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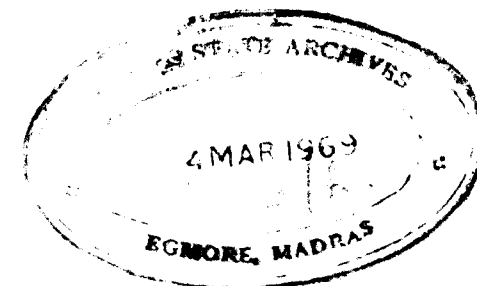
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SCHEME FOR FINANCING CRAFTSMEN AND OTHER QUALIFIED ENTREPRENEURS DESIROUS OF SETTING UP SMALL SCALE INDUSTRIES BY THE STATE BANK OF INDIA

1. INTRODUCTION

There are instances where craftsmen and other qualified entrepreneurs have worthwhile schemes to set up and operate small industries but are unable to do so for lack of sufficient resources to provide the initial capital, or, as it is technically termed, the 'owner's equity', required. For want of such resources, they cannot obtain finance from banks or other financial agencies. If, however, financial assistance was made available to them, they might be enabled to set up and operate the proposed enterprise successfully. It is to tap this potential and encourage entrepreneurial talent that the scheme set out herein is being introduced, to provide financial assistance to such craftsmen and qualified entrepreneurs. It is expected that the scheme will give a boost to growth of industrialisation in the country.

2. THE SCHEME

2. (1) The Scheme envisages provision of finance to such entrepreneurs, including to the extent necessary the owner's equity in business. So long as the purpose is to set up a worthwhile project, there are prospects for its successful operation and, in consequence, reasonable assurance of repayment forthcoming, finance will be made available, provided, of course, the persons have personal attributes like character and integrity and possess the requisite know-how as well as managerial ability. For protection, the entrepreneurs will be required to charge to the Bank their assets acquired either through the finance made available by the Bank or otherwise.

2. (2) The financial assistance may take different forms depending upon the actual

requirements. It may even cover a combination of more than one type of financing; Instalment Credit for financing the purchase of machinery/equipment, Medium Term Loan for financing the long term working capital, and, where and to the extent necessary the owner's equity and Cash Credit or demand Loan for catering to the short term working capital requirements.

2. (3) To start with, however, only such projects will be entertained where the total financial assistance to an entrepreneur can be limited to Rs. 1 lakh.

2. (4) All surplus generated by the enterprise will first be applied in repayment of the Instalment credit. Equity will be gradually strengthened and, until this has been done, no

part of the surplus will ordinarily be allowed to be withdrawn from business for any purpose whatsoever.

3. CRITERIA

3. (1) **Eligibility** : Entrepreneurs who have worthwhile projects for setting up new industries and, apart from having good character and integrity, possess the requisite know-how and ability to operate the projects successfully, but have only limited resources, will be eligible for financial assistance under the Scheme. Persons who already own a factory wholly or partially will not be considered.

3. (2) **Purpose** : Advances under the Scheme will be given to industrial units which are engaged in the manufacture, processing and preservation of goods. Preference will be given to the projects covered by the following industries :

- (a) Defence-oriented industries.
- (b) Industries which are substantial net savers of foreign exchange and, in particular, are export-oriented.
- (c) Industries which provide a basis for
 - i. agricultural development and
 - ii. further industrialisation.

3. (3) **Location** : The proposal should be for setting up the industry in an Industrial Estate, where there is provision of suitable factory accommodation, with requisite ancillary facilities like water supply, power, transport and communication. Also, the accommodation should as far as possible be secured on a rental basis.

This will ensure that the investment in fixed assets is kept down to the minimum and enable entrepreneurs to make the best use of the financial assistance available from the Bank.

Simultaneously, it will provide better control for the Bank over the operations of the industry and thus assist the Bank in making a positive contribution to the growth of the enterprise.

3. (4) **Technical feasibility and economic viability** : The project must be technically sound and economically viable.

A confirmation will be required from the Small Industries Service Institutes or the Director of Industries that the project is technically feasible and that the products of the unit will have a ready market. In addition the Bank will independently examine this aspect, as well as economic viability, where necessary, in consultation with specialists in the line.

4. FORMS OF FINANCIAL ASSISTANCE

4. (1) **For acquiring machinery/equipment** : As most of the machinery/equipment will normally be movable or at best fixed to the ground through nuts and bolts (not firmly embedded in the earth to comprise part of fixed assets), finance would ordinarily be provided by way of Instalment Credit, under the Bank's Instalment Credit Scheme as modified for small scale industries.

Medium Term loans may also be considered, where this becomes absolutely necessary, to finance acquisition of part of the fixed assets, which cannot be catered through Instalment Credit.

4. (2) **For providing long term working capital** : Finance for this purpose will be provided by way of Medium Term Loans.

4. (3) **For Short term working capital** : To finance the carry of stock-in-trade, short term working capital will be provided by way of Cash Credit or Demand Loans on normal terms as applicable to small scale industries.

Cash Credit or Demand Loans may be either on 'lock and key' basis or 'factory type', or a combination of both according to the requirements, with separate split facility may also be extended.

Receivables too may be covered, preferably by way of overdrafts against bills.

5. PROCEDURE

5. (1) **Processing** : Each proposal will be subjected to detailed scrutiny for credit evaluation. If it satisfies the criteria referred to in items 3-1, 3-2 and 3-3, the credit factor 'purpose' would have been taken care of. For the credit factor 'person' apart from enquiring into the antecedents of the entrepreneur to obtain information with regard to his family background, character and integrity, educational qualifications, etc., his technical know-how and competence would need to be verified. Simultaneously, the project will be evaluated with regard to the other credit factors payment (repayment) and 'Prospects on the basis of technical feasibility and economic viability' vide paragraph 3-4.

If all these credit factors on evaluation are found satisfactory, an assessment will be made of the total cost of the project and consideration given to the mode of financing; Thus :-

(a) Cost of the Project

1. Machinery	A
2. Other fixed assets, if any	B
3. Pre-operative expenses	C
4. Working capital	
(i) Stock-in-trade	s
(ii) Stocks-in-process	sp
(iii) Receivables	r
(iv) Stores & Spares	ss
(v) Overheads for a month	oh D
Total cost.	A, B, C, D.

(b) Mode of financing

- 1. Instalment credit for machinery A — M1
- 2. Medium term loan to cover other fixed assets B — M2
- 3. Cash credit / demand loan against stock-in-trade, stocks-in-process and stores and spares. - (s-M3) - (sp-M4) $\frac{1}{4}$ (ss-M5)
- 4. Overdraft against receivables r — m
- 5. Medium term loan for long term working capital. (own resources to the extent provided-sundry creditors to the extent expected)

M₁, M₂, M₃, M₄, M₅, and M₆ represent the owner's equity that is required to be carried in the respective assets. As, however, the financing will be on a totality basis, this may be fixed uniformly at 20% for each.

In so far as working capital item (a)-(4) is concerned, the requirements will have to be computed on the maximum carry of stock-in-trade and receivables; when the level of these assets is low, part of the owner's equity allowed there against would become surplus, but so long as no surplus is withdrawn from the business this need not cause any worry as the position would change again when the stock-in-trade and receivables mount up.

Separate financing of receivables has been suggested as bills may be drawn for each account due-either trade bills or supply bills on Government Departments - and it may be best to finance them on an over-draft basis.

Normally, the entrepreneur will himself be expected to submit the required estimates and projections for the above analysis; where he

is unable to do so, he would need to be assisted in the compilation thereof. The assumptions on which the estimates and projections are based, as also the computations, will need to be carefully verified. This would enable a view to be taken as to the surplus to be generated from year to year and to fix up on that basis the amortisation schedules for the instalment Credit and Medium Term Loans. All surplus generated will be utilised in repayment of these loans and until this has been done no part of the surplus would be allowed to be withdrawn from business.

5. (2) **Protection**: For 'protection' the assets financed under each of the items (b) (1), (b) (2) and (b) (3) would require to be charged to the Bank:

- | | |
|------------------------|---|
| (a) Instalment Credit: | Hypothecation of movable machinery/equipment. |
| (b) Term Loans | Registered mortgage over fixed assets; in a case where the loan amount is not in excess of Rs. 25,000 an equitable mortgage, accompanied by a Memorandum of Deposit, may be taken in the prescribed manner. |
| (c) Working capital: | Pledge/Hypothecation of all current assets. |

For the Medium Term Loan for long term working capital, there would normally be no surplus assets left to be charged, and this loan will have to be made on a clean basis. Where, however, the entrepreneur has any other unencumbered personal assets, a charge should be obtained thereagainst for the purpose. In any case, a suitable undertaking should be obtained from the entrepreneur that any surplus available on the other accounts could be utilised by the Bank in repayment of this loan.

Where possible, if the protection available in the above manner is not considered adequate, the feasibility may be explored of obtaining a third party guarantee, particularly for the clean loan.

5. (3) **Disbursement**: Terms loans/Instalment credit will be disbursed strictly in accordance with the scheme approved by the Bank.

As far as possible, the financial arrangements concerning the purchase of machinery, as also raw materials and components, should be finalised in consultation with the Bank and letters of credit established, whenever feasible, covering the various goods proposed to be acquired. Payments should preferably be made by the Bank direct to suppliers but, where this is not possible, the Bank should be fully satisfied as regards payment having been correctly made.

In so far as the medium term loan for long term working capital is concerned, the amount on disbursement will require to be credited to a current account until it is used up for meeting the owner's equity on instalment credit, medium term loan for fixed assets, short term working capital and pre-operative expenses as well as overheads.

5. (4) **Terms of repayment**:

- | | |
|----------------------------------|---|
| (i) Term Loan | Ordinarily not longer than 5.7 years; start-up period may be considered in appropriate cases. |
| (ii) Instalment credit; | Not longer than 5 years. |
| (iii) Short term working capital | On demand. |

As stated in para 5.1, the amortisation schedules for (i) and (ii) will be determined on the basis of the surplus to be generated by the enterprise.

5. (5) **Interest / Commission**: In view of the additional risks to be undertaken, the Bank charges for the credit facilities provided under the scheme will be slightly higher, as follows:

- | | |
|--|---|
| (i) Interest on term loans | 2% above State Bank advance Rate minimum 9½% per annum. |
| (ii) Finance charge on instalment credit | 9½% per annum (on outstandings) |
| (iii) Interest on working capital | 1½% above State Bank Advance Rate Minimum 9% per annum. |

Besides, commission at the approved rate (which is ½% on the amount of sanctioned limits) in regard to working capital advances and on the amounts outstanding in the case of term loans and instalment credit will be payable to the Guarantee Organisation.

5. (6) **Insurance**: The assets charged to the Bank should be fully insured, at the borrower's expense, against the usual risks with a company or companies on the approved list of the Bank in the joint names of the Bank and the borrower; the insurance policies should be deposited with the Bank. The borrower shall also undertake to take out insurance against riot and strike risks as and when called upon by the Bank to do so.

5. (7) **Expenses**: Any legal expenses incurred in connection with the sanctioning of the loan, viz. lawyer's fees, cost of documentation, etc., will be borne by the borrowers

6. FOLLOW-UP

6. (1) **Progress of the enterprise**: It will be necessary to maintain a close watch on the operation of the enterprise. For this purpose an effective follow-up action would need to be taken periodically say, once in a quarter. Apart from visiting the industrial unit and scrutinising of its books, particularly in regard to production and sales, arrangement should be made for the entrepreneur to submit quarterly statements of progress of the enterprise in suitable form. Whenever any tendency is noticed of undue accumulation of stocks, particularly the manufactured products, the reasons would require to be carefully gone into and suitable action initiated with regard thereto immediately.

The borrowers should be prevailed upon to maintain proper books of accounts and records of their financial and manufacturing operations and they must agree to submit to the Bank, as and when called for periodical statements in such terms as the Bank may require.

6. (2) **Verification of assets**: The Assets charged to the Bank will need to be verified periodically, by monthly inspections in the usual manner.

7. CONCURRENT BORROWINGS

In view of the special nature of financing envisaged on a totality basis, concurrent borrowings from other financing agencies will not ordinarily be permitted.

PROVISION OF CREDIT TO EXPORT ORIENTED SMALL SCALE UNITS

The question of Bank's participation in the Export efforts of the Small Scale Sector has been under constant review. Survey and resurvey of Export oriented units located in the area of operation of the branches / offices of the Bank and its subsidiaries are in progress and endeavours are being made to increase the quantum of assistance rendered to this cate-

gory of small scale units. As on the 31st March, 1968, the total limits sanctioned by the State Bank of India and its subsidiaries to export-oriented small scale units aggregated Rs. 9.43 crores spread over 369 units.

The liberalised terms and conditions available to small scale units generally viz. concessionary rates of interest and margins, provision of factory type facilities where advances on lock and key basis are not possible, rational assessment of credit requirements on the basis of need etc., are also available to export oriented small scale units. In particular the following facilities are considered for the export oriented small scale units.

- (i) Establishment of letters of Credit at concessionary margins (Often without margin) for import of raw materials and/or machinery.
- (ii) Retention of low margins in respect of imported stocks charged to the bank prior to and during the process.

(iii) For Export of finished products, packing credit advance are considered at concessionary rates of interest and on easy terms.

(iv) Post-shipment finance by way of negotiation of bills drawn either under letters of credit or otherwise.

(v) Execution of deferred payment guarantees to the bankers of the foreign exporters where machinery has been imported to India for the manufacture of goods for export.

(vi) Performance guarantees furnished to Government authorities here to enable them to issue import licences for raw materials intended to be processed and finished products manufactured therefrom to be exported.

(vii) Trade enquiries of interest to the export oriented units are also handled vis-a-vis the Bank's correspondents.

FINANCIAL ASSISTANCE TO HOTEL INDUSTRY

The Government of India have formulated a scheme of financial assistance for the development of hotels at selected places of tourist interest in the country. Money will be made available from the Development Loan Scheme under the control of the Department of Tourism, Ministry of Tourism and Civil Aviation, Government of India, New Delhi. Copies of the instructions and form of application for the grant of such loans can be had from the Director of Hotels, Office of the Director-General of Tourism, Ministry of Tourism and Civil Aviation, Transport Bhavan, No. 1 Parliament Street, New Delhi or from the Government of India Tourist Office, Mount Road, Madras, or the Director of Information and Publicity, Government of Madras, Madras. The places selected for such projects in this State are Madras, Mahabalipuram, Madurai and Thanjavur. The loan will be available to such of those hotel projects which have had prior approval of the Department of Tourism, Government of India. Hotel projects are approved from the point of view of the suitability and usefulness for foreign tourists. A set of blue prints, a note on the facilities proposed to be made in the hotel, financial working of the hotel project i.e., the esti-

mated cost of construction in detail, working capital and the likely income worked out on about 60% occupancy per year and satisfactory evidence about the land in possession for hotel construction will have to be furnished by intending applicants. Parties wishing to have their projects approved should also indicate their acceptance of the regulatory conditions prescribed by the Department. 'Approved Hotel' will be eligible for certain tax and fiscal relief, financial assistance in the form of loan etc.,

As regards hotel projects located at places other than those selected, they may go ahead with the projects with their own resources or with financial assistance from the State Finance Corporation, or the Industrial Finance Corporation, New Delhi and apply for approval of the projects to the Department of Tourism. Approval will be considered on the same lines as mentioned for places selected, for assistance in obtaining building materials, telephone connection and for fiscal and tax relief. Further details can be had from the Director of Hotels, Office of the Director-General of Tourism, Transport Bhavan, Parliament Street, New Delhi.

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AGRO-INDUSTRIES

The growth of agriculture beyond a certain stage depends on industrial advancement. Programmes for increased agricultural production, now making headway in many of the developing countries, consist of not only the use of high yielding seeds but also the balanced application of scientific techniques involving the use of fertilisers and pesticides and the latest agricultural machinery and equipment. Without leaning heavily on industry, it is not possible for agriculture now to fulfil its needs of inputs and machinery. Again the increased yields resulting from intensive production programmes require storage and transport facilities on an unprecedented scale, thus opening up further vistas for industrial venture in agriculture.

The increasing emphasis on agriculture in recent years has cast its impact on industrial development also. Agriculture and industry of late, have been interacting on each other more closely. Even in countries like the U. S. where only seven per cent of the population are directly involved in farming, an estimated 35 to 40 per cent of the total working force of the nation is engaged in supplying materials and equipment to agriculture and in producing, processing, transporting and marketing food, fruits and fibre.

A notable development in India, particularly during the past decade, is the more intensive development of enterprises which support agriculture and help to accelerate its progress—the Agro-Industries. There has also been some progress in the fields of storing, processing and marketing farm produce as such and into products which are superior and with better keeping quality. These are termed the agro-based industries.

Research on food technology has also offered wide scope for converting basic foodgrains into a number of sophisticated edible materials for which the demand has been increasing. The food industry which takes care of this field was once just part of agro-based industries, but has emerged as a separate group of enterprises tackling commodities like foodgrains, livestock, produces and marine products.

All enterprises connected with processing of agricultural produce and farm waste are brought under a single head in this list. Not only industries relating to canning or processing of fruits, but also those for providing cold storage facilities, for production of chemicals needed in such operations, for processing of plant fibres, forest produce and some marine-based ventures are categorised as agro-based industries. Manufacture of farm implements of various types, including power threshers, poultry equipment, accessories for dairying and formulations of pesticides

form part of agro-industrial ventures in this comprehensive list. Bricks, tiles, pottery, lime industry and stone dressing and crushing efforts have also been grouped under the head miscellaneous in this list, perhaps as ancillary to agro-industries.

Major agro-based industries like sugar, textile, tobacco or jute in the plains and plantation crops in the hills are already well established. Further expansion of these industries to meet the increasing demands in future will depend much on the enhanced production of raw materials through more intensive measures of cultivation.

But there are fields where better utilisation of farm produce till now untapped or inadequately exploited could be attempted. Large quantities of seasonal vegetables and fruits cause a glut in the market and a sizeable proportion is lost by getting spoilt. Dehydration technique has been employed to process peas, onions and potatoes and manufacture fruit products like banana powder or mango cakes. The research work in the Central Food Technological Research Institute, Mysore, has been the inspiring force behind many of these ventures. Some other findings relating to production of papain and pectin from papaya and garlic powder in tablet form with better keeping qualities are yet to be translated in the factories. There is plenty of scope for expansion in this field, as suggested by the Export Sector Committee for Agricultural Commodities and Agriculture-based industries.

Even in well-established industries like sugar, there appears to be room for thorough exploitation of the by-products like sugarcane wax from filter press-mud. In the oilseeds industry, there is the bulk of cotton seed left unutilised for crushing. It is computed that edible oil imports could be saved to an extent of Rs. 25 crores if this by-product of textile

industry is processed fully. The oilcake could be converted into hygienic cattle feed, which is in short supply in the country and other by-products like linters and hulls which also have high utility value. Rice bran is another source of edible oil and will be a better cattle feed after de-oiling.

On the animal husbandry front, surplus milk production from intensive cattle development areas can be converted into milk powder or condensed milk and be shared with lean supply regions. The import of such products will thereby be considerably reduced. In the case of poultry, there are proposals to set up an egg-powder factory in Kerala, producing one ton of processed eggs per day and such ventures can stimulate large-scale poultry farming efforts in other regions also.

Agro-industrial corporations have been set up in various States, the latest to be established being in Madras. Their objective is to plan and organise industries for manufacturing articles which will improve and accelerate agriculture, animal husbandry and fisheries, as well as enterprises for processing the produce from these fields. Their ultimate aim is to "increase the availability of foods and subsidiary foods in the country and for exports."

The following is a list of agro-industries and almost all of them are capable of being undertaken in the Small Scale Sector.

S.No.	Industry
1.	Agricultural processing and allied industries.
A. FOOD PRODUCTS	
1.	Cereals and pulses processing.
2.	Fruit, vegetables preservation and processing, canning etc.

S.No.	Industry	S.No.	Industry
3. Bakery products and confectionery.		9. Surgical cotton.	
4. Dairy products.		10. Hosiery.	
5. Gur, khandsari and sugar.		11. Readymade garments.	
6. Tobacco processing.			
7. Vegetable oils.		(ii) Wood and Timber Products :	
8. Ragi malt.		1. Saw milling and wood work.	
9. Balanced cattle feed.		2. Timber seasoning.	
10. Yeast.		3. Furniture and radio cabinets.	
11. Poultry feed.		4. Joinery products.	
12. Carbonated drinks.		5. Building fittings.	
13. Spaghetti.		6. Tea chests and other packing cases.	
14. Poultry.		7. Country crafts and hulls for mechanised fishing boats.	
15. Egg powder.		8. Handloom accessories.	
16. Meat and piggery products.		9. Handles of tools and implements.	
17. Fish canning and preservation.		10. Match splints and veneers.	
18. Flavouring scents and edible colours.		11. Wooden toys.	
19. Pectin and papain.		12. Chips, particle and saw dust boards.	
20. Scented arecanut powder.		13. Ammunition boxes.	
21. Jelly and ice-cream powders.		14. Umbrella handles and sticks.	
22. Bee keeping.		15. Ironing boards.	
23. Processed frog legs (for export).		16. Shoe lasts.	
24. Shark liver and other fish oils.		17. Wooden stationery articles.	
25. Canning of shrimps, crabs, oysters.		18. Cable drums.	
26. Katha.		19. Coat hangers.	
27. Epsom salt.		20. Other wooden articles.	
28. Ayurvedic preparations.			
B. NON-FOOD AND ALLIED PRODUCTS :		(iii) Others.	
(i) Textiles and Fibres Industries :		1. Bricks and Tiles.	
1. Cotton ginning and pressing.		2. Pottery	
2. Cotton spinning and weaving.		3. Lime industry.	
3. Silk reeling, spinning and weaving.		4. Stone dressing and crushing.	
4. Jute baling pressing, spinning and weaving.		5. Bonemeal and other by-products.	
5. Coir spinning and weaving.		6. Tanning and leather products.	
6. Cardage, ropes, twine etc.		7. Chalks.	
7. Cane, rattan and other fibres.		8. Table lamps and decorative pieces from supplies and shankas.	
8. Fibres from banana stalk and pineapple leaves etc.		9. Cinnamon and lemon grass oil.	

S.No.	Industry	S.No.	Industry
10. Double boiled linseed oil.		(xxiii) Power threshers.	
11. Inputs required for agricultural, animal husbandry, fisheries programmes etc.		(xxiv) Bund formers.	
A. MECHANICAL ENGINEERING PRODUCTS		(xxv) Reapers.	
1. Electric motors 3—5 H.P.		(xxvi) Cutway disc harrows.	
2. Diesel engines 5—10 H.P.		(xxvii) Paddy threshers (Pedal).	
3. Pumps.		(xxviii) Paddy hullers.	
4. Agricultural implements.		(xxix) Rice polishers.	
(i) Mouldboard ploughs.		(xxx) Seed graders.	
(ii) Three-tine reversable shovel cultivator.		(xxxi) Winnowers.	
(iii) Three-row seeding attachment.		(xxxii) Power paddy thresher.	
(iv) Ridger attachment.		(xxxiii) Others.	
(v) Sweep attachment.		5. Poultry Farming Equipment :	
(vi) Patella with hooks.		(i) Incubators.	
(vii) Turn wrest plough.		(ii) Sterilizers.	
(viii) Ridger.		(iii) Chick sexing machine.	
(ix) Akola hoe.		(iv) Feeders (chick feeders, grower, feeders, adult flock feeders).	
(x) Cotton seed drill.		(v) Automatic chain feeders.	
(xi) Wet land ploughs.		(vi) Community nests.	
(xii) Green manure trampler.		(vii) Bird crates.	
(xiii) Wet land puddler.		(viii) Egg collecting wire baskets.	
(xiv) Paddy weeder.		(ix) Electric collecting beekers.	
(xv) Disc harrows.		(x) Poultry weighing scales.	
(xvi) Spring tooth harrows.		(xi) Catching and handling rods.	
(xvii) Cultivators.		(xii) Chick baskets.	
(xviii) Spike tooth harrows.		(xiii) Pedigree cages.	
(xix) Seed/fertiliser drills.		(xiv) Electric and mechanical egg graders.	
(xx) Chaff cutters.		(xv) Electric and mechanical egg washers.	
(xxi) Sugar cane crushers.		(xvi) Egg cartons (card board)	
(xxii) Olpod threshers.			

MADURA MILLS CO., LTD. Madurai - Tuticorin - Ambasamudram (Madras State) and Serampore (West Bengal)

Manufacturers of **COTTON YARNS - INDUSTRIAL FABRICS - CLOTH**

Managing Agents : A. & F. HARVEY LTD., Madurai - South India



HARVEYS OF MADURAI

S.No.	Industry	S.No.	Industry
(xvii) Egg cases (wooden and card board).		9. Forestry :	
(xviii) Egg room coolers.		10. Cowdung gasplants :	
(xix) Feed mixers.		B. PLASTICIDES	
(xx) Feed grinders.		(i) B. H. S. Formulations.	
8. Slaughter House Equipment :		(ii) D. D. T. Formulations.	
(i) Tables.		(iii) Parathion formulations.	
(ii) Tanks.		(iv) Malathion formulations.	
(iii) Hooks.		(v) Lindane formulations.	
(iv) Overalls.		(vi) Chlordane formulations.	
(v) Rubber boots.		(vii) Endrin formulations.	
(vi) Knives.		(viii) Dieldrin formulations.	
7. Dairying :		(ix) Aldrin formulations.	
(i) Milk pails.		(x) Copper oxychloride formulations.	
(ii) Milk cans.		(xi) Toxaphene formulations.	
(iii) Hand trollies.		(xii) Zineb formulations.	
(iv) Bottle crates.		(xiii) Heptachlor formulations.	
(v) Bicycles.		(xiv) Trithion formulations.	
8. Fisheries :		(xv) 2, 4-D sodium salt formulations.	
(i) Paper cartons for packing.		(xvi) Imidan formulations.	
(ii) Plastic bags for packing.		(xvii) Sulphur formulations.	

மத்திய மின் இரசாயன ஆராய்ச்சிக்கூடம் காரைக்குடி

துவக்குவதற்குத் தயாராகும் செய்முறைத் திட்டங்கள் விவரம்

தோற்றம்: இந்நிலையம் பாரத விஞ்ஞான தொழில் நுட்ப ஆராய்ச்சிக் கழகத்தின்கீழ் இயங்கும் பல தேசிய ஆய்வகங்களில் ஒன்றாகத் துவக்கப்பட்டது. பாரத அன்னையின் தவப்புதல்வர்களும் தற்போது நம்மிடமிருந்து மறைந்த அமரர்களுமான நேருஜி, டாக்டர் எஸ். எஸ். பட்நாகர், டாக்டர் ஜே. சி. கோஷ் ஆகியோரது முன்னோக்கு, செயலாற்றல் ஆகியவற்றின் பயனாக இந்நிலையம் உருவாயிற்று.

கொடைவள்ளலான அமரர் டாக்டர் அழகப்ப செட்டியார் அவர்கள் அளித்த நிலமும், பொருளுதவியும், இடையறா ஊக்கமும், இந்நிலையம் காரைக்குடியில் அமைவதற்கு மூல காரணமாயிருந்தன.

இந்நிலையத்திற்கு நேருஜி அவர்களால் 1948-ம் ஆண்டு, ஜூலை 25-ம் தேதியன்று அடிக்கல் நாட்டப்பட்டது. 1953-ம் ஆண்டு ஜனவரி 14-ம் தேதியன்று பேராசிரியர் இராதாகிருஷ்ணன் அவர்களால் இந்நிலையம் துவக்கி வைக்கப்பட்டது.

நோக்கம்: மின் இரசாயனத் துறையில் அடிப்படை ஆராய்ச்சி நடத்துதல். மின் இரசாயன அடிப்படையில் அமைந்த தொழில் துறை ஆராய்ச்சி நடத்துதல்.

ஆராய்ச்சியில் கண்ட முடிவுகளை நாட்டின் பொருளாதார, தொழில் வளர்ச்சிக்குதவும் வகையில் செயல்படுத்தல்.

இந் நோக்கங்களைச் சீரிய முறையில் செயலாக்க இந் நிலையம் கீழ்க்கண்ட பல பிரிவுகளில் இயங்குகின்றது.

மின் ஆர்கானிக், மற்றும் ஆர்கானிக் அற்ற வேதிப் பொருள் தயாரிப்பு, மின்னூலை கொண்டு பண்டங்கள் தயாரிப்பு, உலோகங்கள், உலோகக் கலவைகள் தயாரிப்பு, மின்முலாமளித்தல், உலோகப் பொருட்களுக்கு பாதுகாப்புடன் கூடிய அழகுத் தோற்றமளித்தல்; உலோக அரிமானத் தடை, மின் கலங்கள் தயாரிப்பு, திண்மப் பொருட்களின் மின் இரசாயன தன்மையறிதல், நுண்கருவி அமைத்தல், அடிப்படை ஆராய்ச்சி, செயல்முறை நிர்வாக ஆராய்ச்சி தகவல் சேகரிப்பு, தகவலளிப்பு.

சாதனைகள்: 21 செய் முறைகள் தொழில் நிறுவனங்களுக்கு அளிக்கப்பட்டிருக்கின்றன.

22 செய் முறைகள் உடனடியாகத் தொழில் நிறுவனங்கள் பயன் படுத்தும் பக்குவ நிலைக்கு உருவாக்கப்பட்டிருக்கின்றன.

Tel: 'Srikrishna'

Phone: 2292

S. K. INDUSTRIES

70, T. P. K. Road, MADURAI - XI

Manufacturers: Teak Wood Casing, Capping Fillets, T. W. Boxes etc., 11 mm Conduit Pipes & Fittings, Huller Spare Parts, Machinery Parts.

கீழ்க்கண்ட செய்முறைகள் தொழிலளவில் அமைவதற்கான முன்மாதிரி சோதனை அமைப்புகள் நிறுவப்பட்டன.

1. ஈய இருதியதை பூச்சுகொண்ட மின் வாய்த் தகடுகள் துணைகொண்டு பார்க்குளோ ரேட்டுகள் தயாரிப்பு.

2. சேலம் மக்னீசியக் கனியிலிருந்தும், கடல் நீரிலிருந்தும் மின் வகுப்புமுறை கொண்டு மக்னீசிய உலோகம் தயாரிப்பு. (தமிழக அரசாங்கத்துடன் இந்நிலையம் கொண்ட கூட்டு முயற்சி).

நாட்டின் தேவைக்கு வேண்டிய பர்க் குளோரேட்டுகளை இங்கே உருவான செய் முறை கொண்டே உற்பத்தி செய்தல்.

இங்கே உருவான செயல்முறைகளின் மூலம் உற்பத்தி செய்யப்பட்ட பொருள்களினால் இதுவரை சுமார் 30 லட்சம் ரூபாய் பெறுமான அந்நியச் செலாவணி இழப்பு தவிர்க்கப்பட்டது.

அரசாங்கம் மற்றும் பல துறைகளிலிருந்தும் அனுப்பப்பட்ட 200-க்கு மேற்பட்ட ஊழியர்களுக்குப் பயிற்சி அளிக்கப்பட்டது. மேற்படி பயிற்சிகள் சேமிப்பு மின் கலத் தயாரிப்பு, மின் மூலம் அளித்தல், உலோக அரிமானத்தடை ஆகிய துறைகளில் அளிக் கப்பட்டுள்ளது.

இதுவரை பத்து கருத்தரங்குகள் கூட்டப் பட்டன.

விஞ்ஞான, தொழில் துறை பற்றி அவ் வப்போது நாட்டின் பல பகுதிகளிலிருந்து பெருமளவில் கேட்கப்படும் விவரங்களுக்கு சீரிய முறையில் தகவல் அளிக்கப்பட்டன.

500-க்கு மேற்பட்ட ஆய்வுக் கட்டுரைகள் இந்நிலைய ஆராய்ச்சியின் விளைவாக வெளி வந்துள்ளன. இந்நிலையத்தில் உருவான செய்முறைகள் :

142 காப்புரிமைப் பட்டயங்கள் பதிவு செய்யப்பட்டன.

வெளியிடத் தயாராய்வு செய்முறைகள்: துரு நீக்கும் ஊறலுக்கான அரிமானத் தடுப்பான் (Acid inhibitor for pickling).

அமினோ குவான்டின் பைக்கார்பனேட் டும், சல்ஃபேட்டும் (Aminoguanidine bicarbonate and Sulphate).

ஆர்த்தோ அமினோ ஃபினால் (Aminophenol, ortho).

சோடியம் குளோரேட்டிலிருந்து அம்மோனியம் பர்க் குளோரேட் தயாரித்தல் (Ammonium perchlorate from sodium chlorate).

நேர் மின் முனையாக்கி பாஸ்ஃபேட் பூச்சிடு தல் (Anodic phosphating)

பென்செல் ஆல்கஹால் (Benzyl Alcohol)

டையால்-டி-ஹைட்ரேட் மாப்பொருள் (Dialdehyde starch).

பசையின் கலங்கள் (Dry cells).

அயோடோஃபாரம் (Iodoform).

காரியம் மின் தூய்மையாக்கல் (Lead Refining).

நிக்கல்-காட்மியம் இரண்டாம் வகை மின் கல அடுக்குகள் (Nickel-cadmium batteries).

பாரா நைட்ரோ பென்சோயிக் அமிலம் (Para nitro benzoic acid).

சாதாரண உப்பிலிருந்து பொட்டாசியம் குளோரேட் தயாரித்தல் (Potassium chlorate from sodium chlorate).

சோடியம் குளோரேட்டிலிருந்து பொட்டாசியம் பர்க் குளோரேட் தயாரித்தல் (Potassium perchlorate from sodium chlorate)

துரு/படல நீக்கிக் கூழ் (Rust and scale removing jelly).

லெக்லான்சியின் "சாக்" வகை மின்வாய்கள் (Sac elements, Leclanche type).

வெள்ளி ஆக்சைடு-துத்தநாக மின்கல அடுக்கு (Silver oxide-zinc batteries).

சோடியம் உலோகம் (Sodium Metal)

சாதாரண உப்பிலிருந்து சோடியம் குளோரேட்டு தயாரித்தல் (Sodium chlorate from sodium chloride).

சுக்கினிக் அமிலம் (Succinic acid)

வெள்ளிய ஆக்சைடு மின்தடைகள் தயாரிப்பு (Tin oxide resistors).

துத்தநாகத் துகள்கள் தயாரிப்பு (Zinc Powder).

உருவாக்கிக்கொண்டிருக்கும் செய்முறைகள்

நீட்டங்கள்

1. ஆல்கலைன் மேங்கனீசு டையாக்சைடு மின்கலன்கள் (Alkaline manganese dioxide cells)

2. மின் கல அடுக்குகளில் நேர் மின்முனைகளாகப் பயன்படும் அலுமினியம் (Aluminium as anodes in batteries).

3. சோதனைக் குழாய்களில் மின்னியல் இரசாயன முறையில் குறியிடல். (Electrochemical marking of tubes).

4. 'ஏர்-டிபோலாரைசுடு' மின் கலன்களின் அபிவிருத்தி (Improvements in air-depolarised cells)

5. சிவப்புக்கு இப்பாலைக் காணொலிக் கதிர்களைக் கண்டுபிடிக்கும் கருவிகள்: (Infra-red detectors).

6. ஒளி பொருந்திய ஃபாஸ்ஃபரசு (Luminescent phosphors).

7. பாதரச ஆக்சைடு மின்கலன்கள் (Mercuric Oxide Cells).

8. உலோக ஆக்சைடு தடைக் கருவிகள் (Metal Oxide resistors).

9. வெப்ப மின் நிலையங்களில் பயன்படும் குளிர்கலக் குழாய்களில் ஏற்படும் அரிமானத்தைத் தடுப்பது (Prevention of Corrosion of condenser tubes in thermal power stations)

10. மங்கனூர் துறைமுகத்திலுள்ள இரும்பு, எஃகினாலான அமைப்புகளைப் பாதுகாக்கும் முறைகள் (Protection of iron and steel structures at Mangalore Harbour).

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11. ஜரிகைத் தொழிலுக்குரிய ஜரிகை வேலைப்பாடுகளுக்குத் தேவையான வெள்ளி முலாம், தங்க முலாம் பூசும் முறை (Silver and gold plating in relation to jari industry).

12. கட்டடங்களின் வலிமை குறைவினைத் தடுப்பது பற்றிய ஆராய்ச்சிகள் (Studies on corrosion of re-inforcement in buildings)

13. 'டான்டாலம்' மின் ஏற்புக் கலன்கள் (Tantalum capacitors).

இந்த ஆராய்ச்சிக் கூடத்தின் நிலையங்கள்

மத்திய மின் இரசாயன ஆராய்ச்சிக் கூடம்

சென்னை நிலையம்

முகவரி: சி-21, தொழிற்பேட்டை, கிண்டி, சென்னை-82.

தந்தி: 'Cenelechem'

சென்னை-82.

தொலைபேசி எண்: 801795

மும்மாத்தி நிலையங்கள்

1. அலுமினியம் மின் ஏற்புக் கலன்கள் (Aluminium Capacitors)

2. அமினோ குவான்டின் பை கார்பனேட்டு (Aminoguanidine bicarbonate).

3. நேர் மின் முனை ஃபாஸ்பேட்டிங் (Anodic phosphating)

4. ஈய டையாக்சைடு மின்முனை மின்வாய் மற்றும் பெர்குளோரேட்டுகள் (Lead dioxide electrodes and perchlorates).

5. மெக்னீசியம் (Magnesium).

6. மேங்கனீசு டையாக்சைடு (Manganese dioxide).

மத்திய மின் இரசாயன ஆராய்ச்சிக் கூடத்தின்

அரிமான பரிசோதனைக் கூடம்

முகவரி: மத்திய மின் வள ஆராய்ச்சிக் கூடம், மண்டபம் கேம்பி, ராமநாதபுரம் மாவட்டம், தமிழ்நாடு.

தந்தி: Care 'Kadalmeen'

மண்டபம் கேம்பி.

தொலைபேசி எண்: 16.

விவரங்களுக்கு கீழ்க்கண்ட விவரத்தில் விசரிக்கலாம்:

அறிவியலார் (பொறுப்பு),

மத்திய மின் இரசாயன ஆராய்ச்சிக் கூடம், காரைக்குடி-3. (இந்தியா)

தந்தி: "Cenelechem"

தொலைபேசி: 68.

64, அழகப்பாபுரம், காரைக்குடி.

SCHEME FOR THE MANUFACTURE OF KING PINS, GUDGEON PINS AND COTTER PINS FOR AUTOMOBILES

I. INTRODUCTION

King pins, Gudgeon pins and Cotter pins form replaceable components of automobiles and are marketed as spare parts. The sizes of these pins vary from one type of automobile to the other, but their general shape remains more or less similar.

As a spare part the demand for these items is substantial and it is envisaged in the following scheme to produce quality pins by improved techniques.

The raw material used is bright rolled annealed nickel steel bars having the composition of Ni. 1.5%, cr. 0.5 to 0.65%, C. 0.35% and is to be imported. After preliminary operations at the soft stage the components are case hardened in cyanide salt bath or by induction hardening and ground to specific tolerances.

II. TARGET OF PRODUCTION

The scheme envisages a production of 4 dozen king pins, 5 dozen gudgeon pins and 6 dozen cotter pins per day of 8 hours.

III. BLOCKED CAPITAL

A. Land & Building:

Building with covered area of 30 ft. x 50 ft. rented at (Rs.) ... 300

B. Machinery and Equipment:

1. Turret Lathe 1½" cap. and complete with accessories. ... 1 45,000

2. Capstan Lathe 1" bar capacity and complete with all equipments and of ordinary indigenous quality. ... 1 10,000

3. Centreless grinding machine with capacity to grind upto 1½" dia. complete with motor and accessories. ... 1 50,000

4. a. Salt Bath Hardening Furnace oil fired 12" dia pot capacity temperature range 850° to 900° C provided with necessary control ... 1 8,500

b. Lead bath tempering furnace Temperature range 350° to 400° C oil fired with necessary temperature controls. ... 1 7,500

5. Rockwell Hardness testing machine ... 1 4,000

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6. Horizontal milling machine complete with Machine vice, motor etc. and of ordinary indigenous quality ...	1	8,000
7. Hacksaw machine 9" stroke with hydraulic back lift arrangement ...	1	2,000
8. Bench Grinder with 8" wheel dia ...	1	600
9. Tools, measuring instruments and equipments ...	Set	4,400
c. Installation & Electrification etc. ...		8,000
d. Equipment: Office equipments and furniture ...		2,000
		<u>Rs. 1,50,000</u>

IV. WORKING CAPITAL

A. Raw material:

Bright rolled annealed nickel steel 3 tons at Rs. 5,500 per ton...	10,500
Heat treatment salts, consumables ...	9,000
	<u>19,500</u>

B. Salary and wages per month

1. Manager ...	1	350
2. Machine-setter ...	1	250
3. Skilled worker at Rs. 150 p.m. ...	4	600
4. Semi-skilled worker at Rs. 120 p.m. ...	4	480
5. Unskilled worker at Rs. 60 p.m. ...	5	300
6. Peon and watchmen at Rs. 60 p.m. ...	2	120
		<u>2,100</u>

C. Miscellaneous expenditure:

1. Water and electricity ...	500
2. Postage, T. A. advertisement ...	1,000
3. Repair & replacement ...	500
4. Rent of building ...	300
	<u>2,800</u>

Total working capital per month

Rs. 23,900

V. WORKING CAPITAL FOR 3 MONTHS

Rs. 71,700

VI. CAPITAL OUTLAY

Blocked capital ...	1,50,000
Working capital for 3 months	71,700
	<u>2,21,700</u>

VII. COST ANALYSIS PER MONTH

Working capital per month ...	23,900
Depreciation on machinery at 10% p. a. ...	1,250
Interest on capital at 8% p. a. ...	1,480
	<u>26,630</u>

Sale proceeds per month:

Income by sale of	
1. 200 dozens of King pins at Rs. 144 per dozen (average) ...	28,800
2. 125 dozens of Gudgeon pins at Rs. 72 per dozen (average) ...	9,000
3. 125 dozens of Cotter pins at Rs. 9 per dozen (average) ...	1,125
	<u>38,925</u>

Less 20% discount ...	7,785
Actual income ...	31,140
Gross profit per month ...	4,510
Percentage of profit 24%	

SCHEME FOR THE MANUFACTURE OF AUTOMOBILE SILENCERS

500 NOS. PER MONTH

INTRODUCTION:

There is wide scope for automobile silencers as there is increase in production of automobile vehicles year by year and also it is a replaceable part in any vehicle. Automobile silencers can be fabricated in small scale industry with the following machinery given in the scheme.

II. TARGET OF PRODUCTION

The scheme is prepared to manufacture 500 lbs. of silencers per month.

III. BLOCKED CAPITAL

(a) Land & Building

2000 sq. ft. rented at Rs. 500 p. m.

(b) Machinery

1. Treadle guillotine shear 48" to cut 16 gauge ...	7,000
2. 30 Ton Power Press ...	8,000
3. Bending machines with rollers One set ...	800
4. Bench grinder ...	600
5. Edge folding machine ...	1,500
6. Pipe bending machine ...	800
7. 30 - Ton capacity Horning Pressing ...	10,000
8. Flexible shaft grinder ...	1,500

9. Gas welding set ...	2,000
	<u>32,200</u>

(c) Installation, electrification etc. ... 3,200

(d) Equipment

Dies, punches, hand tools etc.	1,520
Office equipment ...	2,000

Total Blocked Capital ... 38,920
or Say : Rs. 39,000

IV. WORKING CAPITAL PER MONTH

(a) Raw materials and Consumables

M. S. Sheet 16 gauge 1.5 ton at Rs. 1,200 per ton ...	1,800
Glass wool etc. L. S. ...	100
Grease lubrication oil paint, gases etc. L. S. ...	200
	<u>2,100</u>

(b) Salary & Wages per month

1. Direct Labour:

Chargeman at Rs. 300 p. m. ...	300
Skilled worker at Rs. 150 p. m. 10 Nos. ...	1,500
Unskilled worker at Rs. 60 p. m. 10 Nos. ...	500
	<u>2,300</u>

2. Indirect Labour:

Clerk-cum-typist at Rs. 150 p. m	
1 No.	150
Peon-cum-watchman at Rs. 75 p. m.	
1 No.	75
	225

(c) Miscellaneous expenditure per month

Rent for Building	500
Electricity and water charges ...	100
Packing and Forwarding charges ...	150
Unforeseen & Miscellaneous ...	100
	850

Total working capital
per month Rs. 5,475

V. WORKING CAPITAL FOR 3 MONTHS

$$= 5,475 \times 3 = 16,42$$

VI. CAPITAL OUTLAY

Blocked capital	39,000
Working capital for three months ...	16,425
	55,425

Cost analysis per month

Working capital per month ...	5,475
Depreciation on machinery at 10% p. a.	330
Interest on capital at 8% p. a. ...	370
	6,175

VII. SALE PROCEEDS PER MONTH

Income by sale of 500 Nos. of silencers at Rs. 14.50 each Rs.	7,250
Gross profit p. m.	1,075
Percentage of profit 28%	

SMALL SCALE INDUSTRY

TECHNICIANS TAKE TO SMALL SCALE INDUSTRY

Highly qualified and skilled technical personnel in both public and private sectors are increasingly taking to setting up their own small scale industries.

This trend has been markedly noticed in the chemical and engineering industries, according to Thiru K. L. Nanjappa, Development Commissioner, Small Scale Industries.

In Madras and Bangalore, for instance, ancillary units to manufacture motor cycle and machinery tool parts have been set up.

The number of unemployed engineering graduates and diploma holders, who have recently completed their studies and set up small concerns is not still great because of financial reasons.

The Development Commissioner has proposed special liberal terms for securing Government

aid for setting up small industries during the Fourth Five Year Plan. These will include starting production units in partnership, payment of lesser earnest money and repayment of loans at reduced interest rates over a longer period of years.

On an average some 12,000 small scale industries were being set up annually in India. To-day there are 125,000 registered small scale industries in the country and another 100,000 unregistered.

Credits were formerly offered to small scale industrialists by the State Bank, but this year commercial banks have been advised to earmark Rs. 75 crores for advance to small entrepreneurs. Unlike in the past, when loans were sanctioned on considerations of property, credits will now be made available to qualified engineers also.

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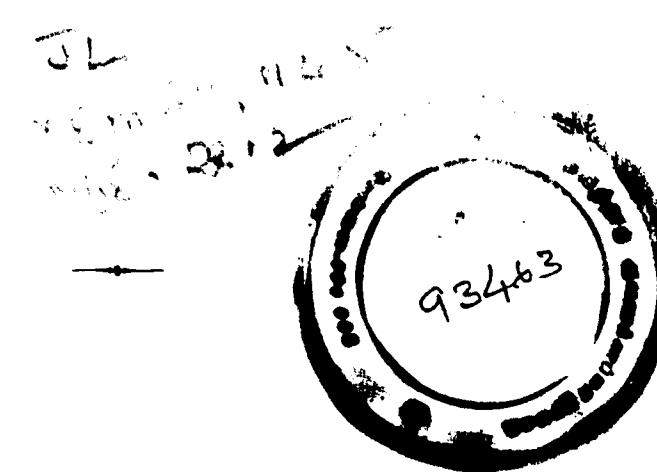
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AVAILABILITY OF RAW MATERIALS TO SMALL UNITS

PANEL'S RECOMMENDATIONS FOR FOURTH PLAN

The Panel on Small Scale Industries, constituted by the Planning Commission, recommended that a proportion of scarce raw materials needed by small scale industries should be reserved and distributed through public distribution channels to small units in the Fourth Plan.

The Panel, of which Thiru R. Venkataraman Member, Planning Commission, was the Chairman, also discussed the formulation of the development programme for small scale industries for the Fourth Plan. Among the issues raised at the meeting were decentralisation, dispersal of credit facilities, development of ancillary industries and technology for small scale industries.

The meeting was attended by representatives of small scale industrial units and senior officers of the Reserve Bank of India, State Bank of India, Ministry of Industrial Development and Company Affairs and Planning Commission.

The Panel also suggested that allocations for the small scale sector should be of a higher order than those indicated in the Draft Outline of the Fourth Five Year Plan. This, it was argued, was necessary as the needs of the small scale sector would grow with higher purchasing power in the rural areas.

Earlier Thiru Venkataraman referred to a number of policy matters in regard to Government's licensing policy, specially of raw materials, dispersal of industrial units to minimise regional imbalances and incentives for small units. He added that unhealthy competition between large and small units should have to be removed, as these sectors

had specific roles to play in the development of the national economy. He said that there were many fields for small rural workshop units, for instance, operation of repair workshops for agricultural implements as pilot projects in the rural areas. He sought the advice of the Panel on these matters.

The panel generally was of the view that social control of banks be given a full trial and State Banks should continue their liberal credit policy towards the small sector.

It was felt that infra structure had to be developed before small industries could be dispersed in the rural areas. Special areas should have also to be developed for building up the economy of underdeveloped regions. It was also suggested that the rural industries planning committee should be extended to cover village and small industries as well as the small sector, and criteria evolved for selecting them.

During the discussion on these issues, several members urged that better facilities should be available to small scale industries in production of exportable goods. In the view of a member of the panel, the weakness of the industry was its failure to develop export potential. For this purpose, it was necessary that prices of raw materials, used by small industrialists, should be stabilised and the procedures for credit facilities and prompt payment simplified.

On development of ancillary industries, it was felt that large industries were trying to produce their own components and parts and that it was essential that ancillary units should be developed and markets found for them.

CALCIUM FORTIFICATION OF COMMON SALT

INDIAN PATENT, 112946 (1967)

One of the important elements found lacking by the nutrition scientists in average diet is calcium which is an essential mineral for building bones. Deficiency of calcium in body leads to reduced growth, more particularly, in children. The daily requirement of calcium for an average man is estimated to be about 600 to 800 mg. of calcium of which the normal Indian food provides about half the quantity. For meeting the requirement of remaining 300 to 400 mg. of calcium through common salt, for an average consumption of 12—15 mg. of common salt per day, 5 to 6 per cent fortification with calcium sulphate is required. Other calcium salts can be used but calcium sulphate being cheaper and readily available in salt works is preferable.

The process developed at the Central Salt and Marine Chemical Research Institute, Bhavnagar consists in adding calculated amount of gypsum (or calcium carbonate or any other insoluble calcium salt) to the saturated brine in the crystalliser pans of any convenient size in the solar salt works. The crystallisation of common salt is permitted by solar evaporation of brine with occasional raking in the normal way. Raking of salt crop is necessary so as to permit co-crystallisation of gypsum on all salt facets of salt crystals. It has been observed that fine

particles of gypsum are preferentially taken up by the precipitating common salt crystals. The process requirements of making calcium fortified salt and of ordinary common salt are identical and the cost of gypsum is on par with the common salt, therefore the cost for manufacture of calcium fortified salt remains same as that of common salt.

PRECIPITATION PREVENTS SCALE FORMING

Investigations by Thiru W. R. Grace Co., in U.S.A. have shown that calcium ion can be economically removed by chemical precipitation with magnesium carbonate trihydrate derived from precipitation from sea water. The process removes upto 70 per cent of calcium ion; this is sufficient to prevent anhydrite formation and although hemihydrate can form in small amount, at this concentration none has been observed in the pilot scale operations.

UNIFORM QUALITY BOILER WATER

Ion-exchange resins used to soften industrial water generally employ a system with two columns of resins. These operate together in a cycle of absorption and regeneration; while one column is absorbing impurities, the other is offstream being regenerated. The disadvantage of this system is that water quality varies during each cycle as the column on-stream gradually accumulates impurity.

A new two-column fluid-bed system from Augsburg-Nuremburg is aimed at removing this disadvantage giving a constant quality supply. In operation from the bottom, expended resin of the top-fed absorption bed is removed to the top of the regeneration column. The bottom regenerated resin of this column is at the same time taken to the top of the absorber, as replacement.

THE USE OF MAGNESIUM OXIDE FOR REDUCING PRODUCTION COST OF SUGAR

Investigations have shown the superiority of magnesium oxide over lime for many reasons. Further, hydrated lime forms calcium sulphate, which precipitates out and forms scales on equipment. Magnesium oxide on the other hand forms a soluble magnesium sulphate which remains in solution. Magnesium oxide can be used as a partial substitute for a proportional quantity of lime adding only such quantities as necessary to keep calcium content of limed juice below the critical level at which calcium scale forms, which point is called the scaling potential level. Since magnesium oxide exhibits approximately 1.85 times neutralising effect of lime, 540 lbs. of magnesium oxide are equal to 1000 lbs. of lime. The magnesium oxide has been recently used with excellent results at Tuman factory at Chiclaya, Peru.

MAGNESIUM OXIDE IN STICK FORM

Scorch guard is a magnesium oxide compounded with specially selected aliphatic materials which took in the activity of the magnesium oxide, thus ensuring retention of performance even after months of exposure to the atmosphere. Its high degree of plasticity and compatibility can reduce the incorporation time by 75 per cent compared with magnesium oxide powder. The product has a density of 180 lbs/cft. giving a saving of over 90 per cent in storage space. In this very compact form the material is supplied in standard 3 lb. sticks each 7½ inch long by 2½ in. square. The sticks are individually wrapped in polythene and packed in easily handled corrugated fibreboard cartons each containing 12 unit weights.

Veneer in Stone: Stone veneer sheeting panels which add distinction and interest to all buildings at little cost are made in Australia by Stone-board Pte. Ltd. of Sydney.

Tor-ite Stone is made from smooth-cut Australian sandstone, noted for its warm, delicate shades of buff, pink, ochre and off-white with pink veining.

The stone is permanently bonded to sheets of asbestos cement to form a tough, durable product about 5/16 inch thick.

It is light, easy to handle and weatherproof even under extreme conditions.

The stone will not crack, crumble, peel or craze when cut or nailed.

Sheets usually are applied to timber battens, but the company says they are equally satisfactory over brick or concrete, asbestos cement or cement blocks, aluminium siding or solid timber, on new constructions or for renovation work.

Tor-ite Stone is in two patterns—"Random Rectangular" with white mortar joints, featuring the conventional rectangular blocks and suitable for most buildings, and "Tor-ite Moderne", made up of polygon blocks which suit a "contemporary" look.

The sheets have passed exhaustive tests by the Australian Government's Commonwealth Scientific and Industrial Research Organisation and have proved satisfactory in the hottest and dampest conditions.

They weigh 2½ lb. per square foot and stock sizes are 3 ft. by 3 ft., 4 ft., 6 in. by 3 ft. 4 ft. by 4 ft., 6 ft., by 3 ft., 6 ft., by 4 ft., 8 ft., by 4 ft., 9 ft. by 3 ft. and 9 ft. by 4 ft.

They are simple to install by nailing or glueing, and are easily and quickly cut with a standard abrasive disc or ceramic cutting wheel.

Inquiries: Stoneboard Pty. Ltd. P.O. Box 91, Earlwood, N.S.W. 2206, Australia.

Plastic Bricks for Builders: Western Australian building company, Marylands Plastics Pty. Ltd., are marketing hollow plastic bricks that interlock and eliminate the use of mortar.

The maker claims the bricks can be laid much quicker than clay bricks. In Sydney, the Ascort Corporation has placed a plastic dome with a 60 feet diameter, on top of a 15 storey building.

The dome design is built to withstand wind gusts of upto 150 miles an hour and it provides a weather-proof cover for lifts, airconditioning and other services.

Potash salts from bittern: The Central Salt and Marine Chemicals Research Institute is reported to have developed processes for the recovery of potassium chloride, potassium schoenite (a double sulphate of potassium and magnesium) and potassium sulphate from mixed salt, a raw material recovered from solar evaporation of bittern.

The developed processes are expected to help manufacture of potassium fertilisers from sea water and inland brines. In India, says a CSMCRI paper, sea water and inland brines are used for the manufacture of about 5 million tonnes of salt. For every tonne of salt manufactured, about one tonne of bittern is produced.

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NEW TYPE SAFETY LAMP FOR COAL MINERS

A new type of lamp for the detection of methane—a gas feared by coal miners the world over—has impressed an Indian mining expert. Thiru Manoranjan Paul, Senior Scientific Assistant with the Central Mining Research Station, Dhanbad (Bihar) saw the lamp being made yesterday when he visited recently the works of the manufacturers, Protector Lamp & Lighting Co. Ltd., at Monton, near Manchester.

Thiru Paul, who went to Britain on a Colombo Plan scholarship to study methods of testing mining equipment, said: "We have a methane gas problem in our mines in India. This lamp is extremely effective and would be very useful to us. I am hoping to have a film made of it in operation to be shown in India."

"Among the responsibilities of India's Central Mining Research Station is that of

testing and proving mining equipment. The purpose of my visit is to examine British testing procedures so that we can adopt some of the advanced techniques".

The gas-detecting principle of the lamp is based on the life-saving discovery made more than 150 years ago by Sir Humphrey Davy — the discovery that a flame enclosed in a lamp increased in size and changed colour when gas was present. In 1883, William Garforth followed this up with an idea for a lamp that would take air samples at different levels and in inconvenient locations. Now, more than 80 years later, his idea has been realised in the new lamp which is named after him. The Garforth lamp enables areas of the mine seams — especially near the roof — to be tested for methane.

GUJARAT ENGINEERING DIPLOMAS RECOGNISED

The Government of India have decided to recognise provisionally a pass in the final examination for diplomas in civil, mechanical, electrical and metallurgical engineering held by the State Council for Technical Education, Gujarat in respect of students trained at various institutions for purposes of recruitment to subordinate posts and services under the Central Government in these fields. They

include diploma in civil engineering of the Government Polytechnics, Rajkot and Bulsar, diploma in Metallurgy of Dr. S. & S. S. Gandhi College of Engineering and Technology, Surat and diplomas in mechanical and electrical engineering of the Krishnalal Jahverilal Polytechnic, Broach, Kilachand Devchand Polytechnic, Patan and Government Polytechnics, Dohad and Porbandar.

★

"INVENTIONS FACTORY" FOR SCIENTISTS

An "inventions factory" for scientists engaged on engineering research and development has been opened at Cambridge.

The factory is the new headquarters of Cambridge Consultants Ltd., which recruits scientists and engineers from universities and industrial laboratories to invent products and processes the company feels are most needed by industry.

Among the ideas it has developed is a

machine for making a patterned carpet 50 times faster than was previously possible.

Another is a system of mechanical editing and photography which a London publishing company is using to prepare the world's largest book—a 600 - volume catalogue of more than 12,000,000 books. Using traditional techniques, this task would have taken 200 years. The Cambridge system has cut production time to 10 years.

★

INDIAN HANDICRAFTS AT LONDON EXHIBITION

Indian handicrafts are on show in London at the 16th annual International Handicrafts and Do-It-Yourself Exhibition at Olympia.

They are being shown and sold to exhibition visitors by four London importing firms.

The products range from Banaras brassware to bangles, from ivory carvings to incense.

The exhibition has attracted about 200 firms supplying tools, materials and "know-how" to the increasing numbers of do-it-yourself enthusiasts in Britain.

★

INDIAN TRACTOR DEALERS' TRAINING IN BRITAIN

A party of Indian business executives who helped to sell more than 15,000 Indian-made tractors in the last seven years have arrived in Britain and undergone a course in business management and technical training.

The executives represented firms which sell the products of Tractors and Farm Equipment Ltd. (TAFE), Madras, the associate company in India of the worldwide farm machinery manufacturers Massey-Ferguson. They spent seven weeks in Britain at the 550-acre Massey-Ferguson farm mechanisation school at Stoneleigh, near Coventry and also visited major Massey-Ferguson plants in the Midlands and the North of England and in Scotland. Their programme included technical training

in the operation and maintenance of a wide range of modern implements, combines and other harvesting machinery and tractors.

A spokesman for Massey-Ferguson said that in addition to providing opportunities to see some of the latest types of equipment for farm mechanisation, the executives' visit would enable them, on their return to India, to help farmers get the maximum benefit from the use of mechanised equipment. It would also enable them to provide even higher standards of after-sales service to customers. Their advanced studies in United Kingdom would complement the local training given by TAFE and help them to make an increasing contribution to the national objective of agricultural self-sufficiency". ★

COMPUTER CONTROLS MOVEMENT OF TRAINS AT BUSY STATION

British Rail signalmen at Leeds (Northern England) are controlling trains by computer in a major technical advance involving a standard Elliott 903 machine.

The computer, housed in the basement of the station, is linked by 100 yard lengths of coaxial cable to the signalling control desk six floors above. Though the signal men never see the trains they control, their switches and telephones supervise the movement of over 500 passenger trains plus the goods and parcel services starting, terminating and passing through the Leeds area, as well as hundreds of shunting movements every day.

As a train is about to enter the area to proceed over part of the 47 miles of track, the

train "description"—a four-character code—is passed forward from one of the seven fringe signal boxes.

The signalmen sets up the "description" and the train's position by pushing the appropriate buttons on his control desk. The computer, programmed to manipulate the data it receives, automatically passes on the information as the train passes each signal on its route.

A self-checking routine is also included in the computer programme which detects any errors in the description data. Test programmes can also be inserted to check that the various parts of the equipment are functioning correctly. They can be tried and completed in a matter of a few minutes. ★

THE MANY USES OF "SILENT" SOUND

LONDON CONFERENCE ON ULTRASONICS FOR INDUSTRY

The uses of ultrasonics—"silent" sound-waves that can weld metals, detect tumours and brain damage, or operate burglar alarms—will be highlighted at a forth-coming conference in London.

The fifth Ultrasonics for Industry Conference and Exhibition, to be held on October 15 and 16, will be attended by delegates from Britain and overseas. They will hear lectures by some of the leading authorities in the field.

Ultrasonic waves, which are inaudible to the human ear, can be put to a number of uses. They can, for instance, machine and cut the hardest-known metals and ceramics;

detect flaws, leaks and cracks in anything from railway lines to telephone cables; weld metals, wire and plastics; operate burglar alarms; and detect tumours and detect tumours and brain damage. Equipment used in many of these applications will be demonstrated at the London conference.

Medical uses of ultrasound will be reviewed at another conference held in conjunction with the main one. Organised by the Acoustics Group of the Institute of Physics and the Physical Society, the conference is open to members of the organising body and to delegates attending the main Ultrasonics Conference. ★

INSTANT SERVICE

A new system at Westel House, Ealing, enables telephone subscribers complaining of faults to be answered in five seconds and saves maintenance engineers' time.

Instead of subscribers getting straight through to an engineer as before, the calls go to six women repair service clerks who operate a turntable card index for every installation

in six telephone exchanges. When a call is received from a subscriber, the clerk takes the appropriate card and notes the complaint on a docket, which she attaches and passes to a diagnostic officer.

He decides what type of fault it is and the maintenance engineers are freed to spend more time in dealing with the faults concerned. ★

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AUTOMATIC TRAINS FOR NEW LONDON UNDERGROUND LINE

NO DRIVER OR GUARD NECESSARY

London's new Victoria Line underground railway, will be able to carry 25,000 people an hour in either direction - equal to the capacity of 11 motor-ways spanning the city. Eventually, the 14 mile line will link four main London rail termini.

The first underground railway built under Central London for 60 years, the new line runs through tunnels bored out at an average depth of 70 feet. It will be served by automatically operated trains, and there will be automated ticket issue and collection facilities

There will be no driver or guard on the new trains. In their place will be a train operator who, by pressing buttons, closes the doors, sets the train in motion and opens the doors at the next station.

Once the operator presses the twin start buttons, the whole sequence of events until the train stops at the next station will be completely controlled by an electronic "brain".

Instructions will be picked up from the rail by coils and fed to this brain which actuates brakes or motors as required. Impulses from the track are pre-set to give the most efficient running, section by section, over the line. There will be constant automatic checks as trains approach and enter stations to ensure that the speed is dropping correctly to halt the train in the proper place at the platform, regardless of passenger load.

The train will also stop at a safe distance if a train in front is held up, and will re-start automatically as soon as the section ahead is clear. The operator can switch to manual control if any part of the automatic system fails. ★

LESS EXPENSIVE WAY TO ASSESS MINERAL WEALTH

Scientists of the Commonwealth Scientific and Industrial Research Organisation have developed a new and less expensive method of determining the extent of mineral deposits under the ground.

A spokesman for CSIRO said the new system meant analyses could be made at between a fifth to a tenth of the present cost.

The three-inch diameter metal tube is lowered down a bore hole. The tube contains \$A 2,240 worth of scientific equipment, mainly a neutron gun and a gamma ray detector.

The detector picks up characteristic gamma radiation from metals which are bombarded with neutrons and transmits information on the type and concentration of metal to an observer on the ground. ★

DOMESTIC WATER PUMP FOR HOTEL, LODGING, GARDEN & FOR SMALL FARM
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FICCI STRESS ON QUALITY FOR EXPORT BOOST

A lasting improvement in export performance can be made only by modernising techniques of production and management, improving quality of products and devising attractive packing, according to the Federation of Indian Chamber of Commerce and Industry.

FICCI has also called for a significant shift from the traditional to the non-traditional exports for a breakthrough in our foreign trade.

In a publication entitled 'Business Indicators' the Federation says that the export effort in traditional items is not likely to go very far. During the last five years the share of jute, cotton textiles and tea in relation to total exports has declined from about half to two-fifths. New markets have therefore to be found for items like iron and steel, engineering goods and chemicals.

The Federation points out that the markets for Indian goods are located mostly in the Western region particularly Europe and

America and there is scope for expanding export activities in the neighbouring countries like South-East Asia and Africa. But these regions cannot earn free foreign exchange on a large scale so necessary to pay for imports which come primarily from Europe and America. It is inescapable that exports to Western markets must have high priority.

It observes that the present recession in the industrial sector caused by a fall in domestic demand has to some extent forced entrepreneurs to look for markets abroad. If foreign markets prove remunerative, it will be possible to solve two problems simultaneously of recession and exports. The effort can be successful with co-operation between Government, the industry and exporters.

FICCI is of the view that unless the import capacity is improved either by stepping up exports or by securing larger foreign capital on official or private account, it will not be possible to achieve a high rate of growth.

FRESH WATER FROM SEA WATER

One of the strangest anomalies of modern times is that even in water-rich countries, the threat of water shortage for domestic and industrial use is fast becoming really serious.

One reason for the gradual scarcity is, of course, the increasing population and the impossibility of normal supplies being able to keep up with the additional thirsty millions. Another reason is that people under modern conditions use more water domestically, apart from the enormous quantities required by modern industry.

One way which is already being tried out on a practical scale is the desalination of sea water. A new installation designed and made in Holland is now under construction in Zealand which, with a production of one million cubic feet of fresh water every day, will be the largest of its type in the world.

It is based on an experimental plant tried out for two years at Ijmuiden, and gives promise of being a most useful answer to the fresh water problem.

So it is not surprising that this unique installation is being carefully watched, and that in anticipation of its proving eminently successful, investigations are already being made so that a practical plan can be drawn up which will enable a chain of these de-salting plants to be erected in places especially where the shortage is expected to be greatest.

Holland, of course, is not the only country trying to solve this problem. So serious is it, indeed, that President Johnson recently organised a "Water for Peace Conference" in Washington attended by 5,000 delegates from all parts of the world. One of the results was a decision to set up a network of water-resource centres around the world to find ways of meeting the water needs of the exploding population. American scientists are also speeding up their studies of suggested rain-making methods, and it is hoped that other nations will follow suit.

It is comforting to the Dutch that a good start has already been made in the Netherlands to find out the best ways of preparing for the great water needs of the future, and Dutch scientists and engineers have clearly shown that they have already evolved their own ways of controlling water and of finding ways to keep the supplies running, it is certain that they will closely watch this international water hunt to devise ways for better use, re-use, conservation and management of present water resources. And the Dutch results may well also prove of considerable value for other countries.

Meanwhile the Council of Europe has drawn up a Water Charter to protect water resources on the Continent and is about to start a large scale European operation to inform the public of the gravity of the situation. In this, of course, the Dutch are taking a prominent part. ★

REPORT ON THE WORKING OF THE COMPANIES ACT 1956 IN THE SOUTHERN REGION FOR THE QUARTER ENDING 10TH JUNE 1968

During the quarter under report 65 companies with an authorised capital of Rs. 704.20 lakhs were registered in the Southern Region consisting of Madras, Andhra Pradesh, Mysore, Kerala and Pondicherry. Of these 7 are public

companies, 58 are private companies. Amongst the 7 public companies one is a guarantee company. The authorised capital of the public companies comes to Rs. 350.00 lakhs and the authorised capital of the private companies comes to Rs. 354.20 lakhs.

STATEMENT SHOWING STATEWISE AND INDUSTRYWISE CLASSIFICATION OF COMPANIES REGISTERED IN THE SOUTHERN REGION FOR THE QUARTER ENDING 30th JUNE 1968

No. S	Industrial Classification	Madras		A. P.		Mysore		Kerala		Pondicherry		Total	
		Pub.	Pri.	Pub.	Pri.	Pub.	Pri.	Pub.	Pri.	Pub.	Pri.	Pub.	Pri.
0.	Agricultural and allied activities ...	—	1	—	—	—	—	—	—	—	—	—	1
1.	Mining and quarrying ...	—	—	—	—	—	—	—	—	—	—	—	—
2.	Processing and manufacture food stuffs ...	—	2	—	1	—	3	1	3	—	—	1	9
3.	Processing and manufacture metals and chemicals and products thereof ...	1	1	1	6	1	3	1	1	—	—	4	11
4.	Processing and manufacture (Not elsewhere classified) ...	—	—	—	2	1	—	—	—	—	—	1	2
5.	Construction and utilities ...	—	—	—	1	—	—	—	—	—	—	—	1
6.	Commerce (Trade and Finance) ...	—	16	—	3	—	8	—	3	—	2	—	32
7.	Transport, Communication and Storage ...	—	1	—	—	—	—	—	—	—	—	—	1
8.	Community and business service ...	—	—	—	—	—	—	—	—	—	—	—	—
9.	Personal and other services...	—	1	—	—	1	—	—	—	—	—	1	1
Total ...		1	22	1	13	3	14	2	7	—	2	7	58

TRADE ENQUIRIES FROM ITALY

Name of the firm	Interested in the import from India of
1. PRAI di. Dr. ANGOLO VEROLI, Via XX. Settembre, 37-5, IV-P, 16121 GENOVA.	Jute bags.
2. DOTT. ALESSANDRO RAZZIERI, Piazza Nicola Amore, 10, 80138 NAPOLI.	Coir Mats and Wooden flooring tiles.
3. BALDAN S. A. S., Via Bruni 26, 20158, MILANO.	Human Hair.
4. LEATHER MANUFACTURERS, Viale Faraggiana 85, 17012, ALBISSOLA MARINA (Savona)	Goat skins, sheep skins, cow calf skins and buff calf skins all in the chrome tanned wet blue conditions or pickled or raw fresh salted conditions.
5. Cornelio Weinberger, Via E. Dandolo 4, 20122, MILANO.	Fruit juices (Lemon, Orange, Pears,Apple).

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DEVELOPING COUNTRIES HELPED TO SOLVE BUILDING PROBLEMS

BRITISH RESEARCH STATION'S ADVISORY SERVICE

BY THIRU JOHN WRIGHT

Advice on housing schemes, building techniques and planning problems in the developing countries is one of the main services provided by the Overseas Division of the British Government's Building Research Station at Garston, Southern England. The Division came into being nearly 20 years ago in response to the quickening pace of urbanisation in the Commonwealth.

Each of the nine professional members of the Division's 11 man staff is an expert in his field—be it the design of low-cost housing in an earthquake area or the siting of tall buildings in a hurricane zone.

On - the - spot Advice: Drawing on a constantly expanding fund of knowledge about the latest building and planning techniques the world over, the Division feeds architects, planners and building contractors in the development countries with general advice and information on common problems. The Division's "Overseas Building Notes" appears about eight times a year and copies are distributed throughout the world.

Experts of the Division, all of them with first-hand experience of planning and building overseas, are on call to make flying visits abroad to give on-the-spot advice about particular difficulties.

Although the Division's main areas of interest are design, structures, materials, planning and publications, inquiries about the use of building materials, usually in tropical countries, are by far the most numerous of those received. Advice given in recent months has included answers to the problem of preventing corrosion in reinforced concrete in India.

Should the Division be unable to answer an inquiry on soil mechanics on an Indian housing scheme site or the economics of prefabrication in Ceylon, it is passed on to another section of the Building Research Station that can come up with a solution. Other sections of the Station are themselves taking an increasing interest in planning and building problems in overseas countries.

Long-term problems: The broad scope of the Overseas Division's work covers liaison with the United Nations and other International organisations, arranging professional study courses and tours, and recruitment of specialists for work overseas. It also advises the British Ministry of Overseas Development on all aspects of housing, building and planning, including projects for capital aid.

The Division is concerned not only with today's immediate problems but with long-term ones and, in particular, with organising the training of a new generation of builders and planners in the developing countries.

NEW TECHNICAL CENTRE WILL SERVE WORLD WOOL INDUSTRIES

A new £1,250,000 technical centre built by the International Wool Secretariat (IWS) opened at Yorkshire will provide a valuable service for the world's wool, textile and carpet industries.

The main object of the service provided by the centre will be in helping to bridge the gap between the laboratory and the mill.

Mr. W.J. Vines, Managing Director of the IWS, said; "This kind of bridging operation is not a new one for the IWS—we have been engaged in it for several years now, and have produced a number of valuable developments. But for the first time we will not be able to house our technicians on a single site, and to provide them with laboratories and pilot plant on a scale necessary to enable them to push their work ahead with greater rapidity.

The centre, which will employ 200 scientists, technologists and other staff, will be in the heart of the British wool textile industry. The pilot plant will be capable of making all types of wool goods, including finished garments and carpets.

(Source: *British Techniques*)

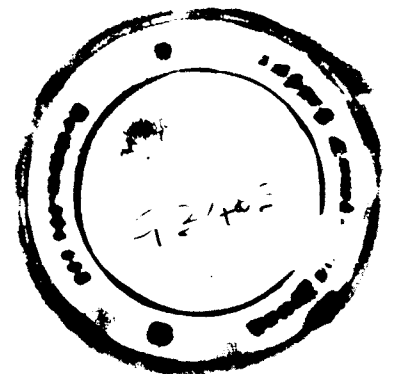
(By Courtesy)

CLIMATE FOR INDUSTRIES IN MADRAS STATE

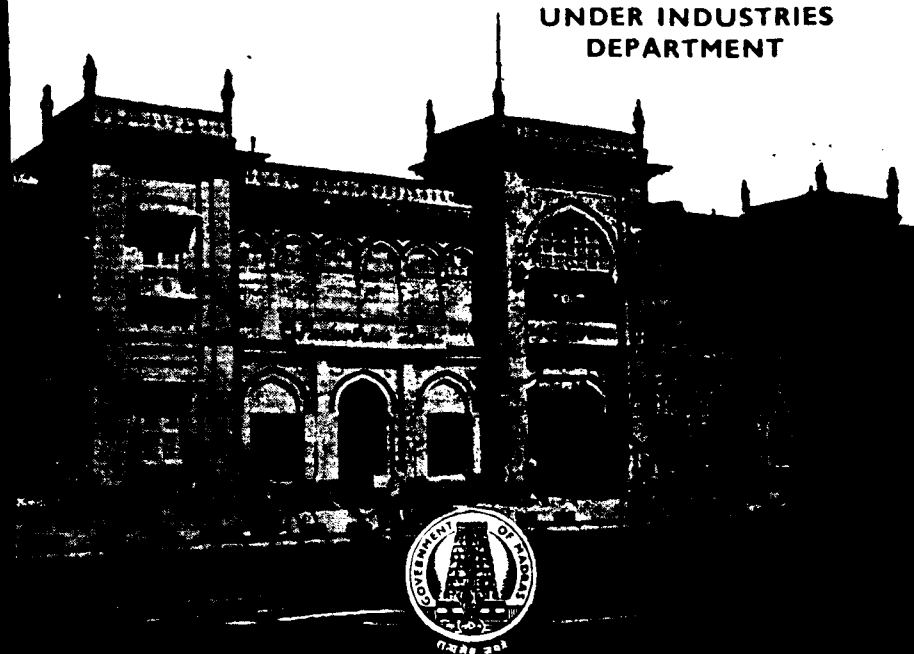
Twenty-nine new industries have been registered in the first quarter of this year in Madras State against 52 industries in all the four Southern States. Thiru V. R. Nedunchezian, Minister for Industries, Madras who disclosed this figure stated that the climate for industries in this State was brightening up.

The Minister was participating at a function at the Madras Rubber Factory in Thiruvottiyur on the 6th May, 1968 to distribute certificates to 150 of the factory workers who had successfully undergone training under the Workers' Education Scheme. He welcomed the scheme of workers' education as it would enable the workers to discharge their duties properly.

Under the scheme 25 to 30 workers drawn from big industries are given training for three months and after return to their factories after the completion of the training, they in turn train their fellow workers. Subjects like productivity, code of discipline, labour legislation, family welfare programmes and co-operation are taught under the scheme.



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