SMALL SCALE INDUSTRIES IN KERALA SINCE 1956
AN ANNOTATED BIBLIOGRAPHY

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TO
Dr. K. M. MUHAMMAD KUTTY
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I am highly indebted to Mr. Mohd. Sabir Husain, Reader of the Department of Library Science, Aligarh Muslim University, Aligarh, who ably supervised the compilation of this bibliography.

I am owe a debt of gratitude to my teacher, Professor M.H. Razvi, Head of the Department of Library Science, who helped me in many ways in undertaking this venture.

Further, I am also thankful to my elder brother Dr. K.M. Muhammad Kutty, who supports and encourages me in many ways.

ABDUL SALAM M.P.
The present study is intended to bring at one place in the form of annotations all the significant literature that is available in the field of Small Scale Industries in Kerala since 1956. Although the bibliography is selective in nature, an attempt has been made to cover all the aspects of Small Scale Industries in Kerala.

I am confident that this bibliography will be helpful to all those who have some interests in the field of Small Scale Industries in Kerala.

SCOPE:

The bibliography includes articles dealing with the following small industries in Kerala:-

- Agro based industries,
- Ceramic industries,
- Cashew industries,
- Coir industries,
- Coconut industries,
- Cosmetic industries,
- Food industries,
- Handi-crafts,
- Leather industries,
- Non-Beverage industries,
- Tobacco industries,
- Perfume industries,
- Synthetic industries,
- Miscellaneous industries.

The bibliography includes 250 entries and covers all the aspects of Small Scale industries in Kerala from 1956 to
present 1986 June.

Although the bibliography is essentially selective in nature, I have endeavoured my best to cover all aspects of the topic. A list of the periodicals documented with abbreviations used has also been provided.

STANDARDS FOLLOWED:

The Indian standards recommended for bibliographical references (IS : 2381 - 1963) has been followed and classified catalogue code (CCC) of Dr. S.R. Ranganathan has been followed for author heading in the main entry.

The entries contain the following items of information:

a) Serial number
b) Name of the author
c) Full stop (.)
d) Title of contribution including sub-title, if any
e) Full stop (.)
f) Title of the periodical in abbreviated form as far as possible.
g) Volume number
h) Semi colon (;)
i) Year
j) Semi colon (;)
k) Inclusive pages of the article.
SPECIMEN ENTRY:

SATYAVATHI KRISHNAN KUTTY. Oil milling industry in Kerala.  
ICJ. 10, 6; 1979; 1-5.

ABSTRACT:

Describes the extraction of oil from Copra in the olden days and at present. Coconut oil milling is very ancient industry in Kerala. It was essentially a rural industry run on a cottage level. In this stone mortar and wooden pestle called Chakku worked by bullock was used. The modern method is by rotary extractor. Also describes the extraction of cake from coconut oil.

ARRANGEMENT:

The articles dealing with the same subject including geographical place are listed in one alphabetical sequence by the names of the authors under subject headings.

The articles dealing with distinct subject heading are listed by subject-wise in alphabetical sequence.

INDEX:

The part III - contains author and title indexes in alphabetical sequence. Each index guides to the specific entry or entries in the bibliography. I hope they will be found very useful in consultation of the bibliography.
PART ONE
_I_N_T_R_O_D_U_C_T_I_O_N_

The small industries occupy a significant place in the industrial set up of State irrespective of stage of its economic development. The importance of small industry sector in the economic life of a state is indeed very great particularly in view of its large employment potential and contribution to state's income. The principle elements in the economic picture of our country to-day are rapid growth of population, increasing labour force, large volume of unemployment and under employment and a low safe of savings. This panorama can be altered to a great extent through the establishment of small industries. It is through small industry that the state can achieve balanced economic development.

The only affective way to face the challenges of unemployment and under employment is a massive industrialisation programme for the under developed region. The industrialisation and its success depend vitally on the relative advantages of location in many of the industries. The infrastructural facilities like electricity, road, transport, water, skilled personnel are basic no doubt, but even these cannot flourish the industries if the relative location and marketing advantages do not exist. It is, therefore, extremely necessary to be cautious while selecting a particular industry for development in the mofussil
areas or by an entrepreneur in a particular state and they should fulfil certain basic requirements. Firstly, they should be amenable for dispersal in the centres of market and raw materials production. Secondly, they should be suitable for operation with a wider range of investment, should also conveniently fit in the small scale size, be less capital intensive and capable of generating more employment opportunities to the labours and at the same time it should be techno-economically viable.

DEFINITION AND SCOPE OF SMALL SCALE INDUSTRIES:

The definition of 'Small Scale Industry' in force since 31st Oct, 1966.

"Small Scale Industries will include all industrial units with a capital investment of not more than Rs. 7.5 lakhs irrespective of the number of persons employed. Capital investment for this purpose will mean an investment in productive plant and machinery only"

Small scale industries differ from large scale industries and can be identified in terms of the features. The capital used is supplied by the proprietor or through means like partnership or in part from financing agencies. Set up for
this purpose etc. These industries too generally use power
driven machines. Like large scale industries, they also
employ modern production methods, engage labour on wages,
produce for expanded market or it ancillary industries sell
to large industries.

A Small scale ancillary industry is defined as follows:-

"A unit which produces parts, components, sub-assemblies
and tooling for supply against known or anticipated
demand of one or more large units manufacturing/assemblying complete products and which is not a subsidiary to or controlled by any large unit in regard to the negotiation of contracts for supply of its goods to any large unit".

THE DIFFERENCE BETWEEN A COTTAGE AND A
SMALL SCALE INDUSTRY:

The cottage industries are saved on traditional skills
and practically require no modern machinery. The small scale
industry, as compared to them, is quite big and it works with
modern machines and electricity. However, there is no hard
and fast rule for this. It is a matter of convenience only.
Small scale sector is a free sector and permission/approval
or licence is required from the Government of India/State
Government for setting up a small scale unit in any manufac-
turing line of your choice. However, for availing of any of the numerous types of assistance provided to small scale industries through any government agency, registration with state Director of Industries is a must.

**SMALL SCALE INDUSTRY IN KERALA**

Kerala is one of the smallest states in India. It is a normal strip of land along with western coast of India. It has an area of 38,855 sq. kms. and the length of its coastline is nearly 575 kms. It is the most thickly populated state with average density per square kilometer being over 3 times the all India mid 1969. The state has also the highest literary percentage in India, i.e. 46.8 (1961).

Kerala, by any standard is also due of the rickest state in India and it has a rich agricultural base, yielding high value cash crops and abundant and cheap electric power. The high demographic pressure combined with fast growth of population and high literacy, has been mainly responsible for the growing economic insecurity and other problems of instability faced in this state. Hence economic development is accorded top priority, with an emphasis on the industrial development of the state, to absorb as much man power as possible out of about 2 lakh people coming in to the labour market every year.
The essential task of economic planning lies in a continuous assessment of resources and assignment of priorities of development so as to achieve optimum economic growth consistent with immediate and long range objectives.

On the industrial scene, Kerala has a preponderance of small industries, most of them traditional industries, utilising mainly local resources. Although they have hitherto accounted for a major share of industrial income and employment, the scope for their further development is limited.

Service based industries like Hobbing workshops are larger in number, but they may not register appreciable growth. Only production oriented industries based on chemicals, rubber, plastics and paper have considerable scope for development.

The demand for a variety of goods in market centres located far away from Kerala could be met by proper selection of products suited to Kerala's endowments and by appropriate encouragement being given to small enterprises manufacturing such products. The capacity of individual entrepreneurs in Kerala is relatively weak.

The flow of investable capital from outside is also not impressive. It is, therefore, necessary for the state to provide adequate facilities and appropriate incentives for the development of new small enterprises in Kerala State.
THE ITEMS COVERED UNDER SMALL SCALE INDUSTRIES ARE:

AGARBETTI
ARECANUT INDUSTRY
CASHEW INDUSTRY
CERAMIC INDUSTRY - Bricks, Pottery & Tile
COCOA INDUSTRY
COCONUT INDUSTRY - Oil Milling, Crushing
COIR INDUSTRY
COSMETIC INDUSTRY
FOOD INDUSTRY
FOOD PROCESSING INDUSTRY
HANDLOOM INDUSTRY
LIME INDUSTRY
NON-BEVERAGE INDUSTRY - Cocoa, Coffee
PACKAGE INDUSTRY - Paper, Wood
PERFUME INDUSTRY
RUBBER INDUSTRY
SEA-FOOD INDUSTRY
SYNTHETIC INDUSTRY - Soap
TEXTILE INDUSTRY
TOBACCO INDUSTRY - Beedi
WOOD INDUSTRY - Furniture, Match, Plywood
AGRO-BASED INDUSTRIES:

Agricultural product from the important resources for the development of small scale industries in variably they require varying types of processing before they can be utilised and during this processing there is appreciable reduction in weight. The processing of the raw materials close to the source of the resources has the added advantage that additional employment is created in an otherwise essentially agricultural area. In addition to the economy that a small units loses due to smaller scale of operation is after more than off-set by the serving in the transport cost in collecting the raw materials as the smaller units has to procure the raw material from a considerably less extensive area. In view of these in several of the agro-based industries the state has been preventing any extensive growth in the large scale sector at the cost of smaller units.

The important agro-based industries in Kerala is Rice milling, oil milling and food preservation industries it provides employment directly or indirectly thousands of people.

CERAMIC INDUSTRIES:

Lime stone and clays are the important minerals in the state which can support small scale industries providing
employment to about 25,000 workers in registered factories and many more in the smaller units, the industry has further scope for development.

TILE:

The manufacture of roofing tiles is an important mineral based - industry concentrated mainly in and around Calicut and Quilon. There are more than 20,000 workers employed in this industry in Calicut district. The industry exports an appreciable part of the production areas outside the state.

BRICK MAKING:

Brick making is an important industry as it supplies building material for various purposes. Brick making is carried out often in very small scale units with very little investment. It is highly concentrated in the districts of Alleppy and Quilon and provides good opportunities of employment in all most all districts of Kerala state.

COIR INDUSTRY:

Kerala is the home of Coir. The Coir industry can be considered as the National Industry of Kerala. It provides direct employment to about half a million people in Kerala in the different ranging from retting of the coconut husk to
the production of Coir goods. The majority of the workers in the coir industry are women belonging to the backward and minority communities in Kerala.

The first factory to manufacture coir product was started in Alleppy in 1859 by a European entrepreneur by name Mr. Darragh. The manufacture of coir fibre and coir yarn was traditional house hold industry in the coastal areas of the native states of Travancore and Cochin.

The main manufacturing centre are Quilon, Kozhikoda, Quilandy and Trivendrum. The main use of coir yarn are fabrication of floor coverings like mats and matting manufacture of ropes, cordages, finishing nets etc. Coir-fibre extraction from dry husk world wide usage as oils filters, brushes and brooms and also for the manufacture of rubberised fibre for cushioning materials.

The coir industry has to be sustained and developed in Kerala because it provides employment to 5 lakh of workers, mostly women in the backward and minority communities.

India is exporting only 1/3rd of the total production. 2/3rd are sold in Indian market.

FISH PROCESSING INDUSTRY:

Fish processing industries in India are mainly concentrated in Kerala. Specially at the Cochin area. The potential of South west coast in pelagic production alone is estimated
at 17 lakhs tonnes 70% more than the quantity estimated for the entire west coast. In 1973-74, seafood exports through Cochin port accounted for more than 65% of the total exports and 65% of the foreign exchange earned.

FOOD PROCESSING INDUSTRY:

Food shortages and heavy wastage have compelled the government of Kerala to encourage this industry. Even so the existing food processing units in Kerala barely meet the growing internal demand and touch only the fringe of bargaining export market. There is, therefore, enormous scope for setting up new units especially in the small sector in Kerala.

Food processing industries started depending on the raw material and finished food products. From one raw material several types of products can be prepared, by making different composition and taste of liking. Broadly the food processing industries can be classified into: Meat processing, fruit and vegetable processing, Edible and vegetable oil processing and Allied food processing industries.

HANDICRAFTS:

Kerala occupies an important place in the handicraft map of India. Kerala had one of the largest scale of handicrafts in the country. The most important handicrafts of the state
are carpets, druggets, wood and Ivory carving, Inlay work and liquor-wares. In addition to this the state had earned a name in brass work, bidri-wares and artistic leather and textile goods.

HANDLOOM INDUSTRY IN KERALA:

In Kerala, the handloom industry is the second largest traditional industry providing employment of over 2.5 lakhs of people particularly in the rural and semi urban areas and contributes a good deal towards the exports of textile from India. There were 90,030 looms distributed in 21,681 households and 2057 non household units. The annual exports of handloom goods, from the state of direct export from Kerala comes to more than 2.5 crores. The export of Kerala handloom fabrics routed through exporters based at other states is much more.

The Handloom Sector provides employment to nearly 1.2 lakhs of people directly. These, apart, there is a substantial pre-loom and post-loom processing work which has to be attended to before yarn is converted into cloth and the cloth is sent for sale. This is by way of ancillary employment in dyeing, bleaching, finishing, marketing, manufacture of looms etc. On the whole it is estimated that the handloom sector would be providing employment to 2.5 lakhs of people both directly and indirectly.
KHADI AND VILLAGE INDUSTRIES BOARD, KERALA:

The Kerala Khadi and Village Industries Board which was working in the background aiding informal industries at cottage level is now directing its efforts to put the khadi and village industries on a more industrial footing. In Khadi sector 40,000 charkhas - half of them model all metal and another half muslin charkhas - and 8,000 looms will be installed in the common work sheds. The khadi Sector has a total employment potential of 65,000 i.e. 54,600 women 10,400 men out of this 2,600 will be educated.

LEATHER INDUSTRIES:

Manufacture of leather goods is at present mostly in the cottage sector and is not well developed in the state. As the economy develops, the demand for these goods will increase and the good will be manufactured in better organised small scale units or co-operatives.

It providing employment to more then 1 lakh workers and the manufacturing leather goods is an important industry in the state especially since most of the employment is in the small scale and cottage sector.

LEATHER TANNING INDUSTRY:

Leather Tanning is one of the oldest and most important cottage industries of Kerala. It provides employment, direc-
The industry is, therefore, important both from the point of view of internal production and exports. Moreover, it is a labour-intensive industry. The industry extends to all the sectors, the small scale and cottage being spread all over the Kerala.

Leather tanning industry is one of the leading industries of the Kerala. It embraces all the three sectors—cottage small scale and medium scale—in throughout the Kerala. So, also, leather is produced both by outmoded processes as well as modern ones.

MATCH INDUSTRY:

Matches are of course a universal need and consumption in Kerala approximately averages three sticks per head per day. Production to day is under two executions—one of 50 sticks per box and the other of 40 sticks. Indigenous raw materials are to a large extend used by the industry, though some chemicals and match paper have still to be imported in the state.

A corollary to conserving supplies of timber is the industry most serious problems, and every year delayed transport occasion severe wastage.

The manufacture of a commodity such as matches is one of these field that are ideally suited for the cottage hand-
worker and his children in Kerala. Some cottage factories provide quite pleasant conditions of work in Kerala but others fall short of normal industries requirement and neglect the welfare aspects.

The match industry is rapidly becoming more and more self sufficient in Kerala, and proper attention if given to its problem of transport, raw materials and tariff. Financial assistant granted by government of Kerala utilised productivity for development purposes improvement of quality, and raising the earnings of their operatives.

RUBBER:

Kerala's most important agricultural produce used as industrial raw material is rubber and its production is almost Kerala's monopoly. Its cultivation is most concentrated in Kottayam district followed by Quilon district and it is cultivated in all the districts in the state. The rubber based industries within the state is comparatively less - even though the present level of production of natural rubber is not sufficient to meet. the raw material requirements in the country establishments in the country, establishment of more rubber based industrial units within the state have to be encouraged.
The Kerala state co-operative Rubber Marketing Federation, popularly known as Rubber Mark, is a professionally managed apex organisation of 33 co-operative rubber marketing societies spread throughout the length and breadth of Kerala. Federation was set up in 1971 and made impressive strides in the rubber marketing. It provides large opportunities of employment.

**TOBACCO INDUSTRY - BEEDI:**

Beedi industry is essentially a cottage industry in Kerala. The main beedi producing districts are Cannanore, Kozhikode, Quilon etc. Large amount of beedi tobacco were utilised in the state.

It provides direct employment to about 1,50,000 people in the industry. 25% people were working in Cannanore. Conditions of working are very poor. They were living in slums and business under contract wise. Most of the workers are women. Kerala Dinesh Beedi is one of the important factory in Cannanore.

Hooka, chewing, cheroots and snuff manufactures is also done on cottage industry basis the important producing centres are Quilandy, Tillicheri and Quilon.

**TAPIOCA INDUSTRY:**

Although tapioca, a shrubby plant cultivated chiefly for
its strachy tuberous roots, has been a subsidiary food crop in Kerala.

Tapioca has been found that the areas which receive annually a good rain fall of over 40 inches are suitable for its cultivation. The cultivation of tapioca is carried on extensively in Quilon, Trivendrum, Kottayam, Malabar and Trichur districts of Kerala.

The industrial use of tapioca tubers is confined mainly to the preparation of chips, sago and starch. The units engaged in the processing of sago are located mostly in the Kottayam districts of Kerala. Many of the units are run on cottage industry basis. The processing of raw tapioca tubers into starch is a cottage industry in Kerala.

**SMALL INDUSTRIES GROWTH IN KERALA:**

Small enterprises in the food processing industry chemical industry and engineering industry have good prospects of development and deserve encouragement as the employment potential in these industries is fairly high. The state is endowed with raw materials of agricultural and marine origin to warrant the development and promotion of food processing industries in an organised manner. The annual marine fish landings of 3.5 lakh tonnes can be further stepped up with modernisation of fishing
craft geared to facilitate off-shore and deep-sea fishing. Opening of more fishing harbours, freezing stations, faster road transport facilities, etc. will help this industry to achieve the export target as set forth in the Fifth Five Year Plan Period.

The fruit products industry has further scope for development and a larger organisational set-up would facilitate a more rapid growth.

These two industries have large employment potential as well as export potential. The development of these industries will help in establishing and augmenting the income of the fishermen and the fruit growers in the State.

Chemical and allied industries occupy the pride of place in Kerala State. The most important ones are fertilizers, chemicals, heavy chemicals, rare earths, D.D.T., rubber products, glass, glucose, soaps, cosmetics, drugs, hydrogenated oil, etc. The small scale chemical industries in this state also play an important role in the states economy. Small scale units in the engineering industry have been engaged largely in service and repair jobs. The emergence of small scale manufacturing units in the engineering line is comparatively recent.

Automobile ancillaries and electronics which have registered rapid growth in the country, as well as other industries which have a high value-added content in the end -
product and large employment potential deserve to be encouraged in Kerala - manufacture of instruments, watches, electrical appliances, household appliances, etc. may be quite suitable for development in Kerala which has abundant man-power with requisite skills and cheap electric power.

The central and state governments are offering various services and facilities such as economic information, technical assistance, managerial advice and guidance, training in technical trades and industrial management, hire-purchase of machinery, credit facilities, accommodation in industrial estates, testing facilities, quality marking etc.

With regard to marketing assistance, the state Government have reserved a number of items for procurement exclusively from small scale industries. During the fifth plan period, the state Government have plans to set up Trade Centres in important cities in India for marketing small industries products of Kerala.

The encourage technically qualified entreprenuers in setting small scale units, Government have several schemes of assistance ie. for training such entreprenuers, providing accommodation for their units in industrial estates and industrial areas on a preferential basis and provision of institutional finance from Rs. one lakh to Rs. 3 lakhs without
any security on the merits and feasibility of their projects.

PROBLEMS OF SMALL SCALE INDUSTRIES IN KERALA:

EMPLOYMENT:

Unemployment among the educated job seekers has been on the increase in recent years in Kerala. According to the live registers in employment exchanges, there are several millions of educated unemployment. Practical solution to the problem of unemployment among the educated, can found only through the extensive grants and development of self employment opportunities. So the Government and their agencies are making every efforts to devise new schemes of small industrial and small business entrepreneurship throughout the country. The scheme aim at providing the facilities required by the entrepreneurs for setting up their business in manufacturing, trading and servicing. In order to take the problem of unemployment the state and central Government have devised a number of schemes.

EXPORT FOR SMALL SCALE:

The export wing of the Kerala State small scale industries development and Employment promotion corporation.
Marketing Division, was started in 1976, then under the Kerala State Small Industries Corporation.

The share of small scale sector in Kerala in the total exports of the small industries from India is not much. This is largely due to lack of proper organisation and guidance to the small units.

The export wing has stepped into fulfil the needs of the small scale industry of the state.

The export wing will be in a position to render all possible assistance to the SSI units having export potential, whatever it be in respect of the raw materials, or production or machinery, export production or export marketing.

**EXPORT PROMOTION:**

To augment the foreign exchange resources of the states, special efforts have been made in recent years, to export the products of small industry. To infuse export consciousness amongst small industrialists, training programmes are arranged for equipping them in the techniques of international trading. Besides the training scheme, trading in international markets is also under taken by the Kerala Small Scale Industries Development Corporation and the state Trading Corporation of
Marketing is the big weak point of SSI in Kerala. The government has evolved a stores purchase policy to give in percent price preference to the products from the industrial estates. Marketing guidance is also made available.

FINANCIAL ASSISTANCE:

There are several agencies through which final assistance is being made available to small scale units, such as state Government under State Aid to Industries Act, Kerala State Financial Corporation, State Bank of India and its subsidiaries and National Bank. The Commercial Banks have been playing a significant role in providing financial accommodations to the small scale sector in the state, particularly after the nationalisation.

INCENTIVES & FACILITIES OFFERED BY KERALA GOVT. TO SMALL SCALE ENTREPRENEURS:

INDUSTRIAL CO-OPERATIVES:

For the development of small scale and cottage industries, industrial co-operatives can render immense help. Most of the people engaged in these industries have to fall innumerable difficulties regarding finances production, marketing, etc. Most of these difficulties have adviser because these producer generally work on an individual basis. If they organise themselves, into co-operatives, many of the difficulties in respect of credit, purchase of raw materials, marketing etc. will automatically disappear.

The central and state Government doing much in the promotion of industrial co-operatives. They were promoting the institution by arranging the sale of the products of industrial co-operatives abroad.

INDUSTRIALIZATION OF KERALA:

The twin problems of acute unemployment and industrial backwardness of Kerala are now sought to be solved by inducing the educated unemployed to start small industries and in that process, create additional employment opportunities to others. Various agencies in the state have chalked out schemes for massive industrialisation.

The much acclaimed new Industries programme (NIP), launched on April 1, 1975 in the core of the activities.

In the field of industries development in the state, the leading names are the Industries Development Commissio-
narrate, and the Kerala State Small Industries Development and Employment Corporation though these two bodies are of different set-up they work hand-in-hand and have started working in a rational and scientific way to give fillip to industrial development activities.

Kerala state is ready with all the paraphernalia for industrialisation except a major chunk of finance.

ITEMS MANUFACTURED:

The variety and range of products manufactured by the Small Scale Units in Kerala State also reflect the progress made in this sector. From the ordinary units that they were, either engaged in the manufacture of traditional articles or under-taking repair and service facilities, small enterprises have emerged as versatile and dynamic units. At present, the items manufactured by them include such sophisticated one as rubberised Coir, form rubbers moulded rubber goods, plastic industrial components, acrylic sheetsm reinforced plastic goods, coconut shell flour, malt extract, cashewnut, wood products, synthetic products, mosaic tiles, bricks, tanned leather, leather foot wear and travel accessories, etc.

MODERNISATION OF SMALL INDUSTRIES:

In a bid to modernise small industry the Union Government has set up a standing committee of modernisation. This
committee selects the industries which need modernisation. Priority is given to those units which are already in the export market, units with export potential, ancillary industries, units which supply to defence requirements, and those which offer opportunity to labour productivity. The modernisation directorate under the Development Commissioner (SSI), Small Industries Service Institute, and their Extension Centres, and the modernisation cell of the Trade State Directorate of industries are all engaged in assisting the small units to modernise.

**SMALL SCALE INDUSTRIES PROBLEM:**

Faster industrialisation is the only way to active economic growth of a state and improve the standard of living of its people. Government, both at the centre and its state, are committed to speedier industrialisation so as to improve the wealth of the Nation as well as to provide employment. Recently Govt. of Kerala has been Great emphasis on the development of small scale and Rural Industries and the promotion of Tiny Sector. The proposed establishment of district Industries centres at all Districts Head quarters in Kerala one of which was Kozhikode, by the Government for rapid industrialisation of this scale.

The unfortunate position of numerous sick units having
lowered down their shutter or units unable to operate and limping as sick units at the verge of closure. Such as Calicut weaving mill and Munna thera Textiles etc. A diagnosis of the problems faced by the small scale industrial units in Kerala are, the process of their initial set back, continued deterioration and eventual extinction should provide adequate data to the planners, the Government, the development authorities and Entrepreneurs themselves as to how to avoid such failures in the future. The Kerala Financial corporation, KSIDC, SICO and small industries Association in Kerala have spent substantial time, latent and money in investing the problem of small industries, particularly the traditional ones.

The major problems which are critical in the growth and survival small scale industries such as:

- Marketing problem
- Shortage of working capital
- Shortage of Raw materials
- Feather Bedding
- Labour problems
- Inventory costs
- Inadequate management control
- Poor management talent
- Government Policy
- Transport etc.
1) **Difficulties of raw materials**: The first and the foremost difficulty is in respect of raw material which is available in adequate quantity, nor of high quality. Non-availability of the required quantity of raw material has been troubling the timber based industries, cashewnut industries and oil industries in Kerala state.

Labour unrest and consequent uncertainties are main problem in industrial units. Government of Kerala is well aware of the problems faced by small scale units, and an all out effort is on for development of small and rural industries.

2) **Shortage of Finance**: The second difficulty is with regard to the availability of credit. For the small producer, finance has not been organised in any satisfactory. These industries do not have much dealing with commercial banks.

The financial helps are getting to the small scale industries for state industrial development. Corporation, state Bank of India and other scheduled bank.

3) **Old methods and inferior techniques of production**: Another difficulty is that the methods and techniques of production of small producers are old and of low technological level. Modern
methods and techniques which have revolutionised industrial production have not as yet become an integral part of the set-up of Kerala's small scale and cottage industries in Kerala.

4) **Inadequate marketing facilities:** The small producer also faces problems at the time of marketing his produce. The wrong selections of the product, insufficient sales and marketing setup, competitions from larger mass production units and low quality competitiveness could be said to be the main problems faced by the small industries in Kerala.

5) **Competition from Large-scale Industries:** An important difficulty which these industries find almost impossible to grapple with is the competition from large scale industries. Large scale industries, organised at these are on modern lines, using latest production technology and having access to many facilities can easily out sell the small producers. The small producers cannot, therefore, stand-up against them in the market.

6) **Other difficulties:** Small industries in Kerala have to face the problems of local and other taxes which result in raising the sale price adversely effecting the marketability of their goods. It need, however, to be noted that there is no uniform
tax-policy throughout the country in this regard. Besides, these industries have to face certain other difficulties such as inadequate transport, shortage of efficient managers, lack of research in their products and not enough motive power etc.

**STANDARDISATION:**

Paucity of raw materials in desired quality, lack of testing facilities and limited resources in production equipment and competent personnel are some of the factors that small industries have to contend with.

The Indian standard institution (ISI) has given importance to small scale sector and its special needs. These standards cover sports goods, utensils, food products, matches, cashewnuts, soaps, inks, cosmetics, edible oils, hand tools, bricks, tiles, lime, leather and leather products, pesticide formulation and chemical are few to mention.

The ISI certification marks scheme is a service devised to promote implementation of standards. It is a third party guarantee to the purchaser that the goods have been inspected, tested, and certified by or under the supervision of a competent agency and may be purchased with a reasonable assurance of quality.
TECHNICAL GUIDANCE:

A Regional Research Laboratory has been set-up at Pappanam Kode by the CSIR of the Government of India. This organisation renders assistance in the matter of evolving new processes and designing equipment and machinery. Technical guidance is available to SSI from the small Industries Institute of the Government of India located at Trichur.

The officers of the Department of Industries and the Directorate of Industries will also render all assistance to entrepreneurs including supply of information and data.
### LIST OF ABBREVIATIONS USED IN JOURNALS

<table>
<thead>
<tr>
<th>Abbreviation used</th>
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<tr>
<td>A &amp; S Bull.</td>
<td>Areca and Spices Bulletin</td>
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<td>Cashew Bull.</td>
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<td>CNL</td>
<td>Cashew News Letter</td>
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<td>ET</td>
<td>Economic Times</td>
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<td>IC, A &amp; SJ</td>
<td>Indian Cocoa, Areca and Spices Journal</td>
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<td>Indian Coconut Journal</td>
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<td>IC</td>
<td>Indian Coffee</td>
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<td>IFI</td>
<td>Indian Food Industry</td>
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<td>IJIR</td>
<td>Indian Journal of Industrial Relation</td>
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<td>IP</td>
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<td>IP &amp; P</td>
<td>Indian Pulp and paper</td>
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<td>J of Ame. Ceram. Soc.</td>
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<td>KL &amp; IR</td>
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<td>Rubber Board Bull.</td>
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Southern Economics
The Cotton Textile Industry
The Oil and Oil seed Journal
Thrill
Vyavasaya Keralam

BOOKS


GUPTA (RK), Ed. Aromatic chemicals and perfumery industries, New Delhi, SBP Pub, 1975.


TECHNOLOGY OF writing and printing inks- New Delhi, SBP Pub, 1976.

TESTING AND analysis of Synthetic Detergents, New Delhi, SBP Pub, 1976.
PART TWO
SMALL SCALE INDUSTRIES - KERALA


Describes some of the major incentives and assistance given by the department of Govt. of Kerala for the establishment of new industrial units and also for the expansion of existing units. The scheme in vogue with regard to registration of SSI units under certification marks scheme is also highlighted. Major assistance are subsidy for detailed project Report, Training Programme and investment subsidy.


Small Scale Industries in Kerala are subjected high degree of business fluctuation to the utter disadvantages of the industry due to the lack of training. Also mentioned, the training institution which can impart not only technical but all other aspects of management of an enterprises in an essential venture a success. Most of the manufacturing firms are by out-mode technology set up an institution which can render useful service to individuals and industries.

Covers various topics pertaining to the main theme 'Industry and Society'. Social impact of traditional industries, automation and society, impact of industrialisation on industrial development of Kerala and management in fostering good industrial relations, Role of Trade Union in industry - Role of government in fostering good industrial relations, Social obligation of industry and structural changes in mat and matting industry.


Faster industrialisation is the only to achieve economic growth of a nation and improve the standard of living of its people. Emphasis on the development of small scale and Rural industries and the promotion of the Tiny Sector. Also analyses the major factors which are critical in the growth and survival of small scale industries such as marketing problems and labour problems etc.

5. NAIR (PB). Financial assistance to small scale Industry. KL & IR. 6, 2; 1968; 123-29.

One of the major problems confronting the development of small scale industries is capital and credit. The financial requirements of an industrial units are long term capital to
acquired fixed assets like land and building, Plant and machinery and working capital to hold stocks of raw materials, finished goods etc. and to meet the day-to-day needs of a running enterprise. Problems in institutional finance are also discussed.

6. N\YAR (GP). Small Scale Industries provide large opportunities for Employment. *Kerala Commerce and Industry*. 6, 7; 1976; 12-5. Describes how, the small scale industries can play a very vital role in the opportunities of employment. Small scale industry is one in which investment in plant and machinery does not exceeds Rs. 10 Lakhs. SSI are capable of employing 9 times the number of people who can employment in a large scale industry employing the same volume of fixed capital.

7. PROGRESS OF modernization in Kerala. *K.C.S.* 11, 5; 1978; 26-31. Deals with the modernization of Tile Industry and Replacement of Fire wood by coal as fuel in kilns. The Tile industry has a particular bearing on the economy of Kerala was specially taken up for the modernisation programme. Coal can be successfully and profitably introduced for firing in Hoffman type kilns. The key to mechanical coal feeders without any structural modification in the existing kilns. Some recommendations made during the seminar on Tile Industry by KFC for providing loans also mentioned.
ECONOMY, INDIA


Examine with reference to Kerala the role assigned to small industries in India's economic growth. The objectives of the small industry development programmes are to create small immediate and permanent employment at small capital cost, and to achieve a balanced industrial development in different regions etc. Kerala has been the traditional home of several small-scale industries in India. Handicraft, coir and handlooms are the most important traditional industries.

GATE HOOKS


Gate Hooks were reserved for exclusive development in small scale Sector in 1974. Mentioned failed by exporters in international markets, there was still enough scope for increasing the volume of Gate Hooks. The demand for Gate Hooks would increase from 15% to 20% during the next five years, because it is very simple item to manufacture and secondly it has sufficient demand in the local markets.
The Handloom industry is the largest single industry of Kerala. It has been facing a series of difficulties in the present time. Realising its importance, the Government have been evolving various measures to solve the problems of the industry. The ills which the industry had to face in the year 1952 was large stocks of handloom cloths accumulated, resulting in the curtailment of production and employment of hundreds of weavers.

Handloom Weaving industry is the largest single cottage industry. The dependence of the handloom weavers on yarn supplies from some source often been responsible for a good deal of confusion. Problems of the handloom weavers was marketing of Mill products, and the shortage of yarn. Most of the powerlooms are small scale units and employ for their work. There is no control either over the handloom or over the power loom.
INDUSTRIALIZATION


The primary consideration and sequence of promotional steps to be taken for industrialization in Kerala, such as to rise in the standards of living, is the introduction of modern farm implements, tools, equipment and machinery. Factors responsible for the modernization of traditional industries and promotion of industries based on locally available resources and demand are also mentioned in the article.

PACKAGING, DEVELOPMENT


Packaging materials are many and varied based on paper, plastics, metal, wood and their combination. Packaging industries can be classified into three groups such as units engaged in the manufacture of basic raw materials like kraft paper, units manufacturing semi-processed materials like paper boards and units engaged with finished goods. Paper also deals with raw materials for the various packaging industries and export problems.

Tapioca is the richest source of starch and the cheapest source of carbohydrates. This root crop is commonly used as food for humans, feed for animals and raw materials for industrial products. This paper presented in the Seminar on Tapioca Processing industry, under the modernization programme, efforts is made to throw light on different important aspects of Tapioca processing industry as a whole.


The present scheme of wet chemical analysis of ceramic materials and tested its reproducibility for laterites and clays. The existing method of analysis of ceramic material has been modified by the quick alkali fusion method for the preparation of the sample solution, thus eliminating the hydrofluorization and fusion which is elaborate and time consuming. Here Al₂O₃; SiO₂, CaO and MgO are estimated by trimetric method, and Fe₂O₃ and CaO by colorimetric techniques. Thus procedure has definitely simplified the method without any compromise on accuracy.
OILS, CASHEWNUT

16. SINHA (RP) and KAR (AK). CNSL AS Binder in foundry industry. *Cashew Bull.* 11, 12; 1974; 5-8.

The possibility of replacing linseed oil the conventional binder in the foundry industry by cashewnut shell liquid, abundantly available in India at low price, has been experimented. Period and temperature of baking and percentage of CNSL in the sand-oil mix-on the dry tensils strength and hardness of sand cores bonded with CNSL was studies. A modified alkyd resin prepared by condensing CNSL with glycerol-anophthalic anhydried gave the best performance as binder.

OIL, PEPPER


Describes the details of liquid chromatography analysis and odour evaluation of oils from different commercial grades of pepper showed that lighter grades which are considered inferior because of light weight and poor appearances were found to be similar to other superior grades in chemical composition and odour profile. Pin heads, under developed small berries had entirely a different odour profile and chemical composition.
RUBBER


Deals with the rubber chemicals analysis with testing of rubber, different moulding techniques. Book containing latest techniques for manufacture of different kinds of rubber chemicals, goods - natural and synthetic both. Also contains the layouts, drawings, sketches, and pictures of machines used with their working and maintenance with address of manufactures and suppliers of machineries and raw materials.

SOILS

19. GANGULY (J) and BANERJEE (BK). Surface Area of Some Soils in Relation to their Mechanical Analysis. Indian Ceramics. 28; 1986; 216-7.

Attempts are being made to correlate the surface area of some soils with their mechanical composition and organic matter content. The top soils of five different profiles namely Kakdwip, Rathurapur, Panmathanagar, Kultali and Dumka are taken for the present study. The surface area of soil was determined by standard BET method in the commercial
instrument from micromeritics. The surface area of soil sample will be primarily dependent on the type and content of clay minerals as well as on the organic minerals present in soil both kaolinite and montmorillonite exist as a minor phase.

BEVERAGES, CASHEW APPLE

Cashew is one of the important commercial crops of the state and also of great economical value. Paper describes the use of cashew apple in the beverage industries such as the production of high quality alcoholic beverages having export potential on an industrial scale. The non-alcoholic beverage from cashew apples are apple juice, cloudy juice and cashew apple syrup. Also gives the method of preparing cashew apple wine

COFFEE

Dehydration of coffee extract was carried out by the foam-mat process. Conditions under which a stable foam of the extract could be obtained were experimentally established
These results were correlated with the help of a mathematical model of drainage of liquid through foam. The stable foam was then dried in a laboratory a diabatic dryer to investigate its drying characteristics. The parameters varied were air velocity, air temperature and foam thickness. The properties pertinent to the quality of the product were tested.

TAPIOCA

22. ALCOHOL FROM TAPIOCA. Hindu. 4 Dec. 1982.

Highlights the manufacturing process of Alcohol from Tapioca in industry. Participants in a seminar on "Utilization of Cassava for production of alcohol jointly organised by the State Committee on Science and technology, the FRL and the Association of Food Scientists and technologist at Trivendrum on 3/12/1982 - expressed confidence that - available technology of production of alcohol from tapioca was available in the State and country.

CHEMISTRY, CERAMICS


Pb ingila Nb2/3O3 ceramics were prepared as single phase without pyrocholate using an improved technique.
Dielectric constants of 18000 for pure PMN and 31000 for PMN with 10% Pb TiO₂ were 50% larger than those reported in the literature. The dielectric constant of PMN ceramics increased with sintering temperature and excess MgO; analysis of the micro-structures confirmed that this resulted from an increase in grain size, explained as a consequence of low-permittivity grain boundaries.

CLAYS


Properties and characteristics of four Kerala clays have been determined. Kaolinite is the principal clay mineral in all these clays. Results indicates that from among them, clay from Nileswar, Cannannore District, may be suitable for the manufacture of lower-grade pottery ware, besides this all four clays can be usefully employed for the manufacture of semi-silica or insulation bricks or after blending with some other refractory clay or clays for making high heat duty refractions.

Seminar on clay organised by Kerala ceramic society in 1985. Seminar emphasised the need for a consistent R & D with regard to production of quality ceramic products. Industry required to select suitable raw material composition. Due to the R & D contact the structural ceramic industry has been able to produce building bricks with relatively high strength than the structural concretes.

CLAY, CONDITIONS


Describes the qualities of clays of Kerala. Of the four clays of Θ K Kulum is highly carbonaceous and wated with oily materials results indicated that a fairly good correlation of wet sieve and particle size analysis and plasticity organic carbonaceous matters also having significant effect on plastic and fired properties, because it is portable that it governs the degree of location of fluctuation and hence the packing density.
27. ROOSMANI (AB). Reverse Osmosis and its possible application in the food industries. IFP. 28, 1; 1974; 48-63.

The primary object of removal of water in any food material is to reduce the bulk so that it may be economical to handle, transport and distribute. Reverse osmosis is a membrane separation process which is used to dissociate solutes of low molecular weight from their solvents. Paper is intended to give both background information and technological possibilities of the process and potentialities.

28. DAN (TK) and CHATTERJEE (MK). Lime-GYPSUM Mixed Activation of granulated Indian Blast Furnace slag. Indian Ceramics. 24, 3; 1981; 59-64.

The hydraulic activity of the low-lime high alumina Indian B.F. slag in the presence of lime gypsum mixed activation have been assessed in view with the objectives of mechanism and reaction products which generally occurs in the slag-cement or super sulphated cement. In the presence of gypsum and lime, slag produced ettringite and calcium silicate hydrate in early ages which in later ages remain unchanged or change to a mixture of the above compounds along with tetra calcium aluminate hydrate.
Lime is used to prepare Bordeaux mixture called spray lime. Two types of limes are available such as shell lime and stone lime. Shell lime is obtained from ice shell and stone lime is by burning lime stone. Preparation of lime is by reacting quick lime with controlled amount of water and instant drying. Hydrated lime is available in market could be used for preparing Bordeaux mixture.

PLASTCIS


The dielectric relaxation behaviour of solution of the copolymer in fourhen has been studies over a concentration range extending from the isotropic to the lyotropic solution states. A market decrease in the magnitude of relaxation in change from the former go to restriction of angular motions to a virtual cone resulting in only partial relaxation of the mean square dipole moment of the chains. Models of restricted motion were applied to the date, and it is suggested that the chains move in the lyotropic phases through rather larger angles than would be expected in a rigid cone of solid angle.
HIGH PRESSURE EFFECT ON POLYTHYLENE CROSS-LINKING INITIATED BY BENZYL PEROXIDE. Borsig, E & Szocs, F.

Polythylene containing benzoyl peroxide was cross linked at 120 deg. C. at high pressure. Increase in pressure led to a fall in the yield of insoluble gel. The activation volume for benzoyl peroxide decomposition in polyethylene at 120 deg. C. was determined. The properties of porous are discussed in terms of phase separation during polyencrisation. Consequent on unfavourable polymer/solvent interaction or microsyneresis.

CLEANING, COCONUT OIL

LAKSHMINARAYAN (T). Direct Bleaching of brown coconut oil. ICT. 15, 6; 1984; 15-6.

Brown coconut oil, a product from inferior grade copra was bleached to yellow light colour by pre-treatment with hydrogen peroxide or oxalic acid followed by bleaching with earth and carbon. Paper also gives briefly the methods of bleaching lime, coconut oil was bleached by adapting ACCS methods using absorbant as such chemical bleaching agents.
Laboratory scale of experiments are described for the direct bleaching of high free fatty acid "red coconut oil". Bleaching earth and activated carbon, hydrogen peroxide, phosphoric acid and oxalic acid followed by bleaching earth and carbon are the reagents used. "Red Coconut" oil is obtained from spoiled and browned coconuts, it possess dark colour and high free fatty acid content. Materials and methods also discussed.

CO-OPERATIVES, INDUSTRY, COIR


Describes the need for co-operation in coir industry. Provision of share capital helps in providing adequate borrowing power for its working capital requirements and maintenance of its borrowing etc. Most of the coir co-operatives in the Kerala are well in structure and one of the reason for this malady is want of adequate share capital.
MARKETING, FISH

35. THANKAPPAN (TR). Co-operative marketing of fish in Kerala. KL & IR. 4, 2; 1966; 81-8.

Highlights the modernization of fishing industry and the need for co-operative sales organization. Problems are also discussed such as trained experts and technicians are required for the installation. Cold storage and freezing plant and also needed for the proper handling and processing of the products. Certain basic principles for the formation of co-operative marketing are mentioned.

RUBBER


The Kerala State co-operative Rubber marketing Federation, popularly known as Rubbermark is a professionally managed apex organisation of 33 co-operative rubber marketing societies spread throughout the length and breadth of Kerala. Set up in 1971, the Federation has made impressive strides in the rubber marketing - from a mere 350 M.T. in 1971-72 the sale of rubber increased to 12,500 M.T. in 1984-85. The current years target is 21,000 M.T. The Federation proposes to expand this to 40,000 M.T. in three years' time.
DEVELOPMENT, INDUSTRY, HANDLOOM


Handloom industry is one of the traditional industries of the State. About 75,000 looms in the State giving employment to about 1½ lakhs of people. The weavers were exploited by money lenders who advance loans at high rates of interest. For saving the weavers State Govt. is assisting the following schemes, such as share capital loans, loans and grants for organization of industrial co-operatives, grants for the renovation of weavers houses and grant for the purchase of improved appliances.


Government of India guidelines State having more than 40,000 looms will get two projects, an intensive development project and an export orient project. The first project will cover 10,000 looms and will cater to the needs of internal market. State Govt. will meet 25% of the cost of this project and the remaining 75% will provide govt. of India. 75% will be loan and 25% will be grant. The second project will concentrate on export varieties. Centre will provide full assistance.
DYEING - COIR


Deals with the spinning, bleaching and dyeing of fibres. Fibres should be bleached by solutions of caustic soda specific strength of 18 hours in the cold. End of the period material was washed, soured, washed and dried as usual. Applications of dyes of different classes on coir by standard methods and evaluation of the light fastness of the dyeings on coir. Different classes of dyes, Acid, Basic and Direct are known to be useful for dyeing coir.

COTTON

40. VARGHESE (J). Effect of scouring on Dyeing of cotton. ITJ. 95, 2; 1984; 97-108.

Study three laboratory techniques, viz. pressure kien boiling, padroll - steam and pad-roll steam were used for scouring of two fabrics, i.e. sheeting - a medium variety and a poplin of fine variety. They were further given a mild bleaching treatment with sodium hypochloride having 0.53/1 available C/2 to improve their whiteness prior to dyeing. Data collected on these scoured and bleached fabrics are discussed in this paper.
OILS, COCONUT

41. LAKSHMINARAYAN (T). Refining and bleaching of solvent extracted coconut oil. *ICJ.* 8, 5; 1977; 5-6.

Deals with the bleaching of extracted coconut oil. The dark colour of the solvent - extracted coconut oil was reduced considerably by pre-treatment with aqueous solutions of oxalic, citric or tartaric acids and the resulting oil has good bleachability property which yielded light-coloured water white oil when bleached with activated earth and carbon. The solvent-extracted coconut oil was obtained from a solvent extraction plant in Kerala.

ECONOMIC ASSISTANCE - INDUSTRIES, PERFUME

42. GUPTA (RK), Ed. Aromatic Chemicals and perfumery industries 1975. SBP Chemical Engineering Series. 27. SBP Pub., New Delhi.

Provides complete technical know-how for entreprenures to start up new units and for existing units to expand their business and also to assist the establishment of Small Scale units, in the field of perfumery and flavouring industries. The introductory part covers, its present status and prospects and standardisation with relevant up-to-date data. Introduction to the raw materials used in perfumery industry also given.
ECONOMIC POLICY - INDUSTRY, LEATHER

43. MAJUMDAR (B). Policy support for leather industry. K.G. 31, 1; 1984; 48-51.

Leather has entered the modern way of living in more ways than one. It is not only the sleek and sturdy footwear that it presents itself in but a number of sophisticated items like leather garments, sports goods and others. And strangely and pleasingly all these are manufactured in the decentralised sector itself. Now is the time for grabbing the opportunity by supporting this industry in all possible ways and bringing it to the forefront. Financial help is getting.

TEXTILE


Textile industry has a unique place in the economy of our country. Industry provides one of the basic necessities of life. Paper describes the new policy adopted by govt. for handloom industry, such as full fibre flexibility as between cotton and man-made yarn would be provided to the textile industry. Adequate availability of man-made fibres yarn at responsible prices shall be ensured. Creation of capacity by new units and expansion of capacity by existing units for production of synthetic fibres yarn.

Cashew industry holds a place of great significance in the economy of Kerala. It accounts nearly forty percent of the foreign exchange earnings the country from the export of the products from Kerala. Paper traces vividly the origin and growth of the industry and brings to light various problems being faced by it. Several useful suggestions and recommendations which will help to pull the industry on safe and stable footing have been offered.

COCONUT

46. KUTTAPPAN (M). Coconut in the economy of Kerala. KL & IR. 6, 4; 1968; 241-46.

Deals with the important industries depending coconut palm as a raw material in Kerala are copra making and copra crushing for oil, coir and coir mats making, toddy tapping and manufacture of coconut jaggery and production of toys and fancy articles from coconut shell. Problems of oil mills in Kerala is the difficulty in obtaining an adequate quantity of copra. Coconut enriches our economy mainly coconut is a source of food and raw materials for industry
RUBBER

47. NAIR (VK Bhaskaran). Dynamic programme for increased production in small holdings. Rubber Board Bull. 19, 3; 1984; 10-2.

Natural Rubber industry occupied as important position in the economy of India. The main objective of the rubber Development project of Modi Rubber Ltd. is to create an awareness among small growers on the modern scientific methods in the production. The scope for stepping up the productivity of the small holder's sector which, on re-suscitation.

EMPLOYMENT, INDUSTRY, CASHEW


Cashew 'kernal processing' industry is well established and providing considerable employment in the State. Describes the cashewnut shell liquid is a versatile raw materials for manufacture of paints and lacquers, insulations varnishes, oil and acid proof cold setting cements, industrial flooring tiles, automobile break linings, clutch facings, laminating and rubber compounding resins and typewriter roller manufacture.
The coir industry is one of the biggest traditional industries in Kerala, providing employment to about 5 lakhs of people in the densely populated coastal belt of the state. Labourers from backward classes and better segments of society engaged in coir and coir products have been an export-oriented commodity and foreign market remained the main stay for coir and coir products. Coir products facing marketing problems due to the lack of adequate demand from within and outside the country has resulted in the accumulation of unsold stocks of coir and coir products distributed in many places.

Handloom industry in the state, about one lakh looms, provides employment to more than two lakh persons. 82% of the looms are concentrated in the districts of Cannanore, Trivendrum and Kozhikode. Continuous threat from the mill section with its superior production technology, design, marketing strategy and its lower cost of production. This has caused accumulation of unsold stocks of handloom industry goods. Govt. recently set-up a handloom co-operative
societies. Govt. bring all the 2.5 lakh workers in this field under the fold of co-operative movement. At present, there are 546 primary co-operative societies with a strength of 45,000 looms.

51. NATARAJAN (NC). Handloom industry in Kerala. Kerala Industry. 27, 8; 1980; 31-5.

In Kerala, the handloom industry is the second target traditional industry providing employment of over 2.5 lakhs of people. Substantial pre-loom and post-loom processing work which has to attend to before yarn is converted in to cloth and the cloth is sent for sale. It is less capital intensive capable of employing more people and there by highly labour oriented. Working capital requirements of weavers are from R.B.I.

WOMEN, RUBBER TAPPING


Describes the reasons behind the invasion of women workers in tapping and methods how to collect latex from rubber. Myth of education and highest unemployment rate process of collection is, treking slowly into the plantation before day break taking fast rounds of trees either with a rool or a bucket or carrying head loads of latex to the processing centre. Also explains why women accepts uncon­ventional and arduous jobs like rubber tapping.
EXPORT, AGARBATTIS


Describes the manufacture of Agarbattis and necessary items for manufacture of agarbattis, such as charcoal powder, Maida lakadi, Jigat, white butter paper, cotton yarn, cardboard boxes, labes and wooden boards and racks. Manufacturing in two ways: scented Agarbattis and Masala compound Agarbattis. Dummy Agarbattis are first prepared and then chemicals are sprinkled over the dummy sticks, using a brush. In the second process adhesive masala compound coated over the thin bamboo sticks.

PLASTICS


India's export of plastic goods over the past three years has amounted to Rs. 62 crores annually. Over major markets are: Bangladesh, Dubai, Kuwait, Oman etc. The principal items of export are: Plastic electrical accessories, luggage items, synthetic ropes, gramophone records and cassettes, PVC pipes and special spectacle frames etc. Paper deals with the problem ofacing plastic industry such as high cost of raw materials and acute shortage of power.
PRODUCT, CASHEW


During 1974-75, country earned Rs. 118.14 crores in foreign exchanges by exporting 65.025 MT of cashew kernals. To maintain the same to step up the indigenous production of raw nuts many folds and make the same available to the organized units for processing and export. The important factor which are responsible in achieving higher yields are selection. Gap filling, after care, fertilization and controlling of pests.

PRODUCT, COIR

56. BHOWMICK (BB) and DEBNATH (CR). Coir fibre *LIT*. 15, 5; 1984; 11-4.

Coir is one of the important industrial fibres in Kerala. Preparation of coir fibres manufacture of coir products and their export provide livelihood for a large number of people. Coir earns for India foreign exchange to the tune of Rs. 25 crores per annum. It occupied a particularly important place in the economy of Kerala. Coir fibre is obtained from the husk of coconut. Qualities of Kerala coir is given briefly, such as Retting in the lagoons and long period of getting in pits in brackish water.
Export of coir and coir products during the first seven months of the current financial year 1985-86 amounted to 13,323 tonnes valued at Rs. 1707.21 lakhs. Export during the corresponding period of the previous year i.e. April-October was 15,080 tonnes valued at Rs. 1494.01 lakhs. April - October 1985 increased Rs. 213.20 lakhs in term of value when compared to the export effected during April - October 1984.

India has been exporter in traditional items of fishery products like dried and salted fish and shark fin etc., and centres like Calicut, Cochin are famous. Paper deals with the problems of industries such as exploitation of marketing and preservation of trash fish. The industry should also try to diversity their products keeping pace with the changing needs of important countries and utilize the waste profitably. Packaging problems are also discussed.
PROBLEMS, INDUSTRY, CASHEW

59. BALASUBRA MANIAM (D). Crisis in the Cashew Industry. 
Cashew Bul. 14, 8; 1977; 8-13.

Describes the causes and some possible solutions of cashew industry completely export oriented and providing employment to very large number of people both directly and indirectly. The establishment of new units, scarcity of raw materials and lack of skilled workers. The migration of a large number of entrepreneurs from Kerala to Tamil Nadu is the main problem. Various aspects of measures taken by the Govt. of Kerala are discussed.

PROBLEMS, INDUSTRY, SEA FOOD

60. MATHEW (MG) and MENON (KPS). Ed. Problems facing seafood industry. Seafood Export Journal. 1, 3; 1969; 5-8.

Problems, such as number of factories on multiplied and exporters have increased shortage of shrimp has given room for un-healthy competition among the exporters with regard to purchase of raw material. Due to the increasing maintenance of the cantamarans and mechanised boats, the lack of the raw materials are very less. Main problems of exporting the seafood industrial products are also discussed.

Export marketing of cashew kernals faces problems like competition from products of other nations. The authors have observed that the combined flavour of cooked shrimp and fried cashew kernals is better. Fried cashew kernals increase in weight to 18.1 during heat processing in brine. The standardised procedure is also discussed.


Coir industry is a small scale labour intensive cottage industries, providing employment to about 5 lakhs of people on the various stages of production such as collection of husks, retting, beating, spinning of coir yarn and manufacture of coir products. Consumption of coir products within the country has improved due to the efforts taken by the coir Board, Kerala State Coir co-operative Marketing Federation, Kerala State Coir Corporation and the initiative of private enepreneurs of export of coir and coir product from 1983-85.
PROBLEMS, PRODUCT, SEAFOOD


Describes the problems of Seafood exports and difficulties of seafood industries such as imbalance between the raw materials supply and the installed processing capacity of the industry, purchase tax in Kerala on raw shrimp and high cost of tin containers which inflate cost and add to the difficulties of the exports and lack of shipping facilities for frozen cargo to continental ports. Quality control and market diversifications are the problems of industry.

EXTRACTION, BIOLOGICAL, COIR

64. JAYASANKAR (NP). The biological extraction of coir. *ICJ*. 9, 2; 1978; 1-3.

Coir fibre is extracted from the mesocarp of the fruit of *CoCos nulifera*. The old age of practice of biological extraction of coir consists essentially of soaking coconut husks in water for varying length of time. Ret liquor are considered by the retters for the production of good quality coir fibre polyphenols of the coconut husk as the possible reason for the undue delay in the completion of the process.
CASHEW, LIQUOR


Describes the extraction of cashew liquor in industry. At present the entire quantity of about 6.7 lakh tonnes of cashew apple produced in Kerala State is being wasted. Feasibility of utilising cashew apple for the production of alcoholic beverages. Filtration and again methods adopted gave an agreeable produce almost comparable to the popular brands available in the market.

CASHEW SHELL LIQUID


Describes the various methods employed for the extraction of cashew nut shell liquid and process of extraction. Process is cashew shell is powdered and air is evacuated and solvent is kept in thin jute bags. The solvent a circulated in the chamber for mixing and steam is pumped in the extractor etc. Some of the main points on which the govt. should come forward to assist this fast developing industries are given.
COIR


Coir is an industrial fibre. It offers immense possibilities for profitable utilisation on account of its natural resilience and other properties. It is extracted from coconut husk. This paper fulfils the need for a consolidated account of the various aspects of coir technology, such as extraction of coir, spinning, weaving, dyeing and cordages. Useful information on the structure and properties of coir fibre, on a marketing and trade in coir and coir products have been included.

CRUSHING INDUSTRIES


Describes the process of extraction involves crushing of whole or decorticated seeds on power driven, closed or open hydraulic press, expellers rotary mills or even bullock driven ghanis. Refined castor oil is used in cosmetics, pharmaceuticals and insecticidal applications. The oil is distinguishable from most other oils by its high viscosity, specific gravity and acetyl value. The extraction process also mentioned.
FAT, ARECANUT

69. MATHEW (AG). Extraction of Fat from Arecanut. A and A. Bul. 6, 2; 1974; 31.

The process involved in the extraction of fat from Arecanut in the industry. Increasing production and decreasing demand has been causing total hardships to the small industry. Materials and methods used for the test is mentioned.

OILS, COPRA

70. SATYAVATHI KRISHNAN KUTTY. Oil milling industry in Kerala. ICJ. 10, 6; 1979; 1-5.

Describes the extraction of oil from copra in the olden days and at present. Coconut oil milling is very ancient industry in Kerala. It was essentially a rural industry run on a cottage level. In this stone mortar and wooden pestle called chekku worked by bullock was used. The modern method is by rotary extraction. Also describes about the extraction of cake from coconut oil.

OIL, PALMAROSA

71. NAIY (VG) and MARIAM (KA). Palmarosa the new promising Aromatic plant of Kerala. Indian Perfumer. 22, 4; 1978; 300-1.

Describes the quality of palmarosa crop for extracting the oil. crop can be profitably grown under the agro-climo-
logical conditions of Kerala. More over the price of palmarosa oil is very attractive. It is now two and a half to three times higher than that of lemon grass oil and is steady. The oil can be stored in the ordinary conditions, while the quality of lemon grass oil deteriorated under such conditions.

PECTIN, CASHEW APPLE

72. VALSALA CHANDRAN (T) and DAMODARAN (VK). Pectin from Cashew apple. Cashew Bul. 16, 3; 1979; 8-9.

The extraction of pectin from cashew apple in the industry. Pectin is an important constituent of commercial fruit and vegetable products like Jam, Jelly, Ketchup and Sauces. It is also used in the manufacture of cold liver oil, ice creams - mayonniese, explosive, and location. Materials and methods are involved in the experiment are also discussed.

FINANCIAL ASSISTANCE - COIR INDUSTRY


Due to the natural advantages of back waters and lagoons in Kerala which help the traditional process of retting the husks have made the so called golden fibre from Kerala the real attraction in many foreign countries. Coir goods earning about Rs. 30 crores worth of foreign exchanges. Coir
is highly labour intensive industry contributes various problems of the industry. Government of India have implementing a scheme of financial assistance for living wages to the workers. Coir industry has not been able to provide the rebate assistance.

RUBBER INDUSTRIES

74. KHADI BOARD to assist rubber-based units. Hindu. 15 May 1983; 6.

Highlights the financial assistance to rubber industries. The Khadi and Village industries Board on 14-5-1983 decided to consider rubber-based industries as village industries, with entitled for financial assistance from the board. Twenty four items are now getting such assistance.

COFFEE INDUSTRY

75. BALASUBRA MANIAN (MA); Coffee potential in Kerala. ICJ. 63, 11; 1979; 331-2.

The phenomenal doubling of crop in the season is significant of increasing awareness and participation of numerous small growers and financing institution in the coffee planting industry. Govt. of Kerala should develop infrastructure facilities like roads, communication, power, transport, medical aids to improving the industry.
FOOD MANUFACTURE, BAKERY, PRODUCT


The recommendations for modernizing and upgrading the manufacture of bakery products. The baker is a traditional artisan either taking the profession from his father or inheriting the same through close relatives. Most of the colleges of catering situated in the country are not fully equipped and oriented for practical bakery training. Govt. of India started establishing the manufacturing bakery products by small scale sector in rural areas.

BISCUITS, CAKES

77. VATSALA (CN) and SHURPAIESAR (SR). Suitability of germinated wheat for the preparation of biscuits and cakes. *Indian Miller*. 15, 4; 1985; 27-33.

Studies on the suitability of wheat germinated to stimulate that of wheat sprouted due to rain in bakery products have shown the possibilities of their utilisation for the preparation of soft dough biscuits and cakes acceptable quality. In case of soft dough biscuits, the spread increased and the raise decreased while reverse was the case for fermented dough biscuits; materials and methods also given.
CHOCOLATE


Describes the story of chocolate industry in the manufacturing process. Chocolate was used to be manufactured adopting hand methods till the end of 1715 century. In the early 1815 century Cocoa grinding was introduced. Chocolate industry made remarkable progress during the 1915 century. As a result cocoa butter became available. Chocolate was being prepared by using the whole beans and sugar but the milk chocolate is familiar.

ICE CREAM


Ice cream is one of the widely consumed milk product in state. Ice cream is manufactured by small scale operators. Microbiological quality of ice cream indicated that conditions of manufacture, handling and storage. Paper points out the poor hygienic quality of ice cream sold in Coimbatore. ISI standards were used to determine the quality of ice cream
SOFT DRINK


Deals with the various steps involved in the manufacturing process of soft drinks and the developments in carbonated beverage industry. The production centres of this industry are located mostly in big cities/towns and limited in rural population. Many improvements in this processing technology, quality of the products, packaging, marketing techniques etc. Equipments and machinery required for the manufacture of beverages are given.

TECHNOLOGY, BAKERY


The scope of this book is vast in the aspect of biscuit, cracker and cookie production except sales and finance. Each segment of the biscuit plant operation has been separately treated, also to facilitate references. The section on ingredients, mixing, matching, baking and secondary processing are all comprehensive and take up much of the text. The importance of quality control and assurance is also stressed.
FUEL CONSUMPTION, RICE HUSK & BRICKS


Describes the details of the technique of firing bricks in kilns using rice husk as fuel and the result of field trials undertaken at different kilns. Rice husk can well compensate the demand of coal energy wise if some technique is developed for its utilisation as fuel in burning bricks in small scale and commercial kilns. The waste materials from rice mill has no other substantive use and it create disposal prons.

TILE INDUSTRY


Tile industry is one of the leading traditional industries of Kerala, it provides direct employment to about 25,000 people with an indirect employment of twice that number. The fuel used by the tile industry is mainly firewood. There are also some of the wastes like paddy husks, cashew husks, saw-dust, coffee-husks etc. which are employed as substitute or complementary to firewood. The industry is also using the commercial sources of electricity and kerosine, but only as the motive power or as a polish to the slabs. Firewood remains to be the chief fuel in tile industry.
HISTORY, INDUSTRY, COIR


Describes the history of coir industry in Kerala. Coir industry is one of the most important traditional small scale industries in Kerala. Coir products appear to be facing increasing competition from other hard fibres in world market and the price fluctuation seem to have become a permissible feature of the industry. The marketing problems has greater importance in the feature prospects of the coir industry.

85. COIR INDUSTRY in Kerala. Coir. 25, 4; 1981; 5-7.

Highlights the history of coir industry in Kerala and how to develop the industry. For this in 1968-69 Govt. formulated a comprehensive coir development scheme. The aim of the schemes are organisation of workers under co-operative fields for serving the manifold purpose of development of coir industry and resign of the workers from merchant exporters and middle men.
Coir industry is one of the foremost cottage industries in India. Raw material is the husk of the coconuts. Kerala producing 829 crores of nuts. Coir enters the world market in the form of coir fibre spun yarn. Coir ropes, coir mats, coir mattings, coir rugs and carpets, curled coir, rubberised coir and articles manufactured by coir and yarn. Coir yarn only constituted more than 70% of the total export of coir and coir products till 1963-64. Coir products were facing severe competition in the overseas markets from synthetic and sophisticated products manufactured on power loom. This had to a serious fall in exports.

HANDLOOM

Describes the history of handloom industry. Indians clothes of wool was from plants not from goats or sheep. References of Indias artistic weaving are found in Budhise Pali and Jain literature. Calicut muslim was fine and the help of steel hooks, young women wove the yarn in the early hours of dawn and necessary moisture might be available for weaving yarn. Indian muslin was known in France by "woven air" and monsoon shower etc. Indian handloom was widely used for bed-sheets, cushion cloth, pillow etc.
The origin of the modern Indian paper industry is traced in the latter 18th century. The first world war gave a good filling to the infant industry. At the beginning of the second world war, production of indigenous paper stood high. Shortage of paper followed the war, gave tremendous impacts to the industry. Concentration of production as on interesting aspects of this rapid growth of paper industry. Industry growth mainly through expansion of the old units. Bulk production is steadily concentrated in a few big units.

PLYWOOD, ORIGIN

To trace the origin and development of the industry as well as to assemble details of its present structure. A brief entrepreneurial narrative is given in section V and the findings of a survey conducted in Section VII. Also dealing with the need for perspective planning in forestry schemes with the anticipated timber requirements for all wood-based industries and the necessity for providing suitable incentives to the plywood industry.
RUBBER, MALABAR


Describes the history of rubber in Malabar and Kerala. Rubber came to India just over a century back and the pioneering stock was planted in Nilambur in the year 1878. Rubber estimates in Malabar exceeding 10 hectares and the total area under rubber in Malabar, comprising the districts of Palghat, Malappuram, Kozhikkodi, and Wynad. Rubber gives direct employment to 1,40,000 people in Malabar alone.

SOAP

91. NAIR (KB). Message from the managing Director Thrill. 1, 1; 1986; 5.

Describes the growth of Soap industry. Re-starting of vanaspati production in full scale, implementation of fat splitting and fatty Acid project, taking up cattle feed project, expansion of soap and vanaspati plants, diversification of oil Division, introduction of more toiletry products with various brands of cosmetics - these are the various facts of the future growth profile of the company.
TILE, ORIGIN


Dealing with history of Tile industry in Kerala. Basel Mission Society established first tile factory of tile manufacture in Kerala were Kozhikodi, Quilon, Trichur and Alwaye. The establishment of the pioneer factories in Kozhikode and Quilon districts towards the end of 19th century. Products of these factories were of high quality. Proliferation of factories in Trichur at the inter-war period. In 1914 common Wealth Trust incorporation England started Tile Industry. "It is one of the leading industry. Cameron who established the first tile factory in the Cochin State was established in 1900 and in Quilon in 1890.

INDUSTRIALISATION, KERALA


The factor responsible for industrialisation in Kerala such as resources of the State are not utilized at its optimum level. All the consumable and non-consumable products marketed in the state are manufactured from other states. Moreover, most of the industrial inputs utilised by these firms are procured from Kerala. Also mentioning the categories of industrialisation field such as chemical, plastic, rubber, electronics, ceramics - textiles, coir and electrical.
PROBLEMS


Kerala has several unique facilities which make it predominantly fit for planned industrial development. The abundance of cheap hydro-electric power is a major factor that gives to industrial growth. The major problems confronting Kerala are poverty and un-employment. The unemployment prorate in Kerala is perhaps the big heel. The number of small scale units registered in Kerala is around 13000. Solutions are mentioned.

RAW-MATERIALS

95. KERALA: Rich in Resources. _Kerala Industry_. 27, Pt. 8; 1980.

Kerala's material resources for its industrialisation can be grouped in to land-forest, agriculture, animal husbandry, Fisheries and power. As far as Kerala is concerned land is a scarce resource. The area and important crops of industrial importance in Kerala is coconut, other oilseeds, sugarcane, A recanue and spices.
INDUSTRIAL MOBILIZATION

96. KRISHNA KUMAR (S). Dispersal of Industries in Kerala. 
Kerala Commerce and Industry. 7, 2; 1976; 5-6.

Scientific dispersal pattern of industries among district, 
Taluk and Panchayat centres all over the state taking in to 
account proper regional balance in development effective 
use of resources potentialities of different locations as 
growth centres and adhering to the best principles of 
regional country and Urban planning and control and conserv­
vation of the environment.

ENTREPRENEURES

97. OOMMEN (MA). Mobility of Small Scale entrepreneurs - A 

Seeks to present the factors which determine the inter­ 
regional migration of the entreprenuers. It is based on 
a study of 124 Kerala entreprenuers out of which 63 have 
established their units in TN and 61 in Karnataka. Also 
discuss the 15 infrastructured facilities of Kerala, such 
as cheap power. Pucca road mileage good and abundant 
water, educated labour and medical facilities.
INDUSTRY, BISCUIT

98. BISCUIT INDUSTRY. LUS. 7, 8; 1983; 15.

Biscuit which is one of the most popular snack items is a wheat-based bakery product. The comparative high nutritional values derived from the fermentation process of biscuits are mostly responsible for bridging the nutrition gap. Biscuit making activity appears to be well oriented towards the SSI units owing to the low capital cost involved and easy availability of raw material. Biscuit manufacturing activities have been reserved for small sector. Biscuit manufacturing technology is also mentioned.

CERAMIC - KERALA


Highlights the prospects for the Ceramic industry. Raw material resources have been enormous both in respect of China clays and superior quality. Aluvial soils, the location and regions did not exploit the deposits. The demand for China clays for the ceramic, paper and rubber industries is bound to go up to a considerable extent.
COCOA - INDIA


Describes the fermentation and drying process in industry. The most suitable areas for cocoa are in Kerala State. Commercial firms are having collection deposits in Kerala. The fermentation of the beans should be started in the sweet boxes within hours after removal from the pod. Then drying, washing of the beans before drying is also practised. The main defects of the beans are also discussed such as mould infection, slatiness and germination etc.

COIR


Kerala is the home of coir. Secured world wide repute because of its shining colour. Main use of coir yarn are fabrication of floor covernings like mat and mattings. Coir industry is the national industry of State. The majority of the workers in the coir-industry are women belonging to the backward and minority communities in Kerala. The extraction of coir fibre from coconut husk depending upon many factors and natural infrastructures are also mentioned.
ELECTRONIC


Electronic industry in Kerala received a fillip with the advent of the Kerala state Electronic Development corporation. Company set up an Electronic Research and development centre. The order to accelerate the speed of implementation, the corporation also entered into an agreement with the Electronic Corporation of India Ltd. Corporation introduced a number of products in the Indian market. TV receivers of ECIL design, Electronic calculators, static invertors variable speed drivers, power plants for chemical industries, voltage stabilizers and TV monitors. Company promoted a number of new companies in public section and in the joint professional sectors.

FISH CURING


Describes the methods of curing in fish industry such as sun drying, Dry curing, mona curing, wet curing, pit curing, Colombo curing and smoke curing. This industry of our states has not shown any improvement at all from its primitive nature and is still carried the hereditary way. In sufficient proportion of salt and improper drying, motivated mostly by profit making mania, are the main causes of defects in our cured fish products.
HANDICRAFTS

104. MEHTA (Kusum). Handicrafts and Handloom of Kerala. Kerala Calling, 5, 6; 1985; 13.

The treasure house of Indian Handicrafts is enriched by a creditable contribution from Kerala. Kerala endowed with her breadth taking natural beauty has to her credit a variety of exquisite handicrafts products which reflect the rich cultural heritage of the land. The characteristics features of Kerala's handicrafts is the skilled and purposeful use of raw materials for practical ends simultaneously satisfying the demands of districts. More than thirty-two different crafts, important are wood carvings, Ivory carvings, horn carvings, mats and decorative items in Koragrass, screwpine, bamboo, cane and reed.

INDUSTRIES - IDUKKI


Serve as a blue print for action by the DIC for industrial development of Idukki district. It points out the various areas demanding attention from project planning to product disposal. The report also discusses the length, the resources, infra-structural facilities, existing industrial structure, etc. in the district and indicates the industrial opportunities for new entrepreneurs to usher it or in.
LIME

Lime industry is one of the traditional industries of Kerala. Lime and its allied products are mainly used in construction work. This industry has made a good headway under the KVIC and has provided employment to a large number of needy people in rural areas. With appropriate policy support it may still do better as it has good scope.

MATCH - KERALA

Deals with the assembling of statistics relating to the match industry in the state, highlights the main problems confronting the industry at present. It also points out the importance of a thorough investigation into the economic aspects of a large export-oriented joint stock venture since the state has in this respect many natural advantages. Completing claims of other wood-based industries is also discussed.
The wood products and uses of packaging cases. Packaging cases proposed for manufacture under the small scale industries are made out of wood. They are used for packing engineering goods, machinery and equipment, ceramics - glasswares. With the rapid industrialisation and increased production of goods, the demand for packing cases is increasing.

Describes the package from wood products such as plywood, hard board and corrugated fibre-board highlighting their present status and future trend. Some problems have been discussed on which research is needed with special reference to replace the conventional wooden containers. Also gives briefly certain problems facing the wood based industries such as shortage of timber and employment problems.
PAPER, WOOD - KERALA


Describes the basic raw materials for pulp and paper industry in Kerala. Timber is used in industrial purposes such as manufacture of paper, packing materials, Chip board, particle boards, hard boards, vensers, matches etc. The basic raw materials are bamboo and reeds. Also describes the use of wood pulp such as writing and printing papers, news print, wrapping and other related papers, paper boards and the blotting paper.

PLASTICS


Products made of fibre reinforced plastics find numerous applications in chemicals, electrical goods, marine transport, aerospace engineering and consumed goods industry. Electronics industry and transport applications items are being increasingly used. Efficiency of glass fibre reinforced plastic using for fishing and pleasure boats. Fibre reinforced bulls are single piece and water proof. Does not require continual painting compared with aluminium, fibre reinforced plastic is light material and easily welded.
Organic materials polymers are susceptible to environmental degradation. Environmental factors such as heat, light, oxygen, humidity etc. cause polymer degradation. Polymer degradation occurs during its processing and end-use of processed articles. The first stage of degradation is thermal effect when polymers are subjected to relatively high temperatures. Second stage is occurs when the plastic component is put to use. The un-predictable nature of weather and constant variation of its many elements do not repeatable.

POTTERY

Village pottery, though seems to be out-dated as far kitchen-ware in concerned, with the arrival of metal and its dominances has still to offer many utility items. The latest additions Grameen Sheetakhs and water filters have all been proved to be less expensive and also resistent to changes of weather. But the poor traditional potters new some training in bringing out such items with appropriate policy backing.
RUBBER, CHEMICALS


Describes the characteristics and nature of common polymers and rubber chemicals used in rubber processing industries. Small scale processing different kinds of rubber products. The products range from play-ball to cover on betting. Natural rubber has its limitations for use in different industrial products. To suit the requirements of industries many synthetic rubber have come and mention in the paper. The processing of rubber with different the chemicals also discussed.

RUBBER, TYRES, RETREAD


Retreading is an industry with tremendous growth potential. Retreading makes a significant contribution to the economic viability of road transport as well as mechanised mining operations. Paper has explained the development of retreading technology. A new technology of precured system, namely, bounding the cured tread on the tyre. The economic advantage derived in each retreading is given in the chart.
GOVT. of India had grouped the soap industry with village and snack industries, as such there was a good scope for its expansion in industrially backward districts. The arrangement of distribution of raw materials through the Association and state govt. was making all efforts to get "Tollow" in sufficient quantity to meet the requirement of the industry. The industries Department had assured all assistance for the rapid expansion of factory.

The ordinary soap is only slightly antiseptic, and that it merely washes off some of the germs. To eliminate germs, a special anti-bacterial soap is required. Kerala state Detergents and chemicals Limited, set up by the Kerala State industrial Enterprises at Kuttipuram. The factory producing 5,000 tonnes of more sophisticated and costly spray dried powder. The washing soap, with brand name of "Score" will first introduced Andhra than in Kerala.
LABOUR, CONDITIONS, KERALA


Deals with the labour conditions in Kerala, trade Unions and need of legislations for the workers in industries. Labour conditions in Kerala to attract attention allow the country. This is because they had deteriorated greatly in the recent part, so that any new light on them arouses interest. Trade Union rivalries had become a serious distributing factor in the labour situation in Kerala. Also mentioned the necessary steps taken by Govt. to improve conditions of security in this State.

EMPLOYMENT, DIAMOND INDUSTRY


Diamond cutting and polishing is a highly labour intensive industry in Kerala. Also gives briefly the possible factors for establishing this industry in Kerala such as least capital intensive, industry does not add to the problem of pollution, it does not leave any industrial affluence for wastes and it does not consume any precious minerals resources like coal etc. Govt of Kerala started a Diamond institute for encouraging and help to start such an agencies.
Workers in coir industry are engaged in the manufacture of rope, twine, string etc. made of fibre, other than cotton and jute. This may be taken to refer mainly to coir as the main industry. Nearly two-thirds of the total workers in coir industries are women. The ratio of women to men is still more in the primary process of hulling, cleaning, spinning etc.

One of the big factory in Kerala. 150000 peoples were working in this factory. 25% people were working in Cananooore. Conditions of workers are very poor. They were living in slums. Business under contract wise. Most of the workers are womens. Kerala Dinash Beedi is one of the important factory in Cananooore. They were exporting to all countries. Also they were not getting allowance and bonus. Problems of wages are mentioned.
A survey is being undertaken throughout the country to ascertain the exact number of people engaged in Beedi Industries. It is stated that in the absence of reliable data, the Beedi workers welfare organisation New Delhi is finding it difficult to implement measures for their welfare. Some recommendations are also given.

Describes the need for good welfare and incentives of workers. For the better production and good maintenance, Cotton textile industry in Kerala provides extensive welfare amenities such as dispensaries, well equipped hospitals, creches, canteens, co-operative societies, schools and gratuity. Also mentioned some name of agents providing welfare such as various acts passed to protect the women workers and employees state insurance and Trade Union.
MACHINARY, DISTRIBUTION, COTTAGE


Deals with the distribution of machinery on hire purchase or on outright sale to small scale entrepreneurs through schemes implemented by the Kerala State Small industries Corporation. A special concessional scheme can be operated for hire purchase of machinery for entrepreneurs also mentioned. The functions of the finance Division of the corporation will be to assist to each SSI units is to be possible.

RUBBER, INDUSTRY


Discuss the dominant areas of Rubber processing - compounding and homogenising and extruding. The paper reviews the latest design changes of the main machine and the innovation in accessories and attachment which combined together low cost, high productivity new generation equipment. Also gives certain advantages of continuous processing such as length of production run, degree of flexibility required, amount of automation desired and type of materials to be processed.
MANUFACTURE, BLOCK RUBBER


Describes the new products of rubber and the manufacturing process of block rubber. Involves series of unit operations such as pre-cleaning, blending, final size of reduction, drying and packing. The raw rubber in the form of latex and removing foreign matter and dried at packed into blocks of standard size and shape, and wrapped in low density polythene film.

CASHEW


Cashew manufacturing units in Kerala are concentrated in and around Quinlon owing to the availability of cheap skilled labour and the existence of local entrepreneurial talents to run the industry. Cashew is one of the most labour intensive industries in the state where most of the operation are done manually. A low wage rate is prevailing in the Industry. Mostly women workers employed in the industries.
COIR

128. NAGARAJAN (R). Retting of coconut husk. Coir. 27, 1; 1982; 5-6.

Retting process plays a crucial role in coir making. The biochemical reactions and micro organism involved in retting of coconut husks has been brought one in this article. The coconut husk is formed leathery exocarp and fibrous mesocarp is made of bundles of fibres in mass of paranchymatious cells. In the retting process coconut husk is steeped in shallow water in areas most often located near the bulk waters subject to tidal action. The retting period normally ranges from 6 to 10 months.

FRUIT MILK

129. PARIKH (JV). Manufacture of Fruit Milk powder. Kerala Commerce and Industry. 6, 6; 1975; 25.

Describes the manufacture of fruit milk powder from the following raw materials such as Fresh concentrated skim milk, Fresh Sweet cream, Fresh and ripe fruits and high grade refined sugar. Typical composition of mango powder and banana milk powder are also mentioned. Manufacture of Recipes is mix fruit milk powder with water in a mixture with 4-5 times of its weight.
INKS


Describes the manufacturing process of writing inks. Small scale manufactures prepare galnut extract by crushing the material into pieces and soaking them in hot water for 7-15 days. Pure tannic and gallic acids and extract are used as raw materials. Gall nuts are sometimes roasted before extraction for the preparation of dark inks. Black inks are prepared by grinding carbon black with a suspending agent by roller mill and diluted with water and preserved.


Deals with the raw materials for ink manufactures and on printing ink machinery. Principle of ink formations analysis, quality control and testing of inks have been adequately dealt with. A comprehensive chapter on ink formulations is included to help manufactures in the selection of a formula for a particular application. Special ink such as rubber stamp ink and type writer ribbon inks etc. have been adequately discussed in the Book.
LEATHER GOODS, FOOT WEAR

132. GUPTA (SN Sen). Manufacture of Footwear by Direct vulcanization process. L.U.S. 9, 3-4; 1984; 8-10.

Describes the advantages of manufacture of footwear by direct vulcanization process such as Reduction in cost of production, improved shoe construction and greater durability and longer serviceability of bottom in comparison with V.T. soles. Small units are becoming more and more interested to produce shoes by D.V.P. to compete a big units because of lower production cost and higher productivity. Properties and process are also mentioned.

LIME, COTTAGE INDUSTRIES


Manufacture of lime is one of the traditional industries in Kerala. KVIC has launched a massive programme to rehabilitate the artisans engaged in this industry through financial and technical guidance. Training course for artisans and superiority personnel are extended for successful implementation of the programme. KVIC also undertaken R and D work products and also performing the quality control.
PERFUME

134. KALICHARAN. Manufacture of Perfumes and essences. 1976.

Gives complete details about the raw materials, the manufacturing process and the equipment required. The emphasis falls on the practical viability of the project. The chapter on oils, gives detailed account of the various methods of manufacture. Distillation, expression, extraction. Also gives an account of all types of perfumes for toilet products, aromatics and artificial cosmetic perfumes.

PLASTIC PRODUCT


Deals with the manufacture and processing of various plastic products from the moulding powder stage. This is a most up-to-date treatise on the manufacture of plastic products for packaging, plastic forms thermo setting resins, plastic welding, sealing and plastic processing. Emphasis is given on topics such as adjustments of moulding temperature, pressure, cure time and thermal induction heat.
PLY-WOOD

136. AYER (S Krishna) and CHIRAYATH (John Thomas). Transformation of Wood into Plywood. Vyavasaya Keralam, 6, 61; 1982; 7-10.

Plywood is made by first obtaining venners from logs of wood then super-imposing and gluing layers of veneers in such a way one ply are cross-wise to those of the next one. The main advantage of plywood compared to solid wood is more homogenous and resists strain to a greater degree. Good dimensional stability against shrinkage and does not warp. Wood is most versatile of nature's products. With the advent of science and technology a number of useful products from wood have been evolved.


Two important items of raw materials for the manufacture of plywood, wood with which veneers are made and adhesive with which layers of veneers are glued together. Also describes the characteristics properties of wood in general.

Genus Eucalyptus plays an important role in pulp and paper manufacture. On an average, it contributes about 30% of the raw materials supply to the pulp and paper industry. Eucalyptus teriticornis due to its comparatively high growth rate, adaptability to a variety of soils and climatic conditions is the single important species contributing portion for pulp and paper industry.

ATHALYE (AS). New developments in Stretch blow moulding of PVC and PET. Popular Plastics. 28, 8; 1983; 15-7

The process of manufacturing of hollow-ware by blow moulding process using thermo-plastics like LDPE, HDPE, PVC, PS, Polycarbonate etc. has been commercial acceptance for over 3 decades. There has been continuous upgrading of process, equipment and moulds for effecting economy to compensate for the rising polymer costs. The process has the following sequences: Formation of a parison by injection moulding or by extrusion - longitudinal streeting of the parison - Radial orientation while blowing the parison into the mould - Ejection - providing an HDPE base cup, printing and packing in shrink - wrapes cartons etc.
SOAP, DETERGENT


The comprehensive volume on manufacturing various types of soap, detergent and perfume first time published in India, containing formulations, plant and machinaries detail and other necessary information. Also explains the process of manufacture such as from oils and fats derived from vegetable and animal sources. Several components are formulated to produce a commercial synthetic detergent.

SOAP, OILS


Highlights the suitability of various non-edible oils for the manufacture of soap. Cotton seed oil which is used for vanaspati purposes and for soap making, castor seed oil and soap stock have established their use in soap industry are primarily selected are the basis of their classification into nut oils, oils and hard oils. Chemical properties and botanical names of some of the non-edible oils are mentioned.
SOAP, TECHNOLOGY


Describes the chemistry of soap manufacture, the chemical raw materials, and the machines and utensils required for soap manufacture. The chapter on soap making on cottage industry scale discusses, the manufacturing process, the boiling processing, toilet soaps by cold process - the removal of fatty acids. Also gives brief account of toilet soap, special soap powdered detergent and manufacture of toilet goods.

SPORTS GOODS


Describes the usefulness of leather especially for the manufacture of sports goods. Leathers for sports goods have immense prospects. Football and Volley ball manufactured from bag tanned leather generally shrinks during summer season. In case of foot-ball and volley ball manufactured from pit tanned leather do not tanning. A number of tanneries manufacturing sports goods leather in organised form are too small to meet the demand of home and overseas market.
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TECHNIQUE, RUBBER


Real practical book written for technical entrepreneurs, manufacture and dealers of rubber products and those who wish to go in for the manufacture of rubber items and chemicals. Book discussed about cycle tyres and tubes, tyre retreading, wires and cables etc. A separate chapter of formulations has been included to cover large number of typical products. Testing of rubber, rubber machinery have been given in later part of the book.

UMBRELLA

145. ACRYLIC BUTTONS & Umbrella handles. Vyavasaya Keralam. 9, 2; 1985; 13-4.

In Kerala no unit for the manufacture of nylon buttons. Few units we engaged in manufacture of umbrella handles. Manufacturing process of Acrylic buttons. Acrylic sheet cutting into strips of required width round and pieces to actual size of buttons with the aid of Hollow Mill cutter blank breaking, Designing and shaping, polishing, Hole making, packing and despatching. Umbrella Handles. Sheet cutting pasting, grinding, polishing, drilling, finishing, packing and despatching.
MARKETING - CASHEW PRODUCT


Cashew is one of the most popular nuts and its demand in the world market is on the increase. Research on cashew find solutions for several production problems. Some isolated studies on the relationship of some of the vegetative floral and fruiting characters on yield have been made in the past. Present studies were undertaken with the object of identifying some of the vegetative and flowering characters associated with production of cashew trees.

COCONUT OIL

147. THAMPAN (PK) and PANKAJAKSHAN. Coconut oil in India. ICJ. 7, 687; 1976; 15-9.

Describes the production and marketing of milling copra and coconut oil. Two major commercial products from coconut are milling copra and coconut oil. Kerala virtually holds the monopoly in the production and supply of milling in the country. The production of million copra is a traditional rural industry in Kerala. The production of coconut oil in Kerala state accounts for about 95,000 tonnes. The milling industry is traditional to the state with very slow pale of modernization.

India is one of the largest producers of oil seed in the world. The production of coconut oil very much related to the production trend of Kerala. 95% of the out put of milling copra is India is accounted from Kerala. Coconut is very important oilseed crop and its proper development helps for supplying vegetable oils in the country. Also deals with the processing activities of oil from copra and marketing of goods.

COIR, MATTES


Describes the increased coir marketing by manufacturing of rope wedded mats. Mats and matting are two of the important traditional forms of coir products. Rope wedded matting is one of such products which has unique weave structure. Unlike ordinary matting, which possesses uniform, plain surface and provided with intermittent projected redges and furrows prominently on the surface.
PLASTIC GOODS


During the 1970s polypropylene was a star performer amongst polymers in terms of tannage growth, market share and application developments. Plants were fully loaded to meet the demand for conventional PP homo polymers and cocopolymers. These conventional grades are house-ware, crates, rope and twine, weaving tapes, packaging and automotive Trim panels. **Block copolymers.** Reactor block copolymers is standard using for blend copolymers preparation. Applications for random copolymers, are OPP film coating-laboratory ware wrapping film - infection blow moulding - bottles and SPPP formed articles.

PROBLEMS, COIR INDUSTRY

151. MOHAN KUMAR (M). Coir industry as we enter the twenty first century. *Coir* 29, 2; 1985; 5-7.

Discusseshow the coir industry facing the new challenging task of 21st country. Rapid technological developments have made significant impact on the floor covering industry. But the coir industry has been continuing on traditional lives. Trying to sell coir and coir products abroad as handicrafted items made out of a natural versatile fibre coir Board envisaged the establishment of a large net work of show rooms and sales depots under the various agencies involved in the industry. The internal market for coir and coir products would have increased by heaps and bounds.
152. BATTERY ELIMINATORS. Vyavasaya Keralam. 7, 5; 1983; 5-6.
Growing market for battery eliminators due to the rising prices of dry cells with the rural electrification in the interior and remote villages. Electricity is available and trend to change-over to battery eliminators, avoiding the use of dry cells, which require frequent replacement. Raw materials, required are copper wire, lamination, transistors, resistors, housing, cover, plugs, sockets adoptors, screws, nuts, paints and varnish.

PRODUCTS - COCONUT INDUSTRIES

Deals with the use of coconut in industry and marketing of products. The main coconut based agro industry is oil milling. Oil is extracted from copra in mills. 1,139 small scale units are located in Kerala. Coir is another industry developed on the by-product of coconut i.e. husk. Other industries like solvent extraction and compound feed processing have developed not exclusively for coconut, but in combination with other oil seeds.
TRADE COIR


Describes that coir industry is one of the most important traditional small scale industries in Kerala, and the problems facing coir products. World market and price fluctuation seem to have become a perennial feature of the industry in efficient marketing. Also gives brief idea about the background of the Industry, internal marketing and deals with external marketing are foreign trade.

MILL CONTROL, FLOUR MILL


Describes what is mill control and why is it so important. Mill control is essential for satisfying both the customer and the mill owner. Uniform loading of the mill, with a minimum of upset or fluctuating situations, will give the miller the opportunity to tune up a mill's performance and reduce costly down time uniform milling conditions through use of controlled temperature and humidity mill air is of extreme importance to good mill control. Mill control improved earnings.
PACKAGING, FIBRE BOARD

156. ANAND (JC) and MAINI (SB). Fibre Board packaging for fruits. Indian Horticulture. 27, 3; 1982; 19-22.

Packaging needs of fruits are increasing every year and it consumes a large part of our forest resources. So paper deals an alternate resources to meet the packaging needs of horticulture industry. Corrugated fibre board box have been substituted for the wooden cases for packing of fruits. It would cause less bruising and other damage to the fruits. Box can be properly punched and ventilated to provide appropriate atmospheric control.

POLYETHYLENE

157. WOVEN POLYETHYLENE. Kerala Industry. 20, Pt. 8; 1975; 43-7.

Woven sacks from polyethylene strips are specially suitable for packaging purposes because of their various advantages over the conventional Jute sacks. Polythelene woven sacks are water repellant and do not rot. Process of manufacture polymer is metered into the extruder barrel where it compacted and plasticised. The melt is then forced under pressure through an orifice. Then immediately collèd by means of chill rollers in the case of blown tube extrusion adopted by us at present. Then streching process causes the molecules to align themselves in the general directions of the stress thus giving the tape a high tensile strength. The laminated tape woven fabric is cut to the required size and stitched by nylon yarn.
PESTS-CONTROL, CASHEWNUTS

158. JAYAKUMAR (K) Measures on Infestation control and plant hygiene in Cashew units. *Cashew Bull.* 23, 3; 1986; 7-9

The export Inspection Agency - Cochin has recently set up an Extension Division to cashew processing units. Objectives are: to render technical guidance on matters regarding infestation control, good manufacturing practices, plant hygiene personal hygiene etc. In cashew units. To render possible assistance and advice as to generate quality culture and quality consciousness among exporters. To advise and assist the cashew exporters as and when necessary to improve the prevailing facilities so as to confirm in process quality control. To arrange in-house training programmes in cashew units. To hold short duration training programmes to managers and senior personnel.

159. NATARAJAN (CP) and SHANKARACHARYA. Insect Infestation and pest control for cashewnuts. *Cashew Bull.* 15, 1; 1978; 4-7.

Infestation in any food product can arise from improper storage of nuts and packaging in industries. The industry in the past has taken some precaution to keep the minimum problems of infestation. The govt. agencies like export inspection agency and the export promotion council have also suggested some recommendations. The industry also going to establish a quality control laboratory and training institute.
TECHNIQUES, FOOD INDUSTRIES

160. GOEL (RK) and GUPTA (RK). Pesticides formulations and Agro-based chemicals, Food and paper products. SBP Chemical Engineering Series. 36. SBP Pub. New Delhi.

Published in the interest of promoting the development of small scale industries. For this purpose some of the technical information incorporated in this book is taken from patents and standard literature. Also describes the manufacture and process of corrugated paper and paper board. Paper and paper board with regular curved foiles and grooves made from kraft paper are known as corrugated paper and board.

POLLUTION CONTROL - PAPER INDUSTRY

161. PANT (Rajesh) and KULKARNI (AG). Steps to be taken for controlling pollution from pulp and paper industry. IP & P, 39,6;1985;5-7.

Describes the possible steps to be taken for controlling the pollution in pulp and paper industry. Application of biological, physical - Chemical methods in treatment of effluents has been emphasized. Paper also discusses the role of closed mill concept; and disposal of waste water in mining the quantity effluents going to receiving streams. Training of the personnel looking after treatment plant is also considered.
PRESERVATION - COFFEE

162. RAO (N Gapala Krishna) and NATARAJAN (CP). Some Aspects of packaging of coffee. IC. 38, 283; 1974; 54-9.

Main function of packaging into preserve the product and avoid the influence of oxygen on roasted coffee and as result of this prolongs the shelf life. Packaging is very important for the keeping quality of coffee and its products. Proper preservation and improvement of quality by the various technique are described in the article. Coffee extracts are frozen and preserved in screw cap jars. The dilute the the extracts etc.

COSMETICS

163. KAMALADAS. Some Hintds to the Cosmetic Industry. SSI. 2,4; 1970; 20-1.

Describes the preservation of raw materials and usefulness of cosmetic products. Preservation of food stuffs method is not easy to apply in preservation of cosmetic made out of herbs. Turmeric is an antiseptic known as Kastur manjal, when applied on the face and arms for a moths make skin glow substitute for soap. BILVITREE is well remover of body odours. TULASI powder is effective cure of coughs, headaches and dandruffs. NEEM leaves powder are good for removal of pock mares and other facial cares. Cosmetics products using for fool-proof product to prevent pregnancy.
TAPIOCA

164. SREEMULA NATHAN (H). Preservation of raw Tapioca tuber. Kerala Commerce and Industry. 1, 1; 1969; 22-3

Tapioca is the traditional poor man's food has indeed a very expensive way of preserving itself. It is highly perishable material. It is rarely possible to preserve more than 48 hours after harvest. Blue-black streaks of fungus growth approx. in two to three days due to softening and rotting. Tuber can be preserved by keeping it wet over water in mud pots, covered with a wet cloth.

PROBLEMS, ARECANUT INDUSTRY

165. VELAPPAN (E) and PAULOSE (TJ). Present position of the Areca nut industry. A&S Bull. 4, 2; 1974; 24-8.

Describes the problems of Areca nut industry. Areca nut is a very important and ancient industry in Kerala and has sustained large number of cultivators and others connected with the industry. Also mentioned the possibilities of using areca nut by product for extraction of fat and alcohol, manufacture of tooth paste and chewing gum. Manufacture of hard brands, wrapping paper etc. from areca nut husk.
CARDOMOM INDUSTRY, INCOME TAX

166. CARDOMOM INDUSTRY, declared drought - hit. ET. 2-6- 1983.
Highlights the difficulty of cardomom industry. The cardomom Board has declared the entire cardomom industry in Kerala, Karnataka as "draught effected" and requested the government of those states to exempt cardomom farmers from cultural income tax.

CARPET INDUSTRY, RAW MATERIALS

The growth of the carpet industry in the last decades shows a favourable trend. At the same time, the lack of good quality raw materials, technological obsolescence neglect of quality of product etc., have to be taken not of and proper corrective action in terms of development of strategies and modernization is required. Some of these vital elements are given.

CASHEW INDUSTRY, INFESTATION

168. PILLAI (SP) and MUTHU(M). Infestation problems in Cashew Industry & Remedial measures. Cashew Bul. 15, 2; 1978; 8-9, 11.
The present problems of infestation in processed kernals. The important species of insects associated with the infestation of cashews and industry are are Necro biarupipes. General premises are also given such as prophylactic spray
of general processing premises using malathion, quick disposal of waste materials preferably by incineration and lower disposal grades and rejections in store should be fumigated using methyl bromide.

CASHEW INDUSTRY, RAW MATERIALS


Describes the main problems and prospects facing the cashew industry. Problems is inadequate availability of raw materials for processing which results in utilisation of installed processing capacity to the extent of 25% to 30% and the establishment of processing factories availability of skilled labour in abundance and steadily increasing imports of raw cashew nuts from East African countries. Also giving some regulations and processing capacity for utilisation.

CASHEW INDUSTRY, TRADE UNION


Discusses the problems of cashew industry. The role of cashew industry in Kerala’s economy is brought out through an analytical study of the cashew tree, cashew products and the processing methods and the growth of trade unionism. The findings of the sample survey conducted was set out in Section IV and the proforma used is given as an appendix. The processing of statistical data also mentioned.
171. PHILIP (Susamma) and MENON (MA) Changes in the properties of coconut oil due to storage. ICJ, 14, 9; 1984; 29-30. Coconut oil is extensively used for culinary purpose in Kerala. Information on the possible chemical changes in coconut oil due to prolonged storage under natural conditions are not available. The paper discussed the investigation made at studying the extent of spoilage of coconut oil due to storage and also deals the materials, and methods used in the investigation.

172. REDDY (N Krishna). A note on the shelf-life of Raw Edible grade coconut oil. ICJ, 9, 1; 1978; 1. Highlights the problems of coconut oil storage Raw coconut oil was stored for over a year ambient room conditions coconut oil is used as edible oil in Kerala but is dealt with as an inedible oil in other parts of India. Coconut oil generally keeps well but if gets rancid, it could smell nastier than other types of oil. Materials and experimental methods also mentioned this paper.
Coir industry in Kerala is one of the major cottage industries providing employment to about 5 lakhs persons while about 10 lakhs persons are dependent upon it for livelihood. Also describes the problems facing the coir-industry in Kerala such as unemployment and under employment constitute serious problems and majority of workers are under poverty line, Coir co-operatives of India, so the financial credit is not possible and non-availability of coconut husks at reasonable price.

Coir Industry, Financial


Deals with the loan advances granted by the commercial Banks to the coir industry. Export credit include to an exporter for financing or packing of goods, processing or manufacturing. Short term or medium term export credit, is provided by Indian and Foreign Exchange Dealers Association. RBI, Industrial Development Bank of India and the newly set-up Export Import Bank, function as re-financing institution. The ECGE plays an important role through the various schemes of insurance and guarantees, providing cover for risks involved in export trade.
175. AGARWAL (BL). Copra crushing Industry in retrospect. coconut Bull. 1,11; 1971; 3-7
The problems of copra crushing industry such as the meagre supply of indigenous copra, total import of canalisation of copra and inadequate distribution and discriminating price policy of govt.. The export of copra cake and coir products earn foreign exchanges to the state. The problem of the industry is basically rooted to the under-utilisation of its installed capacity.

The methods of testing and analysis of raw materials surphonated and finished detergents etc. One of the major problems of small scale manufacturer is to obtain a suitable formation for his product. Keeping all these facts in mind the authors have described the methods of analysis of raw materials and finished detergents. The methods of testing is also mentioned.
FOOD - INDUSTRY

177. FOOD PROCESSING Industries. L.U.S. 11, 7; 1979; 19-22.
Highlights the status, problems and prospects of a few selected processed food industry, such as fruit and vegetable products, Backery industry, Rice Milling, Dal milling and oil seed processing industry. The development of agro-based food processing industries, which are labour-intensive, can sizeably reduce this problems and have, therefore, been accorded a special place in the economic planning of the country. In addition to above, big list of other food processing industries also mentioned.

HANDLOOM, EMPLOYMENT

The problem of employers. Weavers are not getting enough work for their existence. In Kerala only the frame looms have come into existence in place of Pit Looms. In modernised Handloom can be controlled only by legs or hands. In the ordinary frame loom we have to use hands and legs for weaving one to the less fatigue to the weaver. In the machine attached loom not stopping the loom after weaving a small length of cloth. It gives more length and uniform cloth. Helps for double production to weavers.
MATCH INDUSTRY, FINANCIAL


Deals with the requiring an urgent and a good packet policy support from the Government. The main problems faced by the cottage match industry today is to heavy competition from the organised sector as well as the small scale Sector. The Match industries can be devided into categories and the main advantages of categories is also mentioned.

MATCH INDUSTRY, RAW MATERIALS

180. FACTS ABOUT Match Industry. Commerce. 95, 2442; 1957; A 159.

Deals with the raw material problem, requies urgent attention and employment potential. Matches are, of course, a universal need and consumption in Kerala, India approximately averages two sticks per head per day. A corollary to conserving supplies of timber is that transport for this valuable raw materials should be adequate and timely. This is one of the industry most serious problems, and every year delayed or insufficient transport occasion.
PLASTIC INDUSTRY, FINANCIAL

181. NIKUMBH (RR). Plastic; Opportunities for Processing Units. Vayavasaya Keralam. 10, 3; 1986; 13-5

Describes certain main problems facing the plastic industry such as lack of working capitals and high cost of borrowing problems on the transportation of the raw materials as well as finished goods and non-availability of raw materials. Also explains briefly certain opportunities available to the plastic processors such as greater availability of materials, high cost of ferrous and shortage of materials.

RUBBER INDUSTRY, MARKETING

182. GEORGE (CM). Rubber Based Ancillary Industry; Problems and Prospects. LUS. 9, 12; 1985; 13-5.

Kerala provides livelihood for million peoples in the state and gradually becoming the economic back-bone of state. Paper dealing with the main problems and prospects of rubber based ancillary industries such as influencing of northern markets and getting ready mixed compounds from rubber manufacturing units. Some of the possible solution of the problems are also discussed such as intensification of applied and problem oriented R & D efforts and provision of assistance quality control etc.
SMALL SCALE INDUSTRIES, CAPITAL PROBLEMS


Describes certain problems and prospects of small industries in Kerala such as growth and idling capital, projects and environment, entrepreneurs and absence of good consultancy service and lack of sufficient market. Some possible cause of action are suggested such as stop registering new units for next 6 months, consolidate details of industries actually registered category-wise and marketing and finance organisation.

MANAGEMENT, LABOUR


Deals with the problems of organisation and management of legislative control, and problems of managerial kind as well as industrial relation. Labour Deptt. of Travancore adopted various labour problems which had to be tackled during the post-war period, and employer-employee relationship is necessary for the sound consequent promotion of nations well being. The function and responsibilities of the Department has mentioned.
SMALL SCALE INDUSTRIES, MARKETING


Discusses the problems and prospects of small scale industries in India. Small scale industries at present face certain problems at each and every stage - from selection of a product to marketing of goods and realization of returns. The rapid industrialization in India depends on the growth of small scale industries. It covers the literature on the subject, enabling the small entrepreneurs to overcome the problems and march heads towards prosperity.

TAPIOCA INDUSTRY, MARKETING

186. PROBLEMS OF Tapioca Processing industries in Kerala. Vyavasaya Keralam. 9.2; 1985; 5-8.

Problems are quality control, marketing, working capital etc. inferior quality of starch produced and non-uniformity in quality of consignments of the finished products, under utilisation of capacity of the existing units, Non-availability of working capital in time, absence of organised marketing channels and fewer sunny days and non-availability of mechanical drying facilities. Also mentioning the certain profitable recommendations.
TILE INDUSTRY - KERALA


Deals with the problems confronting the tile industry in the state. Tile manufactures will have to enlarge their areas of agreement in order to find lasting solution for most of their difficult problems. The industry plays a vital role in the general economy of Kerala especially the employment it generate. Separate sections have been devoted for a brief entreprenerual sketch and minimum wages in the industry.

TILE INDUSTRY, TECHNIQUES


Discusses the problems of urgent need for improved production, techniques and marketing strategies. Problem of scarcity of raw materials and non-mechanised smaller units despite the lower prices. Also deals with the stages involved in preparation of tile, clay selection and storage, slab preparation, Drying, burning of tiles, Testing of tiles and stacking of tiles. Indicating survey made by NPC in 1978-79, where in a number of tiles units of Kerala were covered to access and pinpoint areas for productivity improvement. Kerala is the home of tile industry in India. 300 units are situated in Kerala.
189. PATEL (M) and ROHATGI (PK). Problems of Tile and Brick Industries in Kerala. *Indian Ceramics*. 24, 11; 1982.
Discussed various problems faced by the tile and brick manufacturer in Kerala such as a lack of knowledge on quality, proper processing, transportation and stocking of raw materials have been found to be a problem and scarcity of fire wood. Also deals certain initiatives taken by govt. for solving the problems such as regular supply of coal to Kerala, exemption of tile clay from mineral royalty and exemption of excise duty from brick and tiles.

**TEXTILE MILL**

Deals with the problems facing the four closed textile mills such as Trivandrum Spinning Mills, Malabar Spinning & Weaving Company, Kottayam Textile Ltd. and Praburam Mills Ltd. Also mentions the need of programme of modernisation such as improving the performance of units. Govt. entrusted KSTC with the task of setting up of new spinning mills in the State and functions are also mentioned.
TRADITIONAL INDUSTRIES - KERALA


Deals with problems in the field of social and industrial relations of Kerala such as Kerala's Industrial Backwardness, factors inhibiting industrial growth of Kerala and Wood-based industries of Kerala. Kerala Industries are employed in low productivity agro-based traditional and backward industries such as coir, cashew, handloom and beedi, with the result average earnings per industrial worker in Kerala is half of national level.

UNEMPLOYMENT


In Kerala, the unemployment is among educated people. In order to overcome this Govt. of Kerala has set up a corporation named "Kerala State Small Industries Development and Employment Corporation" having various divisions. Non-availability of the required raw materials in time and inadequate quantities are the problem facing in Industries. Function of this division may be be defined as establishment and administration of industrial estates.
PRODUCTION, COIR FIBRE

193. BHOWMICK (BB) and DEBNATH (CR). Coir fibre: Potentiality of Coir fibre products. ICJ. 16, 3; 1985; 7-10.

Describes the various stages involved in the processing of coir fibre in industry such as curling, preparation of artificial animal hair, flagging, spinning, rope making and weaving. Also deals with the end uses, problems and potential solutions of coir processing industry. Coir fibre can be utilised in the filter material for sea wall in anti-sea erosion works and uphal story cushionings etc.

COIR PADS, TECHNIQUES

194. CHATTERJEE (IM). Technique for production of rubberised Coir pads. Coir. 26, 1; 1981; 7-8

The techniques for production of rubberised pads. There are two methods of production. In the first method a suitably compounded latex is applied to a performed pad of fibres by means of a spray gun and the pad is then dried and vulcanized in hot-air. In the second method the fibre is first treated with the latex and then shaped by means of perforated metal or wire moulded before being dried and vulcanized.
COPRA, AFLATOXIN-B

195. PHILIP (Susamma) and MENON (MR). Aflatoxin-B in Copra.

**ICJ.** 14, 1; 1983; 3-5.

Paper's aims is to studying the production by *Aspergillus flavus*. Sample of Copra were analysed for aflatoxin-B for a continuous period of one year. Samples collected during March-August recorded values above the critical level of 1ppm. Materials and methods also discussed.

RUBBER - GLOVES

196. GORTON (ADT). Natural rubber gloves for Industrial use.

**NR Technology.** 15, Pt. 1; 1984; 7-18.

Gloves based on natural rubber are used in various industrial applications. Modification of the standard formulations can improve the service life by increasing protection against chemical and physical effects such as oxidation, light, ozone and tearings. The use of polymer blends and polymer composites provides additional advantages. The production of fabric lined gloves is discussed, including new heat-sensitive methods which are superior to existing ones.
Cashew nut shell liquid, a by product of the cashew industry, has got innumerable industrial applications. The juice of the apple can also be used for the preparation of syrup, squash, jam and candy. An alcoholic drink called 'feni' is extracted from cashew apple. Cashew apple is also a nutritionally valuable fruit rich in vitamin C.

COCOA WASTE

Describes the way how to convert the cocoa waste into useful bye-products. Main waste are shells and germs. It is used for cow food and paper manufacture. Sweet liquor from the fermenting mass is reported to be used for making low grade jelly or jam. Possible uses of all these waste products are also given in this paper.

COCONUT, OIL

Describes the extraction of oil from coconut and utilisation ways of bye-products. Coconut is processed for oil production
such as the cut coconut is dried in the sun to produce copra and the oil is expelled from it in a rotary oil mill by expellers. Two types of processed foods have been prepared from bye-product by using the water phase concentration, also mentioned.

COCONUT WASTE


Deals with the extraction process of coconut waste. Coconut waste would be the husk and the shell. Husks are used for fibres. There are two methods of fibre extraction such as retting and beating and mechanical extraction, each depending on the place, age of nuts and availability of water. The availability of husk in the West Bengal is more than sufficient and provided sufficient methods for collection of husks and extraction of fibre out of them.

COIR WASTE, TEXTILE INDUSTRY

201. DEBNATH (CR) and DAS (PK). Use of Coir-felt mill waste for Textile purpose. *ICJ*. 13, 8; 1982; 7-9

Physical properties of coir waste fibre were measured by established methods. Adhesive bonded non-woven textiles were made from coir waste fibre, Jute mill waste fibre and
cotton waste fibre blends on a collughan non-woven fabric machine, employing an air-laying technique of randomisation of fibres, followed by impregnation with bonding agent and curing. The properties of these textiles were also examined so that their suitability for various uses could be assessed.

INDUSTRIAL WASTE

202. MURTI (Indira AS). Industrial wastes and bye-products of food processing industries in India. IPP. 30, 3; 1976, 49-61.

The growth of food processing industries in Kerala has brought forth the problems of effective disposal of wastes. Waste utilisation is both a necessary and challenge. Waste are the by-products of industrial processing of food materials and have a greater economic significance. The present paper deals with the fruit and vegetable processing industry. Fruit and vegetable form a very important class of protective foods.

INDUSTRIAL WASTE, POLLUTION


Exhaustion of water resources, serious pollution of the atmosphere, rivers and lakes irreversible changes in the earth, all due to the increasing amounts of unabsorbable industrial waste, are creating new ecological imbalance.
The problem is not only scientific and technical but social too, the solution of which is impossible without undertaking critical measures and public education. Some recommendations are also discussed.

TOBACCO WASTE

204. WALUNJKAR (WG). Industrial use of Tobacco Waste. ITJ. 12, 1; 1980: 3-5.

Highlights of the industrial use of tobacco waste. Waste from tobacco industry comprises tobacco dust, stalks and low-grade tobacco unfit for human consumption. Processing of tobacco such as beedi, chewing, hookah and through handling in the case of virginia and other air-cured tobacco. The available waste is presently used to some extent as manure and for other agricultural process.

WOOD WASTE


Describes the need for reducing the waste and utilising the timber waste in industries. Primarily used in plywood manufacture, match making etc. Technology is available for the utilisation of timber waste for more productive purposes. With the help of saw mills and chipper mills the timber waste is converted into smaller size scantlings for construction purposes. Also describes briefly the utilisation of Rubber wood for chipping and pulp making industry.
STANDARDISATION - CLAY BRICK


Clay brick were fired from 900 - 1050 °C and subjected to a heating - cooling cycle (20 - 1050°C) in a dilatometer. Magnitude of length anomaly at 573°C, from ß-quartz / B-quartz inversion, residual shrinkage, and magnitude of endothermic heat effect were a function of original brick firing temperature. Sue of these methods to determine brick firing temperature for quality control is discussed. Test results indicated the importance of the relation between firing shrinkage and frost resistance, the variability in pox systems, the time factor and moisture content.

EXPORT, COSMETIC PRODUCT


International market is highly competitive. To meet this competition successfully, our products have to meet exacting quality standards. Standardisation has become a predominant feature of present day industrial civilisation. In 1976, the industry of civil supplies and co-operation recommended that all the manufactures of cosmetics and toilet goods to
in the organised sector should go in for ISI certification mark. The mandatory requirements are those considered significant from safety and stability of the material, and compliance with these requirements should be obligatory. Other requirements which are specific only in particular cosmetic formulation are given as optional requirements.

PROBLEMS, HOSIERY INDUSTRY

208. SIVARAMAN (C) and RAJUCHANDRAN. Impact of Synthetic Fibres on Indian Hosiery Industry. Man Made Textiles in India. 29, 1; 1986; 24-7.

Discusses some aspects of the quality control problems faced by the industry in the raw materials it consumes and suggests certain measures and approaches to overcome them. Besides, the paper emphasises the urgent need for control - Techno-Economic Research centre to help the Indian Hosiery to upgrade its technological skill as well as strengthen the existing marketing techniques and introduce new marketing strategies. The paper forecast a bright future for the industry provided as well defined development plans for the remaining part of 80's and the 90's using synthetic fibres are drawout and implemented.
PRODUCT, INDUSTRIAL

209. PILLAI (KS MADHVAN). Quality Marking of industrial products. KL & IR. 4, 2; 1966; 77-80.

Describes aim and objectives of standardisation of industrial products such as preparing and promoting national and international standards of commodities and process, co-ordination of efforts of producers and users for the improvement of materials and products and provision of the registration of standardisation marks applicable to products, commodities etc.

QUALITY CONTROL, CASHEW INDUSTRY


Explains the need for central agency in the Cashew industry such as quality control, export promotion and publicity. The biggest problem facing the industry is the perennial shortage of raw materials need for regulation on processing industry and establishment of new units. Also deals the problems facing the export of cashewnut shell liquid due to the emergence of Brazil and Mozambique.
QUALITY CONTROL, CASHEW SHELL LIQUID

211. SIVASAMBAN (MA) and AGGARWAL (JS). Does the quality of cashewnut shell liquid need improvement? CNJ. 4, 8-13, 1971; 33-6.

Describes the need for quality control of cashew nut shell liquid. In Kerala few factories are adopting more modern methods and others are following traditional old process. The polymerisation test and volatile matter in the shell liquid are great importance, otherwise it will effect in export market. Also mentioning certain quality control ways such as processing the nuts by the hot oil process and drum method also useful.

QUALITY CONTROL, COFFEE INDUSTRY

212. MENON (AV Ramunni). Cuptasting for the Coffee Industry. ICJ. 37, 8; 1973; 221-25.

Highlights the process or steps involved in the cuptasting process such as to roast the green coffee samples by cylindrical revolving roasters them the roasted seeds on corling are ground to a standard mesh-washing and grinding is necessary. Setting up of the cuptasting unit by the coffee Board as a landmark in the history of coffee industry.
QUALITY CONTROL, SAFETY MATCHES


Around 1910, a few families from Japan came to Calcutta and imparted to the necessary skill to the people in hand-operated machines. After that small number of Match units came up in Kerala. Because of box might be broken or crushed, or loose fit or the sticks might be broken or the heads of two sticks might be sticking together, the standardisation effort was made some of salient features of standard are general, safety, friction surface and Damp-proofness. A number of advantages by adoption such as assurance of quality and safety minimization of cost and wastage and increase in productivity.

QUALITY CONTROL, SOAP


Deals with the quality control of toilet soap. The venture of going into the inlet soap manufacture in the KVI Sector is taking roots. It, however, involved manufacture of good soap base at central place and production of soap cakes at different places. The final product, it not good standard, creates problems of marketing. It is, therefore, essential that the soap base units as well as those manufacturing toilet soap have perfect knowledge about the work at hand and produce articles acceptable to the consumer.
With the introduction of toilet soap manufacturing using non-edible oils, the necessity of preparing quality soap base has acquired crucial importance, since the marketability of the end product very much depends on the supply of standard soap base. The problems faced by the soap base manufacture units will therefore, have to be considered and solved. Methods of preparation is also mentioned.

QUALITY CONTROL, TAPIOCA INDUSTRY


Deals with the provision of technical guidance and help quality production tapioca products, ISI initiated the work of formulation of Indian standard for brought out a number of standards and hygienic code. It helps the consumers in getting right type of material but also paves ways for building up products image of tapioca industry. The quality parameters for various tapioca products are specified in the topic.

SHIVSHANKAR(S). Storage aspects of processed cashew nuts. ICIJ. 10, 2; 1976; 7-10.

Described the storage studies of raw and treated cashew kernels atambient and accelerated storage conditions have shown that kernels remain in good condition with or without Carbon dioxide atmosphere when stored in hermefically sealed containers.
TARIFF - HOTEL INDUSTRY

218. CUSTOMS DUTY on hotel gear goes. ET. 415, Jan., 1986.
Deals with the custom duty on hotel industry. Certain specified equipment required by the hotel industry has been exempted from basic customs duty in excess of 15 percent advalorem, so that the total incidence of duty would not be more than 45 percent. Hotel equipment at present carries total customs duty incidence ranging from 81.5 percent to 164 percent and valorem.

TECHNOLOGY, CERAMIC, PORCELAIN

219. DAN (TK) and JAYA CHANDRAN (K). Effect of Additives on sintering characteristics of Triaxial Porcelain Bodies. Indian Ceramics. 26, 9; 1983; 163-71.
The roll of additives like rice husks ash and glass powder as the sintering characteristics of triaxial porcelain bodies have been studied. For a standard porcelain body, porosity and transverse strength at 1000°C is 36% and 9.60 Mn/m² respectively. By addition of 30% rice husk ash and glass powder separately, it has given value at 1000°C of porosity 32.65 and 23.56% respectively and transverse strength 26.58 and 22.47 Mn/m² respectively. It has been revealed that sintering takes place by flow properties of liquid phase which has increased by addition of more additives. The fractured surface of the products have been examined by SEM and role of liquid phase on crystal growth's is discussed.
CHEMICALS - INK


Formulations and methods of manufacture of most types of writing and printing inks are discussed with special reference to end use of which they are manufactured. Separate chapters are devoted to raw materials and machinery used in the manufacture of inks and testing methods are discussed for most type of inks discussed in the book.

FOOD INDUSTRY

221. ANAND (JC) Development of technology for a break through in fruit and vegetable processing industry. IFP. 29, 6; 1975; 31-5.

Fruit and vegetable processing industry in Kerala is facing statement due to high cost of products and their dwindling sales. The technological practices based on expensive packing and processing procedures can hardly check and promote their sale, alternate processing techniques based on preservation with chemical additives, better use of packagings, economy on the purchase and transport of fruit etc. are suggested
MANUFACTURE—FOOTWEAR

222. BHALLA (AS). Small scale manufacture of Footwear. Indian Leather. 20, 2; 1986; 41-45.

Describes the need for appropriate capital goods and technologies. Local technologies used by small scale enterprises, artisans and cottage industries have often proved to be less competitive than imported technologies and the production units have not also been able to adopt their production to change taste or to increase the supply of consumer goods and capital goods commensurate with that of demand for these goods. Manufacturing process of footwear also discussed.

OIL INDUSTRY


Describes the advantages by the introduction of new technologies and mechanisation process for the extraction of oil industry. Rotary mills and expellers are used in oil milling industry. Coconut oil cake is the residue left after expelling oil from copra, the dried meat of coconut used as cattle feed. Coconut oil obtained from the cake is non-edible and is supplied to industrial establishment.
OIL MILL, COCONUT


Describes the qualities of Rotary machine in oil industry. Oil milling is an important small scale industry of Kerala. Rotary is a mortar and pestle type machine. Modern oil expellers are more efficient and extract one to two percent oil more. Rotaries are inexpensive and easy to operate and so are preferred by the small scale industry. Also, the rotary cake fetches a higher price and has a ready market. Oil is generally recovered by heating the fruits to a high temperature and pressing in a crude screw press.

PRODUCT, COCONUT INDUSTRY


Describes the various uses of coconut in the industries and manufacturing process of different products such as copra production, extraction of oil, properties of oil, food uses of coconut and use of coconut water. Paper also deals with the other products such as toddy made by fermentation of soap crushed inflorence is a popular beverages in Kerala containing 5 to 8% alcohol.
226. BHOJRAJ (SK) and IYER (Ramesh). Sugar Technology. Indian Sugar. 36, 1; 1986; 7-16.

It is an interesting case of designing a heat exchanger for heating raw juice with hot condensate water. This paper deals with process design calculation based on chemical engineering principles. The hot condensate is used as the shell side fluid and raw juice as tube side fluid. The tube side pressure drops is calculated to see whether it is inside acceptable limit. It is simple in construction and operation which ultimately is a measure of steam economy device in the absence of vapour line juice heater.


Emphasises that textile being a labour intensive industry, adoption of advanced technology which is not appropriate to our conditions, should be discouraged. Employment generation being the national objective, only appropriate technology should be adopted which is out-put augmenting as well as employment generating. The paper suggests that the management should accord to top priority in the utilisation of the existing machines and while upgrading the technology, they should as far as possible prefer renovation rather than replacement of the existing machines.

Illustrating the history of coir industry in the Malabar area. In the social economy of the people of the Malabar coast between Cannanoore and Trivandrum the coir industry occupies a unique place. Many foreign countries have been challenged successfully its supremacy in the development of coconut industries such as manufacture of kernel, oil and cake. Natural advantages and back-water tracts of Travancore that the coir industry finds its natural home and coir tends to become as important as oil.

PROBLEMS, COIR

VENKATARAMAN (RS). Direction of the Export Trade in Coir Goods. J. of U. Bom. 26; 1957; 34

Describes the some of the peculiar problems of the coir trade and in the of it suggests the lines of reconstruction of the coir industry and trade. One of the characteristic of the coir trade is that the foreign export trade in coir yarn is entirely in the hands of few foreign firms. A number of factors except for this foreign dominance is also discussed. Too many middlemen make profits before the yarn reaches the merchant the port. Reason is also mentioned.
TRAINING, CRAFTSMEN, INDUSTRIES


Describes the training programme in order to enable them earn their livelihood. Craftsmen training in Kerala state is mainly imparted at the industrial training institute and there are a number of industrial schools which impart training in technical trades to the unemployed youth in the state. The present system of craftsmen training in Kerala is oriented to produce skilled workmen in basic trades like carpentry, blacksmithy etc.

UTILIZATION, ARECanut

231. NAYAR (NM). Developing alternate and better uses for arecanut. Vyavasaya Keralam. 4, 43; 1980; 3-5.

Describes the better uses of arecanut. Arecanut extract used as an ingredient in tooth paste, chewing gum, food colour, etc. Chemical properties of arecanut fat, which appears to be similar to cocoa, butterfat. Arecanut tanning extracted from tender arecanut can be used as a glue in plywood manufacture. Arecanut husk pulp using for the preparation of kraft paper and preparing rubberized materials such as pillows and cushions for cars and bus seats.
CASHEW APPLE


Describes the utilisation of cashew apple in industry such as preparation like jam, pickle, chutney etc. Many tasty drinks prepared out of the juice of cashew apple, mixed with the juice of lime, pine apple, grapes, apple etc. Besides this wine, brandy etc can be prepared. Also describes how the manufacture of tasty preparation with small investment and on a cottage industry scale such as apple jam, sarbath and pickles.

UTILISATION, CASSAVA

233. MAGOON (ML) and APPAN (SG). The Industrial utility of Cassava. *KL & IR.* 4, 3; 1966; 125-30.

The preparation of cassava starch on a cottage industry, basis indeed became a thriving industry everywhere in Kerala. The industrial requirement of cassava starch is two types such as industries where cassava products are irreplaceable and do not specifically require cassava starch. The problem of the industry is the cost of finished starch product and cost of raw materials. Use of cassava starch in industries also mentioned such as derivatives of adhesive etc.
CLAY PIPES

234. CHANNABASIAH (HSM). Clay pipes and Tiles for effective Water Management in Rural India. KG. 26, 7; 1980; 312-18.

If we fail to establish conservation irrigation with safe and different land and water use, the results may prove disastrous. Use of terracotta clay pipes for drainage, irrigation and reclamation of land could usher in prosperity in rural areas improving agricultural operations and providing employment to ceramic workers as well.

COCONUT


Coconut trees are known as Trees of Heaven or Kalpa Vriksha. About 10 million people of this State depend directly or indirectly on coconut culture and industry for their livelihood. Coir manufactures copra processing and oil milling are the major coconut based industries in Kerala. Kerala is the 3rd largest country in coconut production. Kerala coconut oil is mainly an edible oil. Other parts of the country it is used for both cosmetic and industrial purposes.
Major plantation crops of Kerala is coconut. The main wastes or byproducts of coconut are coconut husk, fibres, piths and shell. The paper discusses how to utilize their wastes in industries. In Kerala, the fibre is extracted from the husk by a biological process called retting and then heating the husk to separate the fibre from the piths. Also gives the brief idea about the coconut wastes utilization in small industries.

**COCONUT HUSKS**

Deals with the uses of coconut husk in Industry. Husk is an important byproduct of the coconut industry. It is the outer covering of the nut. It is mostly of fibrous material. Used in coir industry - one of the main cottage industries of Kerala. Coir is spun to yarn and then turisted into ropes or weaved into mats, mattings, nets, bags etc. A good pottassic manure can be prepared by burning them into ash. The extra husks available after burial can be used for this.
COCONUT OIL


Coconut oil is derived from the edible meat of coconut. It is one of the most popular vegetable oils used by the people of Kerala. In addition uses for edible, domestic, industrial purposes and in the manufacture of soaps, creams, cosmetics, shampoos, pomades and as an illuminant and preparation of ayurvedic medicines. Coconut oil is reported to be appreciably active against typhoid bacillus at ordinary temperature.

COCONUT PALM-INDUSTRIES

239. VENKITA RAMAN (MS). Industrial Utilisation of Coconut Palm. KL & IR. 5, 1; 1967; 55-60.

Reviewing the utilisation of coconut raw materials in industries - coconut is used as edible like copra, and the raw material for coconut oil. The coconut oil cake - obtained as a by product of the oil milling industry mainly used as a cattle feed. Husk is utilised for conversion into coir. Coir dust can be obtained as by product of bristle fibre industry. Object of the article is to point out that it is possible to develop new industries using in various parts of coconut palm.
COIR PITH


Two types of coconut husks are used in the coir industry viz. green husks and dry husks. Green husks is utilised for extraction of white coir by natural retting process while dry husk is used for extraction of different types of brown coir by mechanical treatment. Fibrous coir and non-fibrous pith are the two important constituent of coconut husks. Proportion of coir to pith in coconut husks vary a reasonable estimate as 1:1 ratio. Amount of coconut pith produced in India is around 475,000 tonnes or around 2000 tonnes per working day.

KOKAM


Describes the processing of Kokam fruits. Fresh fruits are collected from the forest areas and are pooled and marketed. Then dry about 6-8 days for required for complete drying. Also deals with the manufacturing process of oil by boiling the kernals in water and the oil which collects at the top is skimmed. Kokam fat has been used in chocolate and confectionary preparation and also used in the manufacture of soap, candle and ointments.
6, 1985; 31-5.

Paper cups and plates are gaining momentum now a days. They are preferred over porcelain or glass crockery because they are cheap as compared to hiring charges and expenditure of washing cleaning and breakage. **PROCESS.** Printed paper is cut on a cutting machine with a suitable die. If required, was coating is also done by wax coating machine. Desired shape viz. cups plate etc., is made on screw press.


Discuss with the use of rubber in industries such as for making tyres, tubes, engine mountings, brakes and other forms of transportation like ships railways and bicycles. Large quantities of rubber are used in making foot-wear, proofed fabrics and sheet following.


Describes the details of availability of various categories of timber in relation to its uses such as furniture produc-
tion. Plywood, match industries, packing cases etc. are given. The future requirements together with steps to meet these increasing requirements are discussed. The necessity to popularise the less used evergreen species is stressed. Also discusses with manufacture of match box.

UTILIZATION, TIMBER, WOODWORKING


Describes the usefulness of wooden dunnage pallets. These are extensively used for providing protection to gunny bags against floor moisture and help in providing proper aeration to bottom layer bags and storage of food grains, sugar, cement, fertilizers, etc. Wooden pallets are light, have adequate strength are convenient to fabricate, transport and are available locally at cheaper cost.

UTILIZATION, WOOD INDUSTRY


Describes the current status of wood using industries in Kerala. The total wood consumption in Kerala in 1965 was 5.7 million cubic meters of which 1.5 million cubic meters were industrial wood and the rest fuel wood. Kerala produced ten percent of the total output of all the wood-wing
industries in India in 1965. Wood-using industries depends on the factors influencing consumption and supply of wood.

UTILIZATION, WOOD INDUSTRIES

247. NAIR (PN). Industrial Utilization of wood. KL & IR. 4, 4; 1966; 177-84.

Describes the main wood-based industries with special reference to Kerala such as plywood, packaging, pulp and paper products, match industry and other wood-based industries. In Kerala, at present 14 plywood factories, 44 match wood, one paper mill, one rayon pulp factory and a number of saw mills etc. The shortage of fire-wood in the urban areas is becoming more and more acute and calls for special attention. Problems are also discussed.

WAGES, POLICY - KERALA


Discuss with the aim and various wage policies of govt, like legislation Relating to wages, payment of wages Act, 1936, minimum wages Act 1948, the payment of Bonus Act, 1965 and wage levels in Kerala. Also describes briefly the wages of female labour. In agriculture and plantation a large number of women are employed. Women workers constitute nearly one fourth of the total working force in Kerala.
WOOD-WORKING, FURNITURE-CHAIRS

249. CHAIRS. Kerala Industry. 16, 5; 1972; 5-7

Folding chairs referred in this scheme are made out of wood. These are included in house-holds and industrial establishments. With the industrialisation and economic growth in the state, there is an increasing demand for the supply of furniture. Only those which have good bending and have straight grain without knots could be used as a raw materials. Process of manufacture also discussed.

WOOD WORKING - INDUSTRIES


The conditions of allotment of soft-wood at concessional rate to the wood based industrial units, such as soft-wood will be sold in public auction like other kinds of timber by the Forest Dept, 25% of the soft wood put to auction will be set apart for the small scale industrial units, and SSI units will be allowed 25% concession in price on the soft wood used by them in a year based on the quantity of finished good produced by them using such wood obtained from the forest Department.
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