cheruvannur	..	1	..	..	2	4	..	2	24
5 Nallalam	11	..	..	..	..	..	..	..	38
6 Beypore	8	..	3	1	..	1	1	8	416
7 Kommeri	..	1	..	..	..	..	..	5	54
8 Nedungathur	..	4	..	..	..	..	..	5	107
9 Katcheri	..	..	..	..	..	1	..	4	55
10 Kurumbra Kattasseri.	..	..	..	..	..	..	..	..	80
11 Nagaram	..	..	2	17	..	17	8	27	102
12 Panniankara	..	..	6	..	..	1	..	8	337
13 Valayanad	1	7	..	..	..	57	3	13	51
14 Khasba	..	3	..	..	..	8	10	12	169
15 Kalathan Kunnu	8	3	..	..	..	..	..	73	160
Total	76	23	12	18	17	91	23	184	2,097

APPENDIX 119-A.

Number of families engaged in cottage industries.

Name of village.	Cabinet making.	Cotr.	Weaving.	Copra.	Oil pressing.	Gold-smithy.	Black-smithy.	Beedi making.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Edakad	4	120	3	3	3	1	1	1
2 Puthiyangadi	5	132	..	4	3	10	1	1
3 Naduvattam	17	12	59	8	6	5	4	4
4 Cheruvannur	5	5	3	4	1	2	2	..
5 Nallalam	1	4	2	3	1	6	..	..
6 Beypore	14	377	3	3	..	5	2	..
7 Kommeri	..	22	17	..	5	..	2	..
8 Nedungathur	..	93	1	..	1	..	..	..
9 Katcheri	..	40	..	..	1	2	1	..
10 Kurumbra Kattasseri.	7	16	38	..	6	4	3	3
11 Nagaram	5	12	..	..	2	8	3	1
12 Panniankara	11	225	65	11	6	5	3	3
13 Valayanad	..	9	12	3	1	..	3	1
14 Khasba	15	18	..	..	6	7	2	5
15 Kalathan Kunnu	..	17	1	3	9	..	24	42
Total	84	1,102	204	42	51	57	46	67

APPENDIX 120.

Family composition.

	Family unit.				Employer unit.			
	Employed in cabinet making.	Employed in other occupations.	Dependents.	Total.	Employed in cabinet making.	Employed in other occupations.	Dependents.	Total.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Men	1.6	0.4	0.1	2.1	1.5*	..	1.2	2.7
Women	..	0.5	1.1	1.6	..	..	2.3	2.3
Boys	..	..	1.8	1.8	..	..	0.8	0.8
Girls	..	..	1.2	1.2	..	..	2.4	2.4
Total	1.6	0.9	4.2	6.7	1.5*	..	6.7	8.2

Average for entire sample.

	Employed in cabinet making.	Employed in other occupations.	Dependents.	Total.
	(9)	(10)	(11)	(12)
Men	1.6	0.2	0.6	2.4
Women	..	0.3	1.7	2.0
Boys	..	..	1.2	1.2
Girls	..	..	1.8	1.8
Total	1.6	0.5	5.3	7.4

* Employed in organising and directing the industry.

CABINET-MAKING INDUSTRY IN KOZHIKODE FIRKA—cont.
APPENDIX 121.

Quantity and value of raw materials used by an average industrial unit per annum.

Description.	Family unit.		Employer unit.		Average for entire sample.		Per-centage to total value.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
		RS. A. P.		RS. A. P.		RS. A. P.	
1 Wood	11.25 (candies.)	663 1 0	67.0 (candies.)	4,359 12 0	39.0 (candies.)	2,511 7 0	86.1
2 Screws, looks, mirrors, etc.	..	27 0 0	..	491 0 0	..	258 8 0	8.8
3 Polish Bottles ..	4.1 (bottles.)	10 3 0	95.9 (bottles.)	280 10 0	50 (bottles.)	145 14 0	5.1
4 Total	..	700 4 0	..	5,131 6 0	..	2,915 13 0	100.0

APPENDIX 122.

Fluctuations in total output per unit.

Month.	Chairs.	Tables.	Cots.	Almirahs.	Teapots.	Stools.	Total.
1951—							
November	8.4	1.9	0.6	0.8	1.0	0.1	12.8
December	13.3	1.4	1.9	1.7	0.8	..	19.1
1952—							
January	16.3	1.6	1.6	1.3	2.4	0.2	23.4
February	28.3	2.9	2.8	2.5	2.4	..	38.9
March	40.3	2.8	2.1	2.8	2.5	0.1	50.6
April	89.4	3.0	2.4	1.6	1.3	0.1	97.8
May	46.5	2.6	2.3	2.0	0.1	4.5	58.9
June	9.4	3.2	2.3	2.2	0.2	..	17.8
July	5.3	1.6	2.1	1.2	0.2	..	11.4
August	10.3	2.0	0.8	1.0	0.5	..	14.6
September	9.5	0.6	0.4	0.5	..	..	11.0
October	2.4	0.8	0.6	0.4	..	..	4.2
Total	280.4	24.4	19.9	18.0	11.4	5.0	359.1

CABINET MAKING INDUSTRY IN KOZHIKODE FIRKA—cont.
APPENDIX 123.

Tools and equipment owned by an average industrial unit.

Description.	Number.	Initial cost.		Replacement cost.		Maintenance cost.		Depreciation.	
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
(1)	(2)								
1 Saws	1.4	4 9 0	5 10 0	..	..	..	..	..	..
2 Chisel	7.8	22 12 0	23 12 0	..	..	..	..	..	..
3 Hammer	1.5	4 2 0	4 8 0	..	..	..	..	..	..
4 Measuring rod ..	1.4	1 2 0	12 8 0	2 0 0	4 0 0	..	..	..	..
5 Kadaasal	0.3	8 0 0	4 4 0	..	..	..	..	..	..
6 Chippuli	1.3	4 0 0	0 8 0	..	..	..	..	..	..
7 Tamasu	0.4	0 3 0	3 0 0	..	..	..	..	..	..
8 Planing machine ..	1.8	2 11 0	3 14 0	..	..	..	..	..	..
9 Drilling machine ..	2.5	3 11 0	..	..	..	..	..	..	..
Total	..	51 2 0	58 12 0	2 0 0	4 0 0	..	..	..	..

Description.	Number.	Initial cost.		Replacement cost.		Maintenance cost.		Depreciation.	
		(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
(7)	(8)								
1 Saws	4.5	45 0 0	46 8 0	..	..	..	..	..	..
2 Chisel	9.5	40 0 0	40 0 0	..	..	..	..	..	..
3 Hammer	2.4	6 13 0	7 1 0	..	..	..	..	..	..
4 Measuring rod ..	3.1	3 0 0	3 0 0	3 4 0	8 0 0	..	..	..	..
5 Kadaasal	0.4	23 2 0	31 15 0	..	..	..	..	..	..
6 Chippuli	0.5	2 0 0	2 6 0	..	..	..	..	..	..
7 Tamasu	..	3 8 0	3 8 0	..	..	..	..	..	..
8 Planing machine ..	2.3	8 7 0	8 6 0	..	..	..	..	..	..
9 Drilling machine ..	5.8	..	..	..	..	..	..	..	..
Total	..	131 14 0	142 12 0	3 4 0	8 0 0	..	..	..	..

Description.	Number.	Initial cost.		Replacement cost.		Maintenance cost.		Depreciation.	
		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
(12)	(13)								
1 Saws	3.0	30 0 0	32 0 0	..	..	..	..	..	..
2 Chisel	8.6	31 4 0	32 9 0	..	..	..	..	..	..
3 Hammer	2.0	5 8 0	6 0 0	..	..	..	..	..	..
4 Measuring rod ..	2.3	2 0 0	2 3 0	..	..	..	..	..	..
5 Kadaasal	0.3	15 8 0	22 0 0	2 10 0	6 0 0	..	..	..	..
6 Chippuli	1.0	3 0 0	3 4 0	..	..	..	..	..	..
7 Tamasu	0.2	0 2 0	0 4 0	..	..	..	..	..	..
8 Planing machine ..	2.0	3 0 0	3 4 0	..	..	..	..	..	..
9 Drilling machine ..	4.0	6 0 0	6 0 0	..	..	..	..	..	..
Total	..	96 6 0	107 8 0	2 10 0	6 0 0	..	..	..	..

CABINET MAKING INDUSTRY IN KOZHIKODE FIRKA—cont.

APPENDIX 124.

Income of an average industrial unit per annum.

Source of income.	Family unit.		Employer unit.	
	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS. A. P.		RS. A. P.	
1 Cabinet making	823 15 0	61.2	1,970 0 0	63.8
2 Other occupations	424 1 0	31.5	665 0 0	21.5
3 Agriculture and livestock	44 0 0	3.2	251 0 0	8.1
4 House	54 0 0	4.1	129 0 0	4.2
5 Other sources	..	..	75 0 0	2.4
Total ..	1,346 0 0	100.0	3,090 0 0	100.0

APPENDIX 125.

Expenditure of an average unit.

Head of expenditure.	Family unit.		Employer unit.	
	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS. A. P.		RS. A. P.	
1 Food	986 0 0	75.6	2,138 0 0	70.0
2 Fuel	39 0 0	2.8	96 0 0	3.1
3 House rent, etc.	80 0 0	6.2	348 0 0	11.4
4 Clothing	96 0 0	7.3	194 0 0	6.4
5 Miscellaneous	82 0 0	6.3	165 0 0	5.4
6 Extraordinary expenditure	22 0 0	1.8	114 0 0	3.7
Total ..	1,305 0 0	100.0	3,055 0 0	100.0

APPENDIX 126.

Value of assets owned by an average unit.

Description.	Family unit.		Employer unit.	
	Amount.	Percentage to total.	Amount.	Percentage to total.
	RS. A. P.		RS. A. P.	
1 House	318 12 0	..	5,925 0 0	..
2 Land	375 0 0	..	2,837 8 0	..
3 Livestock	92 0 0	..	155 0 0	..
4 Others	105 0 0	..	513 8 0	..
Total ..	1,391 0 0	..	9,431 0 0	..

BASKET MAKING INDUSTRY IN KASARAGOD FIRKA.

APPENDIX 127.

Number of families engaged in different cottage industries.

Serial number and name of the village.	Basket making.	Mat making.	Hand-loom.	Aval making.	Jaggery making.	Palmgu making.	Sugar-cane crushing.	Oil crushing.	Palacap making.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1 Shribagalu ..	9	14	..	..	..	..	..	..	..
2 Adhur ..	3	4	5	3	..	..	..	1	..
3 Karadaka ..	8	9	40	4	4	..	1	2	2
4 Delampady ..	1	..	..	6	..	7	..	2	3
5 Muliya ..	1	4	2	..	..	..	..	4	3
6 Adoor I ..	9	..	3	1	..	..	..	4	1
7 Adoor II ..	8	..	2	..	..	..	..	1	2
8 Kottikolu ..	2	3	..	..	..	..	..	4	..
9 Muttathodi ..	3	21	5	3	23	..	1	2	..
Total ..	44	55	57	17	27	7	2	20	11

Serial number and name of the village.	Pottery.	Tailor-ing.	Gun-smithy.	Gold-smithy.	Black-smithy.	Carpentry.	Cob-ler.	Total number of families.
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
1 Shribagalu ..	..	..	..	2	2	4	..	31
2 Adhur ..	..	1	..	..	2	1	2	22
3 Karadaka ..	..	5	..	2	3	2	3	85
4 Delampady ..	..	..	..	1	4	..	1	25
5 Muliya ..	2	2	..	2	3	5	1	29
6 Adoor I ..	..	..	2	..	1	6	1	28
7 Adoor II ..	..	..	..	..	3	3	..	19
8 Kuttikolu ..	..	..	..	1	4	3	..	17
9 Muttathodi ..	..	..	..	..	1	5	..	64
Total ..	2	8	2	8	23	29	8	320

APPENDIX 128.

Monthly output of baskets per family unit.

Month.	Bamboo baskets (number).		Creeper baskets (number).	
	(1)	(2)	(3)	(4)
1951—				
November ..	..	74	21	..
December ..	..	74	21	..
1952—				
January ..	..	75	21	..
February ..	..	75	22	..
March ..	..	75	22	..
April ..	..	76	22	..
May ..	..	79	23	..
June ..	..	80	23	..
July ..	..	79	22	..
August ..	..	71	21	..
September ..	..	71	20	..
October ..	..	71	20	..
Total ..	..	900	258	..

COTTON CAP MAKING INDUSTRY IN KASARAGOD FIRKA.

APPENDIX 129.

Composition of the family of an average industrial unit.

Description.	Family unit.		Employer unit.		Average for all units.		Total.
	Workers.	Depen- dents.	Workers.	Depen- dents.	Workers.	Depen- dents.	
	(2)	(3)	(4)	(5)	(8)	(7)	
Men	2.4	0.1	1.4	0.2	2.0	0.2	2.2
Women	1.3	0.6	0.3	1.2	0.9	0.8	1.7
Boys	0.1	0.8	Nil.	1.5	0.1	1.0	1.1
Girls	0.3	0.9	0.1	1.3	0.2	1.1	1.3
Total	4.1	2.4	1.8	4.2	3.2	3.1	6.3

APPENDIX 130.

Number and value of tools, machinery and equipment owned by an average industrial unit.

Description.	Family unit.			Employer unit.			All units.			
	Sewing machine.		Others.	Sewing machine.		Others.	Sewing machine.		Others.	
	Num- ber.	Value.		Num- ber.	Value.		Num- ber.	Value.		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		RS.	RS.		RS.	RS.		RS.	RS.	
1 Initial cost	2.7	477	184	4.4	536	175	3.4	500	180	
2 Replacement cost ..	2.7	633	229	4.4	701	217	3.4	660	224	
3 Present market value ..	2.7	364	145	4.4	421	125	3.4	386	137	
4 Maintenance charges ..	2.7	122		4.4	212		3.4	158		
5 Depreciation	2.7	19	9	4.4	21	9	3.4	20	9	
6 Cost of a new tool ..	2.7	300	160	4.4	300	160	3.4	300	160	

APPENDIX 131.

Monthly fluctuations in output per average industrial unit.

Month.	Ordinary caps (scores).		Picture caps (scores).	
	(1)	(2)	(3)	(4)
1951				
November	..	31.3	10.1	..
December	..	30.6	10.1	..
1952				
January	..	30.7	10.2	..
February	..	29.8	10.2	..
March	..	30.9	10.5	..
April	..	32.5	11.1	..
May	..	34.0	11.5	..
June	..	34.4	11.7	..
July	..	34.1	11.4	..
August	..	32.5	11.1	..
September	..	31.0	10.7	..
October	..	30.4	10.4	..
Total		382.2	129.0	

COTTON CAP MAKING INDUSTRY IN KASARAGOD FIRKA—cont.

APPENDIX 132.

Rates of wages and time taken for manufacture of caps.

Name of the process.	Rate of wage for a score.		Time taken for a score of.	
	Ordinary caps.	Picture caps.	Ordinary caps.	Picture caps.
	(2)	(3)	(4)	(5)
(1)	RS. A. P.	RS. A. P.	DAYS. HRS.	DAYS. HRS.
1 Cutting	0 2 0	0 2 0	0 3	0 3
2 Design drawing	0 4 0	0 4 0	0 2	0 2
3 Joining and stitching over the designs	1 2 0	1 2 0	1 0	1 0
4 Making holes and stitching	0 12 0	..	6 0	..
5 Stitching with coloured thread	3 0 0	..	30 0	..
5 (a) Stitching with art silk yarn	..	4 2 0	..	4 0
6 Joining the sides and upper portion	0 2 0	0 2 0	0 4/5	0 4/5
7 Washing	0 4 0	0 4 0	0 4	0 4
8 Polishing	0 4 0	0 4 0	0 4	0 4
9 Pressing	0 2 0	0 2 0	..	..
10 Agent's charges	0 2 0	..	..	..
Total	6 2 0	6 6 0	38 3 1/2	6 3 1/2

APPENDIX 133

Cost of production of one score of caps.

Description.	Ordinary caps.		Picture caps.	
	Family units.	Employer units.	Family units.	Employer units.
	(2)	(3)	(4)	(5)
(1)	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Rent	0 3 11	0 1 3	0 2 11	0 1 2
2 Maintenance of machinery	0 7 0	0 4 1	0 7 0	0 3 6
3 Raw materials	5 4 0	5 0 0	5 14 0	9 2 3
4 Wages payable	5 14 1	5 11 3	5 5 8	4 13 5
5 Others	0 0 11	0 3 10	0 0 11	0 3 10
Total	11 12 11	12 4 4	14 14 6	14 8 2
Selling price	15 9 10	15 12 9	20 4 11	19 14 11
Profit	3 12 11	3 8 5	5 6 4	5 6 9

COTTON CAP MAKING INDUSTRY IN KASARAGOD FIRKA—cont.

APPENDIX 136.

Liabilities of an average industrial unit.

Description.	Family unit.		Employer unit.		All units.	
	Amount per indebted unit.	Average amount for all unit.	Amount per indebted unit.	Average amount for all unit.	Amount per indebted unit.	Average amount for all unit.
	(2)	(3)	(4)	(5)	(6)	(7)
(1)	RS.	RS.	RS.	RS.	RS.	RS.
Simple mortgage	200	37	Nil	Nil	125	22
Pro-note	400	74	667	111	500	89
Handloans	140	26	50	8	106	19
Law	100	15	Nil	Nil	63	11
Total ..	840	152	717	119	794	141

COTTON CAP MAKING INDUSTRY IN KASARAGOD FIRKA—cont.

APPENDIX 134.

Expenditure per industrial unit per annum.

Description.	Family unit.		Employer unit.		Average for all units.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	(2)	(3)	(4)	(5)	(6)	(7)
(1)	RS.		RS.		RS.	
Ordinary—						
1 Food	1,116	53.6	1,589	44.5	1,305	48.7
2 Fuel and lighting	125	6.0	110	3.1	119	4.4
3 House rent and repairs	152	7.3	161	4.5	156	5.8
4 Clothing	216	10.4	295	8.3	247	9.2
5 Miscellaneous	338	16.2	619	17.3	450	16.3
Total, Ordinary ..	1,947	93.5	2,774	77.7	2,277	84.9
Extraordinary—						
6 Marriage	70	3.4	563	15.7	268	10.1
7 Medicine	3	0.2	22	0.6	11	0.4
8 Death	Nil	Nil	28	0.8	11	0.4
9 Industry	4	0.2	94	2.6	40	1.5
10 Land	10	0.5	23	0.6	15	0.6
11 House	Nil	Nil	9	0.3	4	0.2
12 Others	47	2.2	60	1.7	52	1.9
Total, Extraordinary ..	134	6.5	799	22.3	401	15.1
Grand total ..	2,081	100.0	3,573	100.0	2,678	100.0

APPENDIX 135.

Assets of an average industrial unit.

Description.	Family unit.		Employer unit.		Average for all units.	
	Amount.	Percentage to total.	Amount.	Percentage to total.	Amount.	Percentage to total.
	(2)	(3)	(4)	(5)	(6)	(7)
(1)	RS.		RS.		RS.	
1 Houses	5,206	70.8	18,389	77.0	10,479	75.0
2 Wet land	722	9.8	889	3.7	789	5.7
3 Garden land	307	4.2	1,109	4.6	628	4.5
4 Industrial equipment	464	6.3	613	2.6	523	3.7
5 Livestock	7	0.1	3	0.01	6	0.04
6 Deposits	189	2.6	1,806	7.6	836	6.06
7 Loans given	Nil	Nil	167	0.69	67	0.5
8 Jewels	126	1.7	550	2.3	296	2.1
9 Others	333	4.5	354	1.5	341	2.4
Total ..	7,354	100.0	23,880	100.0	13,965	100.0

