

FOREWORD

IT goes to the credit of Ramnad District to be the first to conduct the District Industries Seminar for this State. Paradoxical as it may sound in view of the fact that it is accepted to be the most backward District in the State, yet so appropriate as it rightly highlights the urgent necessity and importance of such a Seminar. Looking back on the efforts for industrialisation of the country during the past three plan periods, it clearly points to the inescapable position that it is the development of small industries with geographical dispersion and structural decentralisation that would eventually prove to be the turning factor in the country's industrial and economic progress. It cannot also be denied that there is still a large percentage of population with financial capacities ranging from Rs. 5,000 to Rs. 2 lakhs scattered in the Districts, who have not so far been tapped and who will certainly be willing to venture into the industrial field, given the necessary assistance and encouragement. Having accepted this proposition, the first step to be taken would be to draw up a programme of development region-wise. In Madras State each District constitutes a convenient entity for regional development. It could be only at an Industrial Seminar at the District level that we could bring together enterprising type of men and assess the availability of resources of that particular region and work out schemes which are suitable to them. In fact there could be no better method of unearthing unutilised local resources, particularly material useful for industries, in however small a quantity they may exist. It can be only at such a gathering that everyone, big or small could be given equal opportunities to enter the field of industries.



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RAMANATHAPURAM DISTRICT

(15-7-1963)

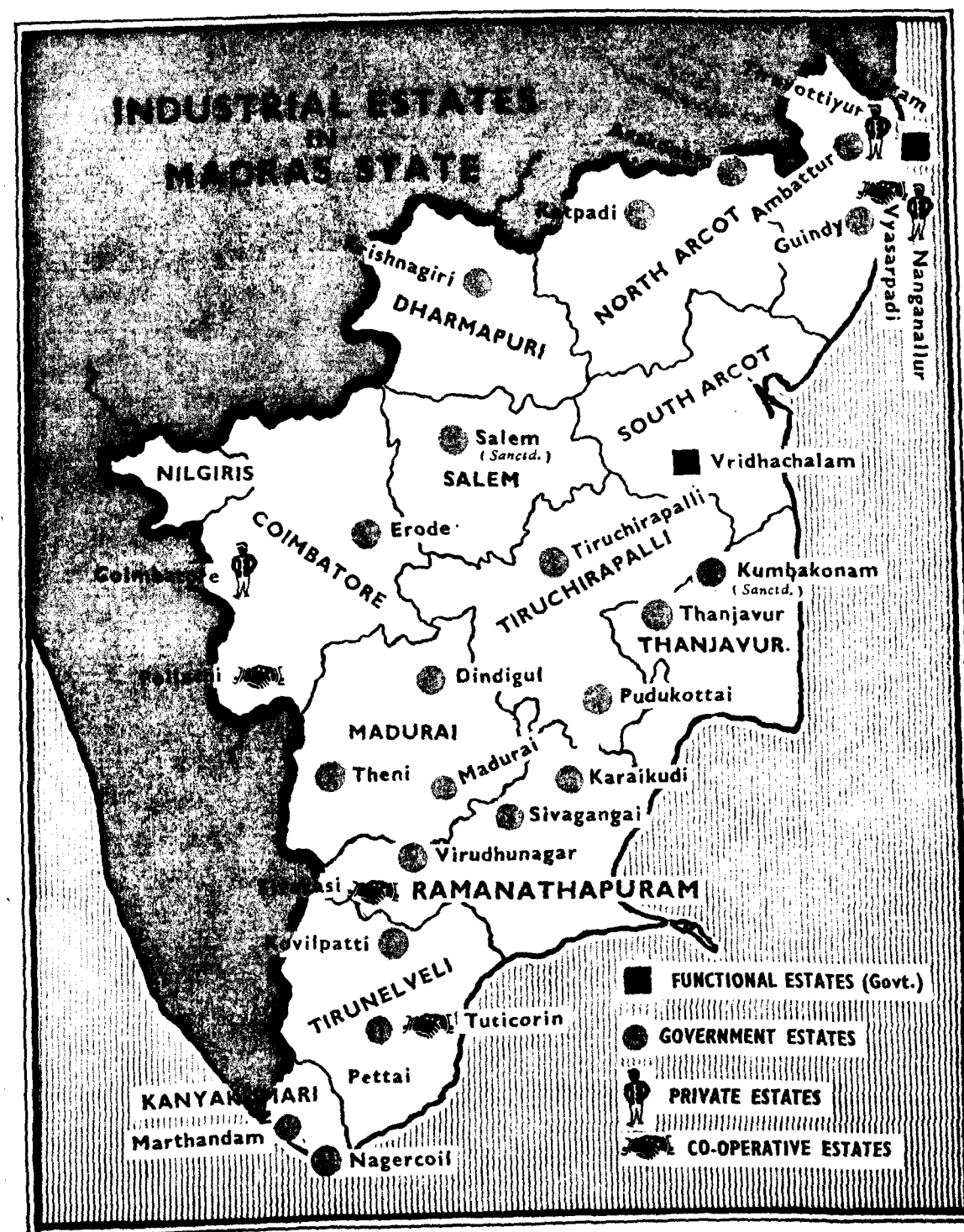
(ii)

Industrial Seminars have been so far conducted in the Districts of North Arcot, South Arcot, Salem, Madurai, Ramnad and Tirunelveli, but the experience is that the follow up action of the various resolutions passed at these Seminars have not been vigorously pursued. It is, therefore, necessary to make an all out effort, on a combined basis, with the assistance of all the Departments represented at the District level, with the District Collector as the spear head to take a grip of the situation and get down to action, if necessary, on a war-footing. The staff of the Industries Department have been geared up to fulfil this task in whatever way their services are required. It is expected that an Industrial Seminar for the remaining Districts will be conducted shortly and it is hoped that during these Seminars that not only all the possibilities of starting new industries, stabilising the existing ones and suggesting ancillaries to larger industries will be tackled in a realistic manner, but that the new entrepreneurs, who would require just the kind of assistance and encouragement, would also be listed out to facilitate the follow up action.

It is hoped that this special issue of 'INDCOM' dedicated solely to the resolutions so far passed at each of the Districts, will inspire those concerned to take renewed action in order that the overall rate of industrial growth of the State may be substantially improved or atleast brought up to a respectable level.

E. C. P. PRABHAKAR

Director of Industries and Commerce, Madras.



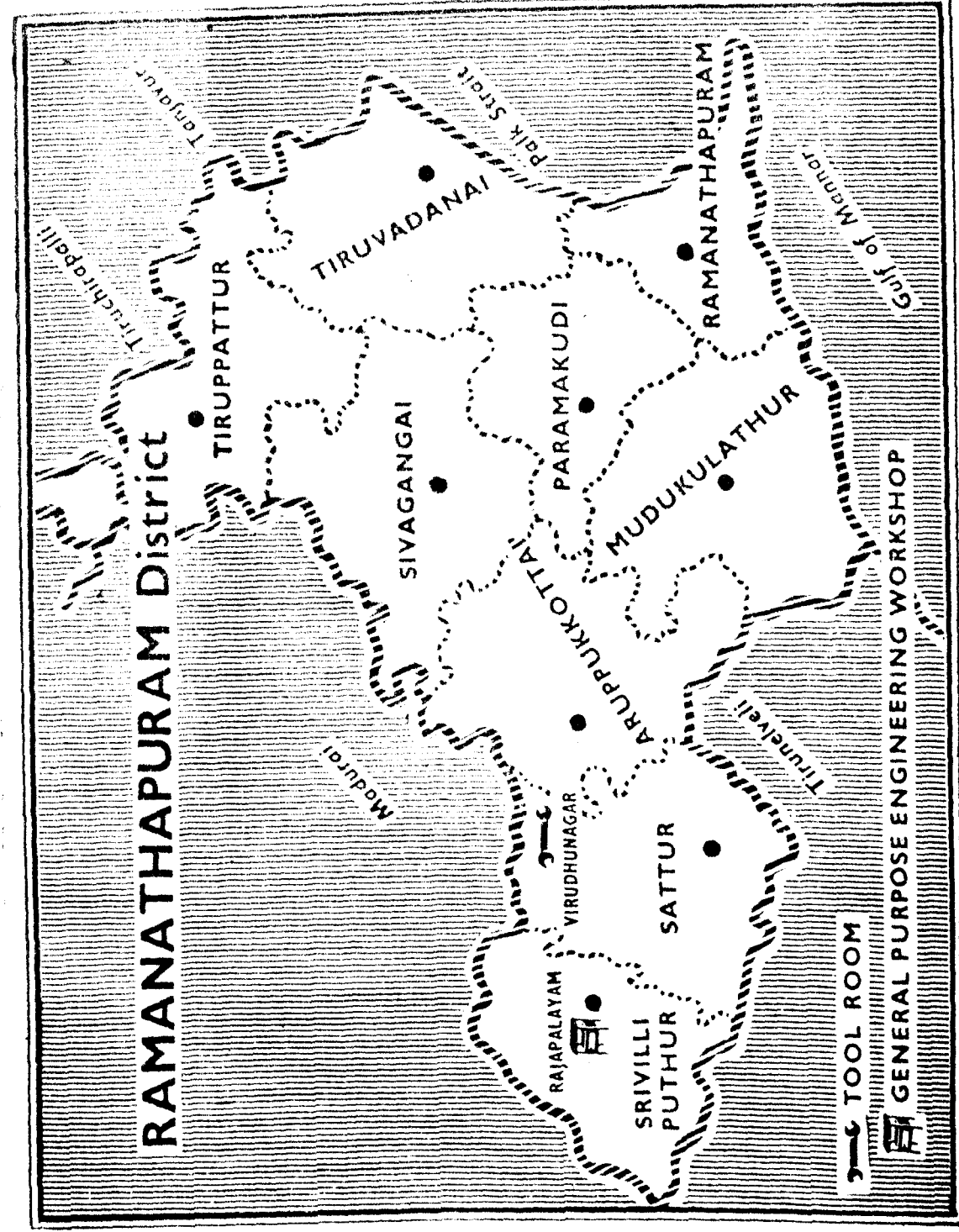
RAMANATHAPURAM DISTRICT

AREA (in square miles)	...	...	5,514
POPULATION	...	...	3,190,078
INDUSTRIAL ESTATES	...	...	1. Virudhunagar 2. Karaikudi 3. Sivaganga
SMALL SCALE INDUSTRIAL UNITS (Government)	...	...	Virudhunagar ... Tool Room Rajapalayam ... General Purpose Engineering Workshop.
NO. OF REGISTERED UNITS (Small Scale Industries)	...	...	702
IMPORTANT LARGE SCALE INDUSTRIES	...	...	Textile Mills 22 (14+8) Cement Factory 1 Explosives factories at Sivakasi

N. B: Figures in brackets indicate split up figures of the factories functioning and those either licensed or under construction.

MINERAL WEALTH

Name of Mineral	Chemical Composition	Industrial Application
Crystalline Limestone	47% of Cao and above	Total reserves 9.2 million tons in Aruppukottai Taluk and 25 million tons in Sattur Taluk—Deposit in Sattur Taluk worked by Madras Cements for their factory at Tulukkapatti. The deposit at Alankulam will be utilised by the Tamilnad Cements (Public Sector)—capacity 1,200 tons per day.



PRESENTATION OF GROUP I REPORT

By Sri A. M. M. Murugappa Chettiar

The Group I for the consideration of heavy and medium industries—Scope for future possibilities—was constituted at the Open Session of the Industrial Seminar with Shri A. M. M. Murugappa Chettiar as Leader and twelve others as Follow-up members. The group commenced its session at 2.00 p.m. and ended its deliberations at about 4.45 p.m. About 80 delegates attended the discussions and about 20 of them participated in the discussions. For a short while, the Hon'ble Sri R. Venkataraman, Minister of Industries was also present. By special invitation Dr. P. S. Lokanathan, Sri B. Natarajan, Sri Prabhakar, formerly Collector of Ramanathapuram and now Collector of Madurai and Mr. Sabhanayagam were also present. The Leader, Shri Murugappa Chettiar, in the course of his remarks made out the following points:—

- (a) that there is scope for development of heavy chemical industries based on salt and salt bitterns and marine biology;
- (b) that there are potentialities for a large number of medium size ancillary industry having a bearing on defence equipment. He also listed a number of items for the manufacture of which scope may be considered to exist in varying degrees;
- (c) that the human potential, most of which is skilled, should be considered as a great asset of this region and suggested that this must be made fruitful use of for the economic development of the district;

(d) that the basic necessities for industrial development like power supply, healthy capital market, greater scope for private industrialists etc., are now available in an extremely limited manner and pleaded for liberalisation in all these directions;

(e) that the geological potential should be more fully and thoroughly investigated and mapped with a view to facilitating would-be-industrialists to consider actively setting up new industries.

A copy of the working paper prepared by Sri Murugappa Chettiar for the guidance of the Group discussions has already been given to the Collector of Ramanathapuram District.

Discussion commenced, delegates taking a keen interest in the examination of the *pros and cons* of the various proposition. About 20 delegates, officials, administrators, legislators, industrialists as well as economists spoke on different lines of new industries.

Among the industries which the speakers considered possible of development in the district were:

1. SUGAR: It was mentioned that about 5 to 10 thousand acres of cane could be made available in the Manamadurai area and with this as the source, a sugar factory could be easily started. It was also pointed out that once a factory is put up, the area under cane would also grow so that there would be no dearth of cane supplies at any time. It was accepted that if the basic information about cane supplies on a regular basis is correct,

there may not be any difficulty in obtaining a licence from the Government and a start being made.

2. CEMENT: The existence of large quantities of limestone was stressed by more than one speaker and the possibility of establishing a cement factory as also a soda ash plant was strongly advocated. There was some difference of opinion as to the exact quality of limestone available in the area, but it was generally accepted that some scope does exist for either expanding the existing cement factory or starting up a new one.

3. SODA ASH: It was pointed out that a Government sponsored industry should be established in this region to give a fillip for the private industrialists and take up the strain. The announcement made by the Industries Minister in the open session that there are possibilities of a soda ash plant with a 10-crore outlay coming up, provided the report of the Japanese team is found to be favourable, and that some information in this direction is expected very shortly was welcomed and is looked forward to with great interest.

4. AGRICULTURE ORIENTED INDUSTRIES: (a) One delegate mentioned about the possibility for a large size poultry farm, a big size dairy farm and even a large size cattle farm as being possible of development in this District. This was endorsed by two other speakers as necessary not only from the point of view of strengthening the agricultural base of the economy but also from the point of view of developing non-cultivation, non-foodgrain sources of development.

(b) CASHEW OIL INDUSTRY: It was pointed out that about 5,000 acres of forest area taken over by the Government have already been planted with cashewnut and that private owners also have about equal quantity of acreage planted with cashew, most of which would be bearing fruit in 2 or 3 years. There

is scope for the development of cashew kernel industry and extraction of cashew oil which has wide use in paint and other industries and which will also earn foreign exchange. Here again, if the basic information is correct, the proposition could be explored further.

5. TEXTILE MILLS: It was suggested that there is scope for 5 or 6 more spinning units in this district since the area is predominantly a cotton growing area. The additional units now licensed have all been sanctioned in the co-operative sector, but it was pleaded that a few licences could as well be issued for being taken up by private industrialists to establish factories on a joint stock basis. The scope for more spinning units is recognised though it is a matter of policy whether these should develop in the co-operative sphere or in private sector. Subject to this consideration, the proposition is worth the attention of the Government.

6. TEXTILE CALENDARING PLANT AND BLEACHING HOUSE AND SCREEN PRINT PLANT: It was suggested that scope exists for the establishment of a calendaring plant and a bleaching factory as at present all the textiles produced on the handloom in this district are exported to Calcutta and other places to be processed, bleached and printed and sold. This business could be easily retained in this District and the calendar unit plant would prove to be profitable for any industrialist interested in pursuing this line of activity.

7. SALT BITTERNS: It was suggested that scope exists for an industry based on salt bitterns, the capacity of the unit being about 1 lakh gallons of bitterns to yield a number of bye-products, all of which would be commanding a ready consumer market. The investment would be of the order of 30 lakhs and raw material requirements will be 15 to 16 lakhs of salt. This is also a proposition which is worth being pursued as the District is rich in salt resources and these have not been exploited fully.

RAMANATHAPURAM DISTRICT

The Ramanathapuram District Industrial Seminar was held at Karaikudi on the 15th July, 1963. Sri K. Kamaraj, the then Chief Minister of Madras inaugurated the Seminar and Sri R. Venkataraman, Minister for Industries presided over the function.

Sri J. A. Ambasankar, Collector of Ramanathapuram district in his introductory talk said that the district was not lacking either in financiers or manpower and given the proper lead, there was chance of the district becoming industrialised within a reasonable period.

Sri C. V. Ct. Venkatachalam Chettiar welcomed the delegates and others present and appealed to the industrialists of the district who have started heavy industries elsewhere in the State to turn their attention to their own district and start industries or atleast encourage the production of ancillaries for the major industries started by them in other parts of the State.

Sri K. Kamaraj, in his inaugural speech, said that there was enough capital, experience, entrepreneurs and courage to invest in new industries in the district and what needed was proper guidance as to the nature of industries that could be started.

Sri R. Venkataraman, Minister for Industries observed that the whole district was dry without any perennial rivers or forests and test drills were being carried out at Karaikudi area to know the volume of the lignite deposit. He stated that the quality of this mineral in this area was found to be slightly higher than that of lignite and slightly lower than that of coal. He also referred to the occurrence of limestone in some places. The Minister said that there was a possibility of a ten Crore Soda Ash plant coming up in the region

if the report of the Japanese expert was favourable. He suggested the setting up of industries to manufacture automobile spare parts and salt based industries along the coastal belt. The Minister referred to the research that was being conducted at the Central Electro-Chemical Research Institute for extraction of magnesium from Salem magnesite.

The Chief Minister presented the Seminar Souvenir to Rajah Sir M. A. Muthiah Chettiar who pointed out that the industrial progress must have a rich agricultural base and pleaded for better irrigation facilities in the district by bringing the Cauvery water. He also stressed the need for a broad-gauge railway line from Tiruchi to Dhanushkodi.

Then Sri R. V. Swaminathan announced the formation of the different groups for discussion:

GROUP I: Large and Medium Scale Industries (Future possibilities). By special invitation Dr. P. S. Lokanathan, Director-General of Applied Economic Research, New Delhi, Dr. B. Natarajan, M.L.A., Sri E.C.P. Prabakhar, Collector of Madurai and Sri P. Sabhanayagam, Director of Industries and Commerce, were present.

GROUP II: Large and Medium Scale Industries (Existing). Problems relating to marketing, transport, finance etc.

GROUP III: Small Scale Industries (existing and future possibilities) under the leadership of Sri A. M. M. Murugappa Chettiar, Sri T. Manikkavasagam Chettiar and Sri P. Iya Nadar respectively for these three groups.

The Reports of these groups are given below:

8. FISHERIES: It was agreed that there is considerable scope for development of fisheries, especially in the Kendai variety. More than one delegate referred to it.

Dr. Lokanathan and Dr. Natarajan who participated in the discussion suggested a more thorough and detailed geological survey and in fact they felt that a techno-economic survey confined to this District, so as to bring out the possibilities of the scope for industrial development, should be taken up. This suggestion was welcomed by the Chairman and also by other members.

It was also the consensus of opinion that there should be a conversion of the metre gauge into broad gauge railway line in this region, in order to facilitate rapid industrial growth to avoid delay in transportation, eliminate transshipments and pilferages. Many delegates drew pointed attention to this and felt that to this single factor could largely be attributed the slow progress of industrialisation of the district. It was understood from the discussions that if the matter is pursued at the State level there might possibly be some result.

The general impression gathered from the discussions is that there was considerable interest from the delegates about industrial development and that after all the possibilities of development did not appear to be as bleak

as they were when the discussion started. Taking the pluses and the minuses, that is the favourable and unfavourable factors, it was the consensus of the opinion that the minuses were more than offset by the pluses and as such with some energetic follow-up action to explore the particular lines of development suggested, some progress should be possible and concrete results might be achieved.

Particular stress was laid on the development of ancillary industries and the District getting its fair share of defence industries, as also what are described as "functional ancillaries", those that are an integral part of industries already functioning in other areas of the State. For progress in this direction the assistance of the State will be required and it was the consensus of opinion that efforts should be made to start some ancillary industries pertaining to Defence with requisite assistance from the government.

The group discussions were extremely fruitful from all angles and with follow-up action, it was felt, that the enthusiasm generated in the group discussions, could be converted into actualities.

(Sd.) A. M. M. Murugappa Chettiar.

PRESENTATION OF GROUP II REPORT

By Sri T. Manikkavasagam Chettiar

The existing large scale and medium scale industries in Ramanathapuram District can be grouped under the following three heads:

1. Textiles.
2. Cement.
3. Steel Rolling Mills.

1. Textiles: The main problems of the textile industries are:— First and foremost is about the cultivation of cotton. Each acre in our part gives about 125 lbs. of cotton only. But in foreign countries they get about 325 to 600 lbs. per acre. Necessary action may please be taken for research for improving the quantity of cotton production per acre and also to afford facilities for supplying manure etc. for cotton cultivation.

Textile industries require a number of spare parts. Most of the spare parts have to be imported and lots of difficulties are experienced in getting the necessary import licence and even when we get it, it takes a long time for importing the materials and also for getting it transported to the place of the destination. Some spare parts are available in Bombay and Ahmedabad. Necessary action may be taken to start some small scale industries in these parts to produce the spare parts in our district.

Now, more and more spinning mills are coming into existence and soon there will be marketing problems relating to yarn. To avoid the marketing problems it is very necessary to start some Weaving Units to balance the high production of yarn.

In the matter of sanctioning additional spindles preference may be given to industries which have already completed construction of the necessary factory space and secured the necessary finance, machinery etc.

2. Cement: Cement industries are usually started only in places where lime stone is available. All the machines are not readily available in India and they have to be imported. Even spare parts for them also have to be imported. Sometimes it takes about three years to import the spare parts. If any one machine stops work for want of a spare part, the entire work is arrested. So we have to plan about three years ahead. But at times due to some sudden breakage there were occasions when one has to stop the industry itself for want of such spare parts. In the circumstances, necessary facilities may be given for affording enough foreign exchange for setting up factories to produce these spare parts. Consideration may also be given for starting suitable steel foundries to produce these spare parts. Another difficulty usually encountered in this connection is the non-availability of suitable technical personnel. Some heavy Mining and Transshipment machinery is required for mining the lime-stone and transshipping the same. Facilities may be given for importing these machineries.

3. Steel Rolling Mills: Steel rolling mill started at Virudhunagar had difficulties for want of supply of billets for its economical working. Now the re-rollable scraps have been decontrolled. Due to this the steel rolling mills in the South have got to pay

about Rs. 120 more than the mills in steel producing centres like Rourkela etc. as the price fixed by them is from ex-works and considerable transport charges have to be paid. Steel rolling mills get their raw materials in train loads. Though it comes upto Madras in about 10 days, it takes a very long time for reaching the destination (Virudhunagar) from Madras because they have to change from broadgauge to metregauge. Broadgauge railway lines may be formed from Madras to Tinnevely. Instead of supplying power during night, it is for consideration whether the power may be supplied during day.

The Steel rolling mills at Virudhunagar are suffering due to heavy excise duty levied as they started a little late after the prescribed limit. The delay may be condoned and the duty relaxed.

General: Generally the following problems are met with in the above industries.

1. **TRANSPORT:** In the South, generally the need for broadgauge lines is felt. Broadgauge lines may be urgently formed in addition to the metregauge line. As it may take some time for laying broadgauge line, we may now consider broadening the existing road immediately. A new line may also be formed connecting Madurai — Melur — Tiruppathur — Karaikudi — Devakottai — Tiruvadanai and Tondi.

2. **POWER:** The generation of hydro-electric power in the State has already reached the saturation point and no further increase in hydel generation seems to be possible. The solution for this is to instal thermal generating stations in the district with the help of the hydro generation reserve from the neighbouring states as the problem is

common to all these States as Madras alone cannot exploit it. Private generation station may be encouraged if they come forward with necessary finance.

3. **WATER:**—There is perpetual scarcity of water for industrial use in this region. The possibility should be explored for bringing water from the Periyar Dam which is 10 miles away from the district border, by canal transport from the river, and digging of tube wells purifying sea water etc.

Finance: The Nattukottai Chettiars, hailing from Ramnad District have been doing business in foreign countries. In view of the deteriorating position abroad they would want avenues of investment in this country and may be attracted to industrialise Ramnad District in several ways e.g. they could be given Incometax relief in importing their capital into India and be provided with some other initial reliefs and incentives necessary in setting up an industry. I feel that there would not be dearth of capital for the industrialisation of Ramnad District, if a suitable climate is generated. Loans may be given for purchase of old machinery. Industrial Financial Corporation may be requested to advance loans upto 75% of the cost of security offered. They may also be requested to advance loans for working capital liberally.

Education: We have one Engineering College and four Polytechnics teaching the faculties in Engineering including Textiles. There is the Central-Electro Chemical Research Institute functioning at Karaikudi. Therefore the technical know-how as far as engineering is adequately met. But there is no facility to train managerial personnel. A College to impart Business Management may be started in one of the centres in this district.

PRESENTATION OF GROUP III REPORT

By Sri P. Iya Nadar

This group insisted upon a thorough geological survey of the entire district with a view to assess the potentialities for starting new small scale industries ; more employment of women in factories manufacturing electrical spare-parts, cycle spare-parts, brush etc. Possibilities for manufacture of stone-wear pipe, colour painting, fire-bricks etc., exist in Sivaganga. A big industrial estate can be started at Mandapam Camp as it has all the facilities like buildings, good water-supply and building materials. In order to provide the gold-smiths with employment, technique in cutting chank must be taught to them ; it will also help to save the vast cost of transporting chanks from Dhanushkodi to West Bengal. The product of the cement factory proposed by the Government at Mandapam must be used for the manufacture of sanitary wears, hume-pipes etc., in that place itself. The group insisted on the establishment of co-operative industrial estates at Rajapalayam, Paramakudi and Mandapam. It also insisted upon the establishment of sea-based industries,

namely manufacture of boats, motor boats, fish-nets and fish-canning. Members felt that protection must be given to small industries like fishing against destruction by large scale chemical industries. Manufacture of light instruments like meters etc., must be reserved for women folk so as to provide them with adequate employment. Facilities for ice-apple-canning can be provided for in small scale industries. Marketing facilities must be provided for by the Government for the products of small scale industries.

Manufacture of ancillary industries for heavy industries like the Boiler Plant at Tiruchi and the Hindustan Aircraft Factory at Bangalore must be reserved for the Ramanathapuram district.

Fibres from cocoanut palms, palmyrah trees and kumari plants can be turned into products like brush in this district itself in which these plants grow in abundance. The group demanded co-ordination and co-existence between large scale industries and small scale industries.

MADURAI DISTRICT

(24-8-1963)

MADURAI DISTRICT

The Seminar on Industries for Madurai District was conducted on the 24th August, 1963. Sri R. Venkataraman, Minister for Industries inaugurated the Seminar. Sri A. M. M. Murugappa Chettiar presided over the function. In his introductory speech, Sri E. C. P. Prabhakar, Collector of Madurai District explained the various possibilities and potentialities of starting industries in the District. Sri K. Kamaraj, the Chief Minister, Dr. (Mrs) Soundaram Ramachandran, Union Deputy Minister for Education and Sri R. Venkataraman, Minister for Industries in their speeches requested the industrialists of the district to come forward to start large scale industries.

The following are the reports of the various groups:

I. LARGE SCALE INDUSTRIES

Group Leader : Sri L. Narayanan Chettiar

The main Committee of the Seminar set up a Group for discussing the possibilities for setting up large industries with the available potentialities and recommendations made were discussed. The Sub Group divided itself into the following Groups:

1. Sri S. A. Rahmutullah, M. A.,
Conservator of Forests,
Chairman,
Forest based Industries.
2. Sri A. Marimuthu,
Regional Transport Officer, Madurai,
Chairman,
Machines for Transport Industries.
3. Dr. C. K. P. Menon,
Chairman,
Chemical Industries.
4. Sri O. Govindarajan,
Chairman,
Textile Mill Machinery Industries.

5. Sri M. Alagu Pillai,
Chairman,
Cattle & Livestock based Industries.
6. Sri I. C. Kanagapandian,
Chairman,
Mineral based Industries.
7. Sri K. L. N. Krishnan,
Chairman,
Functional Ancillaries.

1. FOREST AND AGRICULTURAL BASED INDUSTRIES

(a) Madurai being an important fruit producing district with the estimated yield of 25,000 tons of fruits (excluding bananas) the possibility of starting two medium sized canning units each consuming five tons of fresh fruits is feasible. Of these two, one can be on co-operative agency and the other by a private agency. The sites suitable are round about Batlagundu and for each unit an investment of

MADURAI DISTRICT

AREA (in square miles)	...	...	4,910
POPULATION	...	...	3,211,227
INDUSTRIAL ESTATES	...	...	1. Madurai 2. Theni 3. Dindigul
SMALL SCALE INDUSTRIAL UNITS (Government)	...	...	Madurai ... Tool Room, Raw Materials Depot, Common Lease Shop and Textile Mill Parts. Dindigul ... Common Lease Shop, Lock Unit. Kodaikanal ... General Purpose Engineering Workshop. Palni ... Pressed Metal Products.
NO. OF REGISTERED UNITS (Small Scale Industries)	...	...	650
IMPORTANT LARGE SCALE INDUSTRIES	...	...	Textile Mills 20 (15+5) Sugar factories 2

N. B. :—Figures in brackets indicate split up figures of the factories functioning and those either licensed or under construction.

MINERAL WEALTH

Name of Mineral	Chemical Composition	Industrial Application
Bauxite	Aluminium ore containing 42—55% of Al ₂ O ₃ , Cement grade	Located in the Konal Area of Kodaikanal Hills. Reserves 2 million tonnes.
2. Crystalline Limestone	Cement grade	Occurrence in Dindigul and Tirumangalam and Madurai Taluks—Deposit located around Poovandi (27,000 tons) Chunnambur (1 million tons) and Palayam. In Nattam area, 2 million tons of cement grade limestone and 0.75 million tons of dolomite limestone. The limestone is to be worked out for Chetti Nad Cement Factory at Puliyur.

about Rs. 2 lakhs is contemplated including plant and buildings. Sri. Thillai Govindan of Pattiveeranpatti has been requested to work out the proposal and sponsor the unit.

(b) Round about Kodaikanal road, large areas of Vine-yards occur. The surplus grapes which do not readily find market, when there is peak yield and the surplus molasses available with sugar factory provide a good opportunity for starting a brewery to prepare wines and wincarnis for export.

(c) There are 4,000 acres of cardamom plantations in Madurai District and starting a small scale distillations plant for Cardamom oil and its tinctures is also recommended.

(d) There are large areas of Coffee plantations in this district and the inferior quality of coffee namely Robusta which is not sold at attractive prices can be converted into Instant Coffee tablets for which there is a growing demand in the country.

(e) It is also recommended that most of the fruits and other crops like cardamom are harvested during rainy months. Establishing a few electric driers in places centrally situated like Pannaikadu and Thandigudy, where electricity is recently made available, is recommended. The electric driers are long felt need in this tract. This scheme comes under American Aid Programme and so, the aid can be availed of.

(f) **Forest Industries:** The wattle wood available in the Upper Palnis is suitable both in quality and quantity for the manufacture of excellent variety of Particle Board. The question of starting a Particle Board Industry at Kodaikanal itself may seriously be taken up instead of diverting the wood for the South India Viscose Rayon Company at Mettupalayam.

(g) **Card Board Industry:** The forest grass combined with paddy straw and baggasse

from sugar factory will afford adequate raw materials for starting a Card Board Industry of 5 tons capacity costing about Rs. 5 lakhs. Place near Vaigai Dam is ideal where we have suitable site, water and power.

(h) **Lemon Grass Oil:** At present only few stray individuals are engaged in distilling lemon grass oil. The quantity of grass occurring is so large in the areas and the water is so easily available that the possibility of putting up Lemon Grass Oil Factory somewhere near Virupakshi or Pachalur is recommended. The cost may be somewhere between Rs. 50,000 and Rs. 3 lakhs.

(i) **Matchwood Industry:** The Forest Department is planning at the rate of about 400 acres a year with *Ailanthus excelsa*, the best wood for matchsticks. So the possibility of establishing splint factory after five years should be examined. Most of the matchwood plantations are in Gandamanaikanur ex-zamin forests. The factory may be located either at Vaigai Dam or Kadamalaikundu.

(j) The pencil industry at Madras is handicapped for want of suitable timber for manufacture of pencils. It was recommended that the conifers like Cyprus and broad leaved species like the *Alnus* and toon (*Sandana Vembu*) occurring in Upper Palnis may be tested for the suitability. Planting of this species will form part of the Forest Department's work.

(k) Cultivation of Geranium and the distillation of the oil is being done in a small area near Perumalmalai. It is possible to extend the area under this species particularly in the scrubs forests of revenue lands, which are not fit for cultivation for plantation products. Some other species like *Ocimum* which on distillation yield camphor menthol is also suggested for being planted in the Palni hills. Sponsor C. A. B. Farms.

(l) There are a few hundreds of Eucalyptus plantations (bluegum). So distillation plant for eucalyptus oil can be put up at Kodaikanal.

(m) In Cumbum valley annually 15,000 kilograms of lac is grown and much of these produce is exported to other districts for manufacture of dyes, shellac varnish, etc. Utilising this lac, an industry to manufacture fancy articles and ornaments may be started in Cumbum.

(n) It is also recommended that a Banana Research Station for the hill variety and one for cardamom should be opened in the Lower Palnis. The need for these is keenly felt while we have got other research stations for Coffee, fruit and even Cocoa.

2. MACHINES FOR TRANSPORT INDUSTRIES

(a) There are scope and possibilities for the manufacture of the following Auto-Tools in Madurai District. A committee consisting of Sri T. S. Krishna as Chairman, Sri. J. Chelladurai, Sri. V. Rajendran will be requested to work out the proposals.

1. Iron Horse
2. Tools Tray
3. Inspection Lamp
4. Double end spanners
5. Ring spanners
6. Punches and chisels
7. Tommy bars and extensions
8. Wheel wrenches
9. Wash tub or kerosene cleaner
10. Screw Driver
11. Special hammers (Plastic, wooden, rubber, copper, lead, etc.)
12. Adjustable wrench 6", 8", and 10"
13. Ratchets
14. Pipe wrenches
15. Vice Grip pliers,
16. Pliers (cutting, nose)
17. Tyre levers

18. Battery lifter
19. Tube cutter
20. Tube flaring tool
21. Air line coupling
22. Arbor press
23. Pullers (bearing, Bear, Pulleys, Tie rod and Pitman arm etc.)
24. Axle nut spanner
25. Bushing set
26. Stud wrench
27. Piston ring compressor
28. Piston ring file
29. Piston ring groove cleaner
30. Brake shoe plier
31. Spark lighter for welders
32. Air blow nozzle
33. Valve lifters.

AUTO GARAGE SPECIAL PURPOSE TOOLS

1. Oil and Kerosene spray gun
2. Hand grease gun
3. Car washer gun
4. Type pressure gauge-dial type
5. Type pressure gauge-pocket
6. Spray painting equipment
7. Oil discharging pump from barrel
8. Trolley jack 5 ton, 10 ton and 15 ton
9. Mechanical jacks
10. Bearing grease packer
11. Transmission jack
12. Engine Overhauling stand
13. Vacuum gauge
14. Compression gauge
15. De-greasing plant
16. Torque wrench
17. Timing light
18. Tinker's tool kit
19. De-carbonising kit
20. Lubrication swing arm.

MACHINES AND EQUIPMENTS

1. Brake shoe grinder
2. Brake drum lathe
3. Brake shoe rivetter
4. Crack detector

5. Demagnetiser
6. Boring Machine
7. Horning Machine
8. Cam rod aligner
9. Hydraulic press
10. Valve refacer
11. Wheel aligner
12. Electrical analyser
13. Plug doctor
14. Nozzle tester

3. CHEMICAL INDUSTRIES

(a) A perfume distillery in Madurai will be a very profitable concern because a large amount of roses and jasmines are being sent by plane to different places from Madurai every day.

(b) **Malt Extract :** Malt extract is one of the important basic raw materials used in pharmaceutical preparations. It is not manufactured in our State and is being procured from Mysore. This can be prepared from barley and ragi. Scope for malt from barley is greater. Temporarily barley can be obtained from U. P. Meanwhile cultivation of barley can be started in the Kodai Ranges. Cost outlay Rs. 1,50,000.

(c) **Magnesium Trisilicate :** Manufacture can be undertaken from magnesium sulphate and sodium silicate, both of which are being made in India. Cost Rs. 1,50,000.

(d) **Manufacture of organic chemicals:** There are three possible sources :

1. From Neyveli
2. From Darangadara Chemicals and
3. From Sugar Factories.

1. **Neyveli :** There is a proposal to make organic chemicals in Neyveli with German collaboration. Once basic chemicals become available drugs like Sulpha Compounds, Acetylene Salicylic acid and Sodium Salicylate can be manufactured.

2. **Darangadara Chemicals :** From the Hydro chloric Acid and the Calcium Carbonate which is available in Ramnad, acetylene can be made. From this by polymerisation, a number of Organic chemicals can be synthesized.

3. **Sugar Factories :** From the molasses, alcohol may be distilled, part of which may be used for various industries. Any remaining amount of alcohol may be used for manufacture of organic chemicals by conversion to acetic anhydride and then to Ether, Chloroform etc. A distillery may be put up in Madurai.

(e) **Printing Inks and Dyes :** With the starting of the petroleum refinery plant in Tuticorin and the manufacture of fine chemicals in Ramnad or Madurai there is possibility of starting other industries like printing inks and Dyes. Printing ink manufacture would be not only a good enterprise but also a very useful and progressive one.

(f) **Cement :** A geological survey of Madurai District can be made and all small pockets of Calcium Carbonate may be located. These small pockets can be utilised for manufacturing cement on a small scale. Existence of such pockets in Aruppukottai and Theni are already known. These small concerns can be started on a capital of three to four lakhs. Manufacture would be profitable and also under the heading of small scale industry this may be exempted from excise duty. It will help to relieve the cement shortage considerably and save also transport charges.

(g) **Sugar :** Small sugar factories located near sugarcane fields can relieve sugar shortage and can work profitably if exempted from excise duty. Outlay may be 2 to 5 lakhs of rupees. Prof. Lakshminarayanan has been requested to submit a project report for small scale manufacture of cement and sugar.

(h) **Sulphuric Acid :** A four or five ton plant to manufacture sulphuric acid can be

started mainly to meet the requirements of battery manufacturers and other industries in this district alone. Sulphur has to be imported.

(i) **Copper :** A plant for electrolytic purification of copper is essential in the South. Import of copper is banned completely now. So it is essential to conserve all scrap material and obtain purified copper for industrial requirements. This is an essential necessity.

(j) **Artificial Limb manufacture :** A factory for supplying surgical appliances for the handicapped like artificial limbs can be started in Madurai to work in collaboration with the Government Hospital, as in Roehampton (Great Britain). As this is a humanitarian service, Government may consider subsidising this industry to supply limbs at a cheap cost to poor patients.

(k) **Surgical cotton & Sanitary Towels:** Manufacture of Surgical Cotton and Sanitary towels by using modern machinery can increase production and lower cost. There is greater demand than supply of this item. A modern plant with an outlay of about Rs. 10 lakhs can go very far to meet the requirements of this State.

(l) **Adhesive Plaster :** Manufacture of adhesive plaster like Leukoplast and Elasoplast can be started as a small scale industry in Madurai.

(m) **Catgut and Gland products for Medicinal purposes :** (1) **MANUFACTURE OF GLANDULAR PRODUCTS :** Modernised slaughter houses with facilities for cold storage should be set up in Madurai, Tiruchirapalli, Virudhunagar and Tirunelveli. Glands like Thyroid, Pituitary, etc. from the slaughtered animals can be taken immersed and preserved and pooled from these places and medicinal glandular products can be manufactured at Madurai at one centre. Several centres of this type will not be profitable.

(2) **MANUFACTURE OF CATGUT :** Large amount of foreign exchange is now involved inescapably on account of import of Catgut. This can be lessened and even completely done away with, if catgut can be manufactured in large quantity in India. Madurai with its range of cattle and sheep population in the outlying parts of the district and surroundings will become an ideal centre for this. Very large capital is not required. A small cattle farm, research place and sterilising and testing units are required. Capital about Rs. 5 lakhs is required for a beginning. It is to be remembered that in the event of war, this item may not be obtainable at all from outside India. Therefore there is a great necessity to concentrate on this item as a very essential and urgent venture.

(n) **Glass Industry :** (a) **LENS MANUFACTURE :** At present there is no lens Factory in India. Japan is now making lens from paddy husk which contains a high grade silica. A factory can be located in a convenient place in Madurai District with the collaboration of the Japanese.

(b) **VIALS, AMPOULES AND SPECIMEN JARS :** Good quality transparent glass is required for making these. So manufacture of glass can be considered by making use of the white sand in Rameswaram with the special type of lime found in Ramnad or by means of shells available in plenty all along the shores.

(o) **Animal Diets :** Manufacture and supply of standardised balanced cube diets for laboratory and domestic animals from cheap raw materials available in this District like bran, husk, straw, ragi, fish meal, bone meal, etc., will be a profitable venture. An outlay of a few thousand rupees only may be necessary.

(p) **Medicinal Plants :** Scientific method of cultivation of selected species of medicinal plants may be attempted on the Kodai and Palni ranges with the collaboration of the

Forest Department. The following plants may be considered for cultivation. (1) Eucalyptus; (2) Senna; (3) Squill; (4) Digitalis; (5) Chinamon; (6) Lemon grass and (7) Rauwolfia. Research in this direction may yield results beyond all expectation. Machinery for extraction, purification and preparation of active medicinal ingredients may be located in any suitable place in the south.

(q) **Starch:** Large scale manufacture of tapioca and maize starch for pharmaceutical purposes. The former can be grown on the banks of Vaigai and cago can be produced from this.

(r) **Bees wax:** A collection centre may be located in Madurai District to collect crude wax from various co-operative bee hive farms. Purification and manufacture of yellow and white bees wax may be undertaken. This is a very useful item for many purposes, medicinal and otherwise.

(s) **Papain:** Manufacture of papain from Papaya fruit may be a very useful small scale enterprise.

(t) **Collection of Lycopodium spores:** It is required for pyrotechnic work. At present it is stated that it is selling at a rate of Rs. 200 per pound. The Forest Department may consider this suggestion to grow more of this at Kodai, Palni and Nilgiri ranges for marketing.

(u) **Packing material:** The Forest Department may also consider manufacture of packing materials like cardboard, Tow, Pulp, Cork, Wooden planks and wooden shavings.

(v) **Chicken extract:** A plant to manufacture chicken extract can be set up with improved facilities for poultry farming and left to the consideration of Animal Husbandry Department.

(w) **Domestic appliances:**— Manufacture of miscellaneous and domestic appliances

like clocks, room coolers, etc., may be very useful.

(x) **Hard Board:**— Manufacture of hard board from fibre from surplus waste sugarcane (bagasee) may be considered as a useful industry to meet with the increasing demands.

(y) **Confectionery Factory:**—Using sugar which cannot be marketed, this may be a useful adjunct to many sugar factories (Large and Small Scale).

Liquid can be extracted from cashew shells and brake fluid and varnishes can be prepared for industrial use.

4. TEXTILE MILL MACHINERY

(a) The following items of textile machinery are suggested to be manufactured at Madurai District.

1. Narrow width ring frame.
2. High drafting equipment.
3. High speed plug type spindles.
4. High Speed inserts.
5. Anti wedge rings.
6. Umbrella creel.
7. Vertical Vibrator for scutchers in blow room.
8. Automatic lap doffing unit.
9. Lap weighing scales for automatic recording.
10. Metallic card clothing.
11. Conversion kit for change diameter ears.
12. High production attachment (Cross Roll Varga)
13. Automatic card strippers.
14. High speed simplex frames rovomatic type.
15. Travelling cleaners.
16. Electronic slub catchers for winders.
17. Electronic weft feeler machine in changing automatic looms.
18. Automatic looks.
19. Evenness testers for slivers and yarn.
20. Testing equipment suitable for metric system,

21. Machinery for bonded non-woven fabrics.
22. Knitting machinery.

It is suggested to start three factories one for machinery, one for conversion accessories and another for instruments.

The broad-gauge railway line is expected to be extended upto Dindigul. Hence the factories are suggested to be put up at Dindigul.

The capital requirement for machinery manufacture is very high. Hence a few industrialists could join together and enter into collaboration.

A quality control laboratory can be set up under the auspices of the District Industrial Centre.

5. CATTLE & LIVESTOCK BASED INDUSTRIES

(a) (i) **Industrial aspects of slaughter house bi-products:**— The Sub-group is of opinion that the slaughter house wastes and bi-products such as horns, hooves, bones, blood and other waste products could be utilised for the manufacturing of fertiliser. Unit for this purpose will have good prospects.

(ii) Slaughter house bi-products such as tail, hide, trimmings, uterms and trachea could be utilised for the manufacturing of gelatin which is widely used in Medical field, pharmaceuticals and confectionaries. A plant for the manufacture for gelatin could be set up at Madurai.

(iii) The various endocrine glands and pancreas that could be collected from the slaughter houses could be better used by preparing glandular extracts. A plant for this purpose could be started at Madurai.

(b) **Wool aspect:** Madurai District as a whole advancing well in cotton textile line can also do very well in wool textile in the manufacture of carpets, blankets and other items

that could be prepared from the coarse wool available in the District and the neighbouring Districts.

(e) There are tannery units in a concentrated form at Dindigul. They could be assisted to put on modern lines with better processing facilities.

(d) **Poultry:** A chicken extract plant for the production of standard quality chicken extract will have good prospects.

(e) An unit for the manufacture of quality poultry equipments such as incubators, brooders etc., could also be started in view of the increasing demand for quality poultry equipments and the bright scope of poultry forming.

(f) A Buffalo Farm can be set up to augment the milk supply for the pasteurisation scheme and necessary lands to the extent of 1,000 acres may be assigned by the Government.

6. MINERAL BASED INDUSTRIES

(a) In view of the extensive high quality Bauxite deposit in upper Palani range and Kodai, an Aluminium plant may be set up in public sector.

(b) Another intensive geological survey may be taken up for the District in view of the prices of mica, graphite and special quality quartz.

7. FUNCTIONAL ANCILLARIES

(a) **Textiles:** There is very good scope for manufacture and supply of Textile Mill parts to the specific requirements of the big Textile Mills in and around Madurai. Good planning should be made to produce specific spares at cheap rates.

Electric control equipments, Fluted rollers and Flyers are some of the items which can substitute the imports.

(b) **High Pressure Boiler Plant, Trichy:**— The High Pressure Boiler Plant, Trichy requires the following spares:—

1. Electric Motors
2. Gear Boxes of all types
3. Couplings and clutches
4. Variator type gear boxes
5. Convertors and rectifiers
6. Thermometers
7. Monometers
8. Analysers
9. Water Gauges
10. Control and measuring instruments
11. Chains-link and plate type
12. Lifting equipments
13. Oil gauges and grease cups or nipples
14. Ball and Roller bearings
15. Bolts, Nuts, rivets, washers, split pins, studs etc.,

Industrialists who are interested in supply of above components may be asked to write to the Deputy Controller of Stores, High pressure Boiler plant, Tiruchi. Sri N. Kannayiram to lead a Committee and work out proposals.

(e) **Automobile spare parts:**— Number of small units can be started for supply of Automobile spare parts. Planning should be done for mass production of particular spare parts at cheap prices and to very accurate dimensions.

(d) **Foundries and Engineering Firms:**— Particular variety of small tools

required by the local foundries and engineering firms can be made in small shops on Cottage Industry basis. These firms can also make Carpentry Blacksmithy tools also.

(e) **Springs, Spring washers & Truck Chains:**— These items can be manufactured in small scale and supplied to all Industries. This will help to solve the problems of major industries to get specific size of springs, spring washers etc., Sri S. Vetrivel to follow up.

The following general recommendations are also made:

1. To set up a factory for manufacture of instruments (electrical, automobile, mechanical etc.)
2. To set up a Fertiliser factory.
3. To manufacture taffeta dry cells tarpaulins, fungicides, pesticides etc.,
4. To set up a Structural and steel rolling mills, steel castings, small size agricultural tractors, machine tool factory.
5. To review the setting up of a factory for the manufacture of speciality paper from cotton seed linters in view of the abundant availability of cotton seeds in this district. Sri Venkatakrishna Udupa of Electro Chemical Research Institute, Karaikudi was kind enough to inform the Group that the research findings will always be made available to the entrepreneurs for setting up new projects.

II. SMALL INDUSTRIES GROUP

Group Leader: Sri. S. Vetrivale

General: Small scale industries can play a large and effective part in the rapid industrialization of any territory. While a well-balanced set up of large, medium and small industries is necessary for integrated industrial development, there are certain factors relating to technical know-how, finance, power, transport etc., which stand in the way of rapid achievement of objectives in the large and medium scale sector. This group on small scale industries, therefore, recommends to this Seminar and, through it, to the Follow-up Committee that the strengthening of the small scale sector may be taken as an immediate objective since it is more easily feasible and can also pave the way for large scale developments to follow.

While the Governments at the Centre and at the state level are aware of the importance of this sector and have created several agencies to provide assistance to prospective and existing industries in various ways, unfortunately, such assistance is not effective enough and often falls far short of expectations and needs. If conditions could be created to enable industrial units to derive even a reasonable percentage of assistance from these agencies, the results achieved would have increased several-fold. Certain aspects of this problem will be touched upon in the following recommendations; but, it is mainly for the Governments to study this in greater detail and to reduce the vast gap between the ideal aimed at and the results being achieved.

New Industries: With interest created in recent years in the small industries field

and further intensified by this Seminar, one of the problems facing would-be industrialists is the selection of a suitable industry to fit technical and commercial possibilities and falling within their resources. The services of an Industrial Consultant will be extremely useful for this purpose. It was announced by our State Minister for Industries some time back that they were likely to appoint such a consultant shortly and it is strongly urged that, when appointed, he may be stationed at Madurai so that his services could be more easily availed of by the industrially under-developed moffusil areas of the state.

There are very few foundries in our state for steel castings and malleable castings; and none in our district. One or two firms have expressed interest in these projects and all possible help should be extended to them by way of supply of electricity at special rates and other means. If private parties are not coming forward, the Government themselves may start model units so that private enterprises may be encouraged to follow. There are reports that the Government are thinking of starting model units for grey iron castings in various centres. They will only act as competitors to private foundries and could easily be dispensed with in favour of model units for steel castings and malleables.

There are possibilities of manufacturing articles like cement and cane sugar within the capital limitations of the small scale sector though at slightly increased cost of production because of the impossibility of total mechanisation of handling etc. Such ventures should

be encouraged by the Government by providing relief from excise duties and exempting them from wage-board awards.

It is certainly useful to have demonstration and model factories established and operated by the Government. But, if they are also expected to function as profit-earning establishments, they lose substantially in their usefulness because of the fact that the staff cease to have either the time or inclination to perform the functions of training and serving as an example to the private small scale sector. In many cases, they end up by working in direct competition to the small scale sector whom they started out, in the first instance, to help. The Government are requested to initiate steps to end this anomaly.

Theoretically, no permission or licence is necessary for starting any small scale industry. But in actual practice, various items like radios, domestic appliances (with even a small percentage of imported raw material or component), refrigerators etc, do require the approval of the Development Commissioner (S. S. I.) and even of the Development Wing. Even after such approval, further difficulties and delays arise in issue of import licences and release of indigenous scarce raw materials. All these complicated procedures should be avoided or, in the alternative, as in the case of large scale industrial licensing, once the plan is approved, all required facilities should be made available as a direct result of the approval.

Development of certain industries in our state is far backward when compared to activities in other states. They include machine tools, automobile parts, textile mill parts, hand tools, electric appliances, electric fans etc. A list of such industries should be prepared by the Government and special care should be taken to give them suitable help in the matter of raw materials, imported components etc.

Raw materials : It is an accepted fact that Madras State is extremely deficient in minerals, metallic ores, forest wealth and other natural resources. Under such circumstances, industries become possible only by use of raw materials from other areas and out of imported raw materials and components. This fact should be given adequate consideration to see that a greater share of such scarce materials is earmarked for this State to make up, at least partly, for natural deficiencies.

The most pressing problem now facing small industries is non-availability of adequate quantity of raw materials. While conceding that, in a growing economy, shortages are inevitable to a certain extent, it is natural to expect that whatever small quantity is available should be distributed equitably not only between one state and another but also between the large scale sector and its junior counterpart. The vulnerable small scale sector is getting a much smaller share than it is entitled to (according to a recent report by a Ford Foundation Team). The Government of India which as a matter of declared policy, "emphasizes equal if not preferential advantage to small producers", should devise suitable methods to eliminate this glaring injustice.

The same position exists in the case of imported raw materials and components also. Foreign exchange set apart for this purpose was Rs. 16.2 crores in 1961-62. It was drastically reduced to Rs. 9.5 crores for 1962-63 and is expected to be of the order of Rs. 10 to Rs. 12 crores for the current year. Because of this reduction, import assistance is completely denied to most new entrants with the result that regional imbalances in development of industries like machine tools, electrical accessories and a host of other items in which our State and district are lagging far behind, continue unabated. The allotment should be increased to a minimum of Rs. 20 crores and regional allocations made in relation to development goals.

As is but natural in the present national situation, thoughts on defence production and export promotion are very much in the air. But, it does not seem to be right to deny raw materials to small industries on the score that they are not engaged in either of these two activities. From the nature of things, it is not possible for the thousands of small units in the country to change over to defence or export overnight. They can however continue to serve the country by stepping into civil production when the larger units have switched over to such vital activities. Denial of raw materials will only result in disruption of the national economy without compensatory benefits in the fields of defence or export.

The Government should ensure that all existing small scale units get raw materials sufficient for at least one shift operation before encouraging the establishment of additional units for the same line of production.

The raw materials depot at Madurai should function as a registered stock-holder so that industries can get supplies of iron and steel items at Column I rates instead of having to pay at Column II rates plus freight from Madras as is the case at present. They should also stock defectives, cuttings and shorts so that units in Madurai may be enabled to compete effectively with outside units in the manufacture of products which do not require prime quality materials.

It is impossible to get even small quantities of cement for essential uses like machine foundations etc. A simple system should be devised for prompt supply after due investigation.

Ancillaries : A small panel of large and small scale industries in Madurai may be formed under the auspices of the proposed Follow-up Committee so as to investigate how far the small units can effectively function as suppliers of ancillaries to the larger units at

prices competitive to their present sources of supply.

The Follow-up Committee as well as the local officers of the Industries Department may collect data on possibilities of supply of ancillaries to large scale units in Madras, Tiruchi etc. and help in procuring orders.

Finance: Government schemes for financial assistance directly by themselves and indirectly through banks are very cumbersome and small industrialists are rarely able to make effective use of such facilities. It is recommended that firms now grouped as small industries be further subdivided into those with capital of less than Rs. 1 lakh and those with larger capital and separate simplified procedures developed for each group.

Applications to the N. S. I. C. for hire purchase facilities take several months and sometimes, over a year to be processed and passed. Much of the delay could probably be eliminated if applications for at least small values could be processed and sanctioned at the Madras branch of the N. S. I. C. itself.

Labour enactments and other difficulties : The managerial resources of small industries which should be engaged in essential aspects of business like planning, production, sales promotion etc. are dissipated in having to attend to the provisions of a host of labour enactments. Moreover, it is not right to assume that what is considered necessary in the interest of Labour can be borne by all industrialists large and small alike. Many Acts like the Factories Act, Employees' State Insurance Act, Workman's Compensation Act, Provident Funds Act, Minimum Wages Act, Payment of Wages Act, etc. could be simplified and merged together into a single enactment say, The Small Industries Labour Relations Act, to fall within the capacity and easy compliance of small industries.

The provision in the District Municipalities Act that installation licences for machinery

can be sanctioned only by the Council leads to extreme delays. Ways should be devised to eliminate this. Moreover, once a licence has been obtained from the municipality for a certain maximum horse power, the occupier should then be free to make changes or shift-ings to suit his needs without again having to go back to the municipality for permission for such changes.

Conclusion : Elimination of drawbacks in the existing schemes for supply of raw materials and other assistance will go a long way in increasing the tempo of small scale industrialisation. But, this may be a continuing problem and struggle and it is recommended that a District Small Industries Association may be formed to press for changes and improvements wherever necessary.

III. KHADI, VILLAGE AND COTTAGE INDUSTRIES AND HANDICRAFTS

Group Leader : Sri K. Rajaram, M. L. C.

1. 60 Carpentry and Blacksmithy Units and Societies have to be organised at an estimated cost of Rs. 12 lakhs for giving employment to 8,460 carpenters and Blacksmiths.

2. 28 Pottery Units and Co-operative Societies have to be organised at an estimated cost of Rs. 1,38,000 for providing employment to 2,762 potters.

3. 25 Oil Pressers Societies have to be organised at an estimated cost of Rs. 5 lakhs for providing employment to 482 oil pressers.

4. 10 Handpounding Societies at an estimated cost of Rs. 1 lakh have to be organised for providing employment to 913 workers.

5. 20 Leather Units and Societies have to be organised at an estimated cost of Rs. 4,60,000 for providing employment to 3,900 Tanners and cobblers.

6. 30 Brick and Lime Industrial Units and Societies have to be organised for providing employment to 879 workers at an estimated cost of Rs. 1,50,000.

7. 15 Beekeeping Units and Nurseries have to be organised for providing employment to 643 Bee-keepers at an estimated cost of Rs. 97,500.

8. 23 Palmgur Societies may be provided with an additional financial assistance of Rs. 50,000.

9. 10 more flaying centres have to be opened in this District-the total estimated cost would come to Rs. 72,000.

10. 5 more model tanneries have to be organised. The anticipated expenditure would come to Rs. 1,10,000.

11. 5 more Soap Units have to be organised at an estimated cost of Rs. 50,000.

12. 3 fruit preservation centres have to be started at Batlagundu, Periakulam and Ambathurai. The estimated cost for establishing these centres would come to Rs. 75,000.

13. 2 more Cumbly weaving training centres have to be organised at a cost of Rs. 30,000.

14. 34 Training centres have to be organised for educated unemployed: one for each block, for giving training in turning, sheet metal works, electrical motor repairs etc., at an estimated cost of Rs. 6,80,000.

KHADI PROGRAMME

(1) All the Panchayats may be requested to implement the orders issued in G. O. Ms. No. 3387, R. D. L. A., dated 26-12-1961 by introducing 20 Kisan Charkhas per year in their jurisdictions.

(2) The services of local carpenters may be utilised by Panchayats for manufacturing Charkhas for distribution to the families in their jurisdictions.

(3) All the Panchayats may be persuaded to grow cotton required for spinning in their jurisdictions or they should purchase and stock if dry lands are not available.

(4) The yarn produced in the Panchayats should be converted into cloth by utilising the services of weavers in the locality.

Margins required on key loans and open loans should be only about 10 or 15 percent.

Rediscount facilities should be made available to banks freely without imposing any ceilings on the limits. Interest should be the same as bank rate or a little high.

Banks must sanction loans and facilities more expeditiously than at present.

In order to enable smaller banks to participate in deferred payment scheme in industries the larger banks may extend their counter-guarantee to smaller banks for such deferred payments and the larger banks can also directly give higher limits for such purposes.

Recent suggestion by the Governor of the Reserve Bank for joint lending by banks to industries may be taken up for implementation.

The State Bank is extending liberal facilities for financing small-scale industries and entrepreneurs may avail of these facilities in as large a measure as possible.

It is also desirable if banks extend facilities for hire purchase of consumer goods. If this is done there will be more sales of consumer goods and consequently there will be a growth of industries in general.

Banks should underwrite new issues by companies a little more freely than now and also give short term loans on immovable securities more liberally.

Banks must also make use of refinance facilities given by the Refinance Corporation in greater measure than at present.

If banks are given some tax relief in respect of finances which they are able to place for development of newly started industries it may serve as an incentive for banks to set up substantial amounts to such purposes.

I. C. I. C. I. (Industrial Credit and Investment Corporation of India), I. F. C. (Industrial Finance Corporation) and

State Finance Corporations must play a greater role in regard to the underwriting of shares and reverse the present trend of perceptible increase in the ratio of Preference Shares to Equity to ensure a financial balance. It is heartening to note that the Union Government have advised these institutions on these lines and it is hoped that these institutions will render assistance to the maximum possible extent. In order to make finance more easily available for new industrial undertakings a consortium consisting of the various financial agencies should be organised to study these undertakings with a view to buying their shares.

I. C. I. C. I. and I. F. C. must also make their lending policy flexible and must give assistance quickly.

M. I. I. C. (Madras Industrial Investment Corporation) is doing good work and is assisting new entrepreneurs greatly. It has been growing and serving in a very practical way. At the moment there is paucity of funds. Therefore Government should find ways and means of augmenting its resources.

L. I. C. (Life Insurance Corporation) is the major institution which receives the savings of the people in our country and therefore it should play a major part in financing new industrial undertaking. It should underwrite new issues as much as possible and also keep the morale of the share market in general.

General Insurance Companies: These companies should play a more useful part than now in the promotion of new industries by subscribing to the share capital of new ventures. At present these companies are subscribing to the share capital of new ventures in a small way. The L. I. C. when subscribing to the capital of new ventures need not insist upon insurance being given to a particular company in preference to others and thereby enable all companies to get business and to help new ventures in a larger measure.

Foreign Capital: Apart from the domestic resources industrialists have to secure finances from foreign countries. This may be in the form of machineries and technique. Government should examine such requirements without delay because procedural delays at Government level generally discourage the foreign investor and his initiative. Taxation policy also must be attractive for the foreign investor.

Inter-Company Investment: Under the Companies Act and the Capital Issue Control, a company is restrained from diversifying its activities in other fields or making

investment in other companies of surplus funds without sanction of Government. This limitation makes the utilisation of accumulated funds difficult or sometimes impossible. Such restriction is unnecessary. Surplus funds should be used for the growth of industry in general.

Present taxation policy: As the present taxation policy does not allow any great incentive for improvement of existing industries and for formation of new projects it is suggested that Government may give sufficient reliefs in order to encourage industries.

If weavers are not readily available, weavers can be brought from other areas and they may be settled in the Panchayat areas. A sum of Rs. 500 per weaver will be given by the Khadi and Village Industries Commission Bombay for rehabilitating him under the "Rehabilitation Scheme".

(5) The Panchayats may be requested to open "Apna Bhandar" where Khadi, Charkhas, Handpounded rice, Chekku oil, Soap, Match boxes, Chappals, honey and other Village Industries articles can be sold or exchanged for hanks.

(6) The Panchayats may be requested to induce their members and the Public to spin and get their requirements of cloth by exchanging the yarn produced by them.

(7) The Panchayats may be requested to be self-sufficient in clothing.

(8) The Panchayat Unions may be requested to induce their members, teachers and pupils to wear Khadi as National Dress.

(9) The Panchayats may be requested to conduct Khadi and Village Industries Exhibitions during fairs and festivals.

(10) All the Panchayat Unions may be requested to arrange for mass spinning on the 2nd October and 30th January every year and to donate the hanks produced on those solemn occasions for the community to be woven and redistributed to the winners in spinning competitions on proper occasions, and also to the self-sufficiency spinners by arranging a public meeting under the presidency of the elders of the Villages.

IV. COMMITTEE FOR FINANCING INDUSTRIES

Group Leader : Sri L. ALAGUSUNDARAM CHETTIAR

Ours is a growing economy in which all resources must be carefully harnessed and utilized for the welfare of the State such as promotion of industries, agriculture and social upliftment.

The process of industrial growth requires as one of its accompanying structural changes within the economy, the development of a capital market that will provide an adequate and properly distributed supply of finance to those entrepreneurs—whether public or private—who are setting up new industrial plants or expanding existing ones. While finance itself produces no output until capital equipment and raw materials are purchased with it, the availability of money and credit permits entrepreneurs to gain control of the real resources which enable them to engage in industry by producing and distributing industrial products. At an early stage of development the would-be entrepreneurs normally find their own financial resources inadequate and most resort to external sources. The market through which such finance is made available is the capital market which consists of those institutions through whose services the would-be demanders of finance are able to meet or gain access to either direct suppliers of financial capital or various intermediate supplying institutions to which, in turn, ultimate suppliers are willing to entrust their financial resources in the hope of a return.

The capital market in our country is generally shy especially the available surpluses with the private capitalists. Industrial investment would be relatively unattractive to them

in the earlier stages of industrialization. They prefer to invest available surpluses in Banks and other institutions where savings can be deposited. The Banking system in our country is well organised and it is rendering a very good and useful service for the growth of commerce and industry.

The organised banking system and the life insurance system have been meeting the new industrial financing requirements to a great extent and where these systems had not been able to meet the requirements, special institutions have been set up to meet such demands. We have therefore a good set up to harness the savings and resources of the country and utilise the available funds for the industrial development of our country. If all these institutions are practical in their outlook and little more flexible in the matter of giving assistance most of the difficulties, which industrialists have, can be solved advantageously for the growth of industries. My group has discussed at length the various credit facilities available in the country for industries.

Bank credit: Although bank credit to industries has increased it has not been commensurate with the needs.

It is important that in the first instance deposits with banks are increased to enable banks to play a more effective role to finance industries. It is also felt that the Reserve Bank should not impose rigid rules in the matter of the ratio of advances to deposits. It will be interesting to note that in Japan the ratio is about 120 percent whereas in our country it is 80 percent.

V. TECHNO-EDUCATION-PLANS FOR DEVELOPMENT IN MADURAI DISTRICT

Group Leader : Sri T. Manikkavasagam Chettiar

INTRODUCTION

From ancient times Madurai has prospered as a seat of learning and culture. In moving the technological progress of the age it has attracted the establishment of Engineering College and Institute of Management Studies (one of the five in India) a full-fledged Polytechnic run by Government, a Junior Technical School attached to that Polytechnic, two Industrial Training Institutes and two similar trade Schools (Loyola Technical Institute, Madurai and Pasumalai Trade School). That this will not be able to produce sufficient number of Engineers, Supervisors and Technicians to cope up with the expanding horizon of Industrial activity in the District goes without saying. That considerable progress must be made for turning out **quality** Engineers, **Creative** technologists and **able** craftsman is not probably so obvious. This paper intends to present some measures to tackle both these problems and to give concrete suggestions for improvement in the field of Techno-Education.

Expansion programme for Engineering and Technological Education: The optimum ratio index of technical man power is found in Table 1, which analyses the need for technical personnel of other categories compared to every Research worker.

Table 1

Research Worker	...	1
Design and Development Engineers	...	5
Operation and Maintenance Engineers	...	25
Technologists	...	25
Supervisors Personnel	...	125
Technicians	...	1000

The pattern of technical education in India follows a fairly demarcated area assigning particular categories of people for these different types of jobs. Table 2 indicates the pattern.

Table 2

Research Workers	...	Ph. D. Level
Design & Development Engineers	...	M. Sc. Level
Operating and Maintenance Engineers (including Application Engineers and Sales Engineers)	...	First Degree holder
Supervisory personnel	...	Technician Diploma holders
Craftsman	...	Junior Technical School certificate holders; craftsman certificate holders.

10,000 Trainees per year-needs of Madurai: Considering the total population of the Madurai District together with the pace of contemplated industrialisation, 10,000 trainees per annum is the target to be aimed at.

In course of about 25 years, this would bring about a Craftsman force of 2.5 lakhs. This will be the saturation value, considering the average service span of workers. If the take-off of the industrialisation is to be

achieved within the period of the next 10 years—as had been suggested—this target of training up 10,000 should be achieved by then. Or in other words, 5,000 Craftsman should be annually trained by the end of the 4th Plan and this capacity should be increased to 10,000 in the 5th Plan.

Having this as the basis, then, Technical Man power annual training requirement for the district will be as in Table 3.

Table 3

Categories	No. of seats required	Total No. of institutions required	Existing institutions	Future demand of Institutions
Doctors	...	5	May be trained at Higher Technological Institutes outside Madurai.	
Master Degree holders	...	25	1	1
First Degree holders	...	125 + 125	1 + 1	1
Diploma holders	...	625	5	4
Craftsmen	...	5000	15	10

Starting of Post-Graduate Sections in the Engineering College:— This would involve setting up a Post-Graduate section in the existing Engineering College. The following courses of study leading to M. Sc. Engineering degree may be contemplated.

1. Mechanical ... Industrial Engineering
2. Electrical ... Applied Electronics and Servo-mechanism or power System Engineering.
3. Civil ... Soil Mechanics or Public Health Engineering.

One more College of Technology in Public Sector: It would also mean setting up another

Engineering College preferably a College of Technology leading to the training of Technologists in various fields as follows:

1. Textile Technology
2. Chemical Technology
3. Metallurgy
4. Industrial Electronics
5. Production Technology
6. Power Engineering
7. Instrumentation

Four more Polytechnics for the District: It will also be seen from Table 3 that four more polytechnics are required in the district. It is recommended that these are located at Tirunagar, Palani, Dindigul and Usilampatti. This will cater to both the ever-demanding

urban population at Madurai as well as to the more needy rural population. Courses in the following subjects are to be designed and introduced in the Polytechnics to meet the existing and potential needs of industries :—

1. Textile
2. Industrial Electronics
3. Communication
4. Power
5. Production
6. Plastic Technology
7. Chemical Technology
8. Machine Tools
9. Metallurgy
10. Instrumentation

An Industrial Training Institute for every taluk : Industrial Training Institutes may be set up at the 8 Taluks head quarters to cater to the needs of each Taluk. It is felt that in addition to the existing courses, the following courses may be advantageously introduced :

1. Card Room Fittings
2. Ring Room Fittings
3. Weaving Preparation
4. Weaving
5. Bleaching and Dyeing
6. Knitting
7. Watch repairing
8. Radio Servicing (Tubes and Transistors)
9. Servicing of Sound Engineering Equipments.
10. Hospital Equipment
11. Armature Winding
12. Glass Blowing
13. Plastic Moulding
14. Toy Making
15. Sanitary Engineering
16. Plumbing.

The existing Institutes also must be strengthened. This can be done by expanding the capacity of the Institutes and by allowing them to undertake job work.

A pilot project : The basic skill necessary in any craftsmen training relates to bench-fitting. It is estimated that 80% of the trainees at Craftsmen level do well if they are given bench-fitting work continuously for 6 months before embarking upon the special trades. This part of training costs less and will enable the students to pick up other trades easily.

As a demonstration of the above idea suggested by Sri A. Sripada Rao, Development Engineer, M/s. T. V. S. & Sons (P) Ltd., Rev. Fr. Sama, S. J., Principal of the Loyola Technical Institute, Madurai was requested to be incharge of a Pilot Project to train the first batch of 16 students at his institute for a period of 6 months in the first instance and he readily agreed. These trainees will be selected by Rev. Fr. Sama from the Madurai Employment Exchange and the training will be given free of cost by the Loyola Technical Institute.

The Pilot Project may be run by an Expert Advisory Committee consisting of the following Captains of Industry :—

1. Sri T. Manikkavasagam,
Meenakshi Mills, Madurai.
2. „ R. Ramachandaran, Director,
T. V. S. & Sons (P) Ltd., Madurai.
3. „ L. Narayanan Chettiar,
Visalakshi Mills, Madurai.
4. „ T. K. Sivasamban,
Madurai Mills, Madurai.
5. „ A. Sripada Rao,
Development Engineer,
T. V. S. & Sons. (P) Ltd.,
Madurai (Secretary.)
6. Rev. Fr. Sama. S. J.,
Principal, Loyola Technical Institute,
Madurai (Convenor)

This Committee will be in charge of supplying technical know-how, equipment and other needs and amenities to make the Pilot Project a success.

The first training session of this Experiment will commence on the 24th August 1968.

Emphasis on Rural Industrialisation-Role of Panchayat Unions : The Committee is of the view that this idea should be taken up by all the Panchayat Unions in the district and the Extension officers (Industries) attached to the Panchayat Unions can be incharge of these courses in rural areas.

The committee is of the unanimous view that as suggested by Sri R. Srinivasan, Deputy Director, Social Education Organisers' Training Centre, Gandhigram, the rural areas afford also equal opportunities for industrialisation, if properly tapped and this Pilot Project will be particularly suited to be extended to rural parts and it is hoped that the Panchayat Union Commissioners will take all steps to see that this Project is carried to the masses in rural areas.

Popularisation of Technical Training-Preparation of a Directory—Starting of a Central Hostel : It is very saddening to note that several students living in rural areas who should show much more promise towards technical trades and engineering education go about their lives without being aware of the opportunities available in urban areas. Conducting courses for craftsmen at various Taluk headquarters will certainly bring such people to a realisation of such opportunities. But this is possible only if some supplementary work is undertaken to popularise technical trades. It has been suggested that staff members and final year students from Polytechnics and Industrial Training Institutes make trips to several villages and give talks on the opportunities available. But this does not seem to be a practicable suggestion. Instead, it may be much better if the village schools

send some of their staff members for tour to well-developed Polytechnics and Industrial Training Institutes to catch a vision of technical education; these, in turn, can enthuse their students with the prospects of technical education and counsel them suitably.

It is also suggested that a Directory may be brought out showing the various training facilities available in the District by the Madurai Productivity Council. It was also felt that the services of the All India Radio may be requested to add technical information in their school programmes in a greater measure.

It is felt that many poor students are unable to prosecute their studies in the technical institutions due to financial causes. It has been suggested that a Central Hostel for such poor students may be started in Madurai City and run on Central subsidy.

Science in Schools-Improvisation of Aids-Starting of a Laboratory Glass-Ware Unit : No amount of enthusiasm whipped up among the school children will enable the students to become good technicians unless there is a strong foundation in Science. The suggestion of starting of Science clubs in various schools merits attention. This will indeed help in creating technical bias among the high school students. In this regard, the list of improvised side given by the Co-ordinator, Thiagarajar College of Preceptors merits consideration (vide Annexure 3 [c]).

In this connection, the Committee felt that if a laboratory glass-ware unit could be started in the Industrial Estate, Madurai, it may be able to supply the much needed laboratory equipment to schools and there is a great demand for the same.

Polytechnic for Women at Madurai : With the increasing employment of women in modern industrial economy, it is only fitting that facilities affording training to them are extended rapidly. One Polytechnic

or girls at Madurai with the following Diploma courses is recommended :—

1. Garment making
2. Electronics.
3. Industrial Secretarial Course
4. Catering.

Industrial Training Institute Certificate Courses for Girls: Four Technical Training Institutes may also be run for girls in Madurai, Dindigul, Melur and Periakulam with the following Certificate courses.

1. Tailoring
2. Laundering
3. Radio Servicing
4. Watch Repairing
5. Knitting
6. Painting
7. Catering

“Further Education”—Evening Classes: It is imperative in all our training programmes to provide “Vertical Mobility” for the workers to improve their efficiency and status. In any group there is bound to be some brilliant men who would like to move upward. If opportunities do not exist, frustration sets in. Hence it is very important that craftsmen are given opportunities to become technicians and technicians must have facilities to become technologists or engineers. Since this is primarily for the advancement of the individuals, it should be at the expenses of the individuals or in other words, the training can very well be given in the evening. This will relieve the pressure upon the capacity of the institutions catering to regular students during the day time.

The Tamilnad Polytechnic has introduced evening courses for the workers in industries to take up their L. E. E. and L. M. E. Examinations. This course should be made full use of. Similar facilities must be extended to diploma holders also to improve their status by obtaining a degree. It is also suggested that evening classes by part-time instructors may

be arranged for those working willing to have further education and the Bifurcated Course of studies in high schools may be utilised also.

Training Programme: Programmes are also needed to develop workers, Supervisors and Managers. The following outline is a broad indication of the same:

(1) **Workers' Education:** The Chamber of Commerce, the Madurai Productivity Council, and the local Trade Unions should jointly formulate a programme of Worker's education partly on Company time and partly on worker's own time. (It is not the same thing as night classes in literacy where 3 R's alone are taught). This programme can be imparted to intelligent illiterates also and will prove useful. An illiterate worker can be oriented in the complexities of industrial life and responsibilities of good citizenship through audio visual aids and talks in a language which he understands. If the training is to be on worker's own time, the Companies must provide necessary incentives to them such as Rs. 25 worth of National Savings Certificates on keeping 90% attendance. The programmes would be of 15 day's duration, conducted every evening for two hours on week days in Tamil by instructors drawn from teaching profession. The Chamber of Commerce or the Productivity Council should appoint a Sub-Committee to work out details and enlist the co-operation of the several interests, particularly the Trade Union Leaders, if the idea is to be pursued further.

(2) **Supervisor's Training:** There is a three pronged approach to this viz.,

(1) 15 days' supervisory programmes of training available from National Productivity Council, with another 10 days' Appreciation Course in work study methods after 3 months with a follow-up session after a year.

(2) One year's Certificate course in Foremanship and Supervision of 4½ hours per

week (2½ hours on each day for 2 days in a week) in the evenings, now being successfully conducted at Jamshedpur and Baroda for the fourth year with 50% financial aid from All India Council for Technical Education, New Delhi. All matriculates, English knowing personnel in Supervisory position should be brought under this scheme and be trained. Each Company must have all its supervisors trained under this scheme over a period of 5 to 7 years.

The Chamber of Commerce should initiate with the AICTE, and training should be imparted under the aegis and collaboration of training institutions like the Madurai Institute of Management Studies. The Companies should sponsor candidates and pay fees. The Chamber should appoint a sub-committee to follow up this proposal and set up a nucleus of training supervisors.

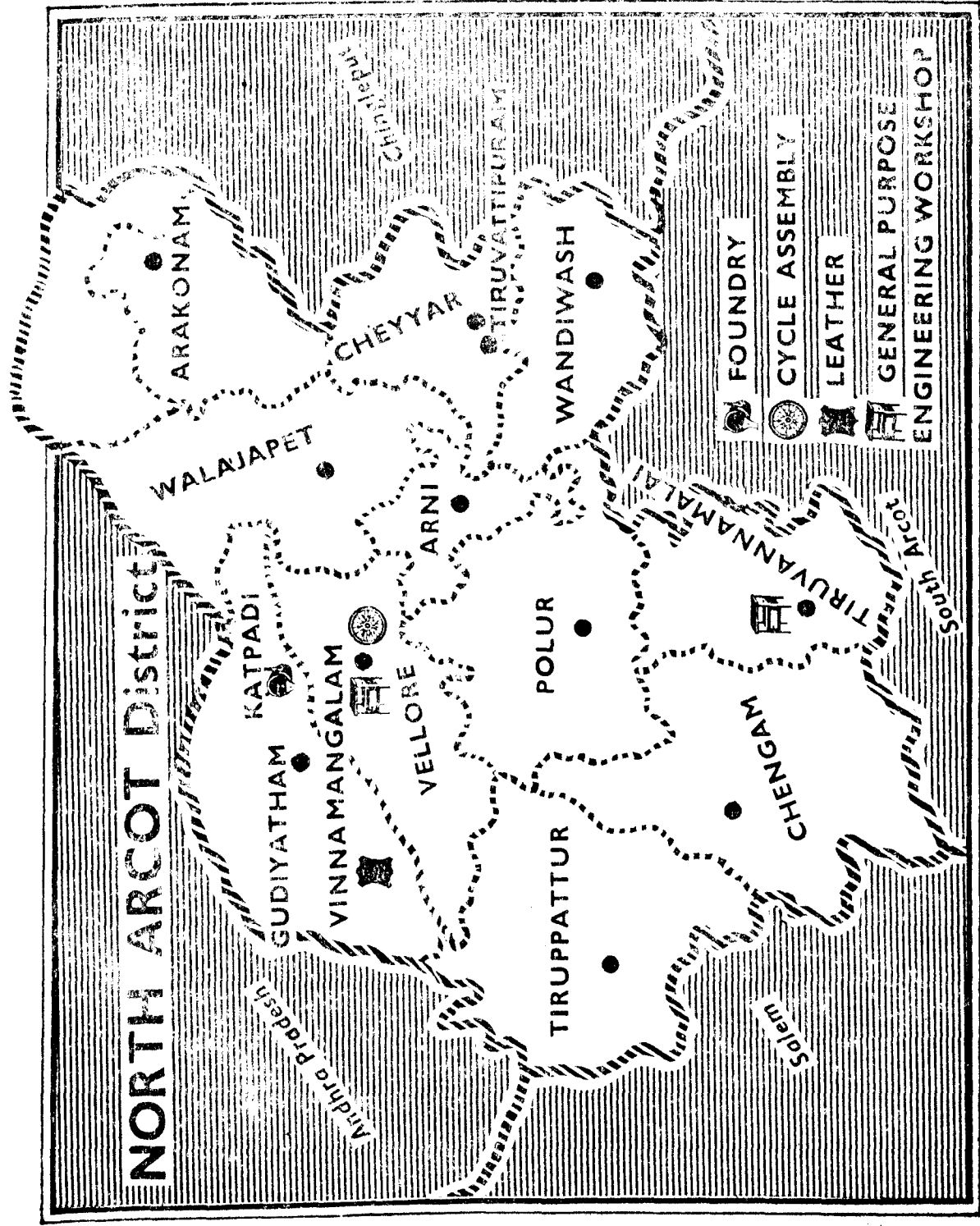
(3) **Manager Development:** The present facilities at the Thiagarajar Institute of Management Studies (which is one of 5 approved and accredited Centres in India for Management training and imparts instructions for the 3 year part time post-graduate University Diploma in Business Management at present) should be made use of by the Industrial and business undertakings in Madurai. Later on, a similar course for Diploma in Industrial Management should be introduced. The Institute should run short-term training programmes for personnel in the mofussil, industrial and business units.

The Madurai Productivity Council and the Madurai Institute of Management should extend facilities for whatever training will fall under their jurisdiction for development.

‘Irim’—Industrial Research Institute, Madurai—Evaluation of Swadeshi Technical know—how: It is in the fitness of things, at this stage, to review the industrial progress that is taking place. From a nation that was importing

consumer goods, we have become a nation which exports finished goods like bicycles and fans. But the machines that were producing these type of goods had to be imported. All the machines are not manufactured here; but even in cases where we manufacture the few machines, the technical know-how of manufacturing these machines is still imported and costs us plenty of foreign exchange. This fact, coupled with the rising cost of labour, will one day boost up the cost of finished products over the international prices. This is all the more tragic since so many of our bright engineers have gone abroad and have come back with first class foreign training and a sincere desire to do research and development work. They would like nothing better than getting into industrial research work and bring about the evolution of ‘SWADESHI TECHNICAL KNOW—HOW’ This should be welcomed if our nation is to thrive on the export of our manufactured goods and become a first class Exporting Nation. Industrial Research should be the Vanguard of our Industrial enterprises, if we are to become a strong industrialised nation.

Several institutes are now functioning under the Council of Scientific and Industrial Research to foster the growth of the ‘Technical Know—how’ besides fundamental research. Also several industries, notably the textile industries, have come forward to establish research activities on a co-operative basis. Some examples are: The Ahmedabad Textile Industries Research Association, Bombay, Textile Research Association, SITRA at Coimbatore, The Indian Rubber Manufacturers' Research Association and The India Paint Research Association. Several more are necessary however if the need for industrialisation of our country is conceded. For Madurai District itself, an Industrial Research Institute is essential, if it should develop into a flourishing centre.



New Substitutes for Old Raw Materials— Evolution of an Intermediary Technology:

The purpose of such an institute is to develop new ideas to new raw materials and new processes which in turn will turn out new products, and one fundamental idea this institute can take up will be to evolve new substitutes for old raw materials.

The functions of such an institute shall be:

1. Fundamental research on raw materials and processes of industry would involve finding new substitutes for old raw materials.
2. To serve as a Research Centre especially to evolve an intermediary technology so that important commodities which are now manufactured at an extremely prohibitive cost are produced more economically within a smaller frame work. This will also involve the idea of service institute.
3. The Institute is to serve as a liaison between the Industrialists and the Government as well as, be in a position to pool all the problems of the Industrialists together and arrange to have them solved.
4. Applied research into technical problems of the Industry and review of technology.
5. Development of the research results to a working model stage in the laboratories and Workshop attached to the institute.
6. Qualitative, operational and statistical surveys of Industrial processes in order to increase production efficiency.
7. Library and information services covering scientific and technical data and developments in various parts of India and abroad.
8. Liaison service; ad-hoc investigations and testing.
9. Market research dealing with the needs and preference of the consumer with a view to achieve greater sales efficiency.

The following wings are suggested for the Madurai Industrial Research Centre keeping in view the present and potential needs of the Industries:—

- (1) Materials
- (2) Textile Technology
- (3) Electronics
- (4) Automobile Technology
- (5) Chemical Technology
- (6) Foundry
- (7) Plastic Technology
- (8) Machine tools
- (9) Market Research
- (10) Information service.

The facilities required for such a centre will be as follows:—

- (1) Digital computer of medium size.
- (2) Workshops (for fabrication of Models).
- (3) Testing Laboratories.
- (4) Library.

This research institute will be run with the co-operation of various industries in Madurai educational institutions, Chamber of Commerce, and National Productivity Council and (State and Central) Governments.

Aid from National and International Agencies:

The meaning of such an institution is worth discussing. It is felt the teachers in Engineering Colleges and Polytechnics must be closely associated with the research work going on in the Institute and they may be given opportunities to pursue research work along with the full time technical staff of the Institute so as to enrich their professional back-ground.

With regard to the general conditions in the field of Technical education, it is felt that improvements in standards are long overdue. The Ministry of Scientific Research and Cultural Affairs, the Department of Technical Education and the Department of Industries and Commerce should be seized of this matter and come forward to establish this IRIM.

It is gathered that though there are about thirty Research Institutions in India at present, all of them are of the specialist type and hence this IRIM proposed to be started at Madurai will be the first of its kind as it is intended to do research in a general way.

It is learnt that the UNO Centre for Industrial Development Technical Division, UNO, New York will be interested in such institutions and hence the Committee recommends to approach this body for financial help and guidance by way of supply of equipment and technical know-how.

Industrial Library—A venture of the Local Library Authority with Public Support: The Committee is of the unanimous view that as a first step in this direction the setting up of an Industrial Library as a branch of the Local Library Authority, Madurai District should be thought of.

The Local Library Authority, Madurai under the Chairmanship of Sri V. Alagappan has already come forward to establish this branch on the site to be assigned by Government in the Industrial Estate. The Public Committee under the Chairmanship of Sri R. V. Swaminathan, M.L.A., will be offering Rs. 50,000-as public contribution and the Local Library Authority will be offering an equal amount as a matching grant. It is hoped that this venture of the Local Library Authority which is the first of its kind in the State will form the nucleus of the proposed IRIM.

Technical Education Research Institute (Terim—A Cardinal Branch of IRIM):— It is felt that Madurai can make a unique contribution to the cause of Technical Education in India by establishing a Technical Education Research Institute, Madurai (TERIM) as an integral part of the proposed Industrial Research Institute, Madurai (IRIM). To those who feel that

TERIM may be a luxury, the questions posed are:—

1. Are not Engineers greater than the products they help to produce?
2. Are not the teachers in Engineering Institutions greater than the Engineers they produce?
3. If there should be research to produce better products, how much more important is the research necessary to produce better equipped teachers and better working conditions in the creation of the engineers, and in the training of Technicians and Craftsmen?

The TERIM will be staffed by the general educationists and engineering educators of proven worth, both these groups working in unison. From time to time, it will also invite visiting professors to enrich itself and staff with problems in the areas specified below:—

- (1) Curriculam planning at different levels of technical education.
- (2) Teaching Technics.
- (3) Class room Psychology
- (4) Standards and mode of appraisals
- (5) Aids to Teaching
- (6) Administration of institutions
- (7) Technical Man Power needs of Industries
- (8) Aims and Philosophy of the ever-evolving Technical Education.

The activities of the TERIM will be two fold one that of Research and the other of Extension work. Besides concerning itself with the research work, it will undertake to conduct seminars, conferences and refresher courses to disseminate the results of research. A Journal of Engineering Education may also be published under its agencies. It may also attempt to translate important engineering works in the Regional Language.

NORTH ARCOT DISTRICT

AREA (in square miles)	...	...	4,942
POPULATION	...	...	31,46,326
INDUSTRIAL ESTATES	...	...	1. Katpadi 2. Arakonam
SMALL SCALE INDUSTRIAL UNITS (Government)	...	Arakonam	Wood Working Unit
	...	Katpadi	Model Foundry
	...	Vinnamangalam	Tanning and Finishing Unit
	...	Vellore	Cycle Assembly Unit
	...	Tiruvannamalai	General Purpose Engineer- ing Workshop
No. OF REGISTERED UNITS (Small Scale Industries)	...	...	423
IMPORTANT LARGE SCALE INDUSTRIES	...	Textile Mills 5 (3+2) Sugar Factories 2 (1+1) Fertiliser Factory 1	

N. B.: Figures in brackets indicate split up figures of the factories functioning and those either licensed or under construction.

MINERAL WEALTH

Name of Mineral	Chemical composition	Industrial Application
Vermiculite	A variety of mica which expands on heating	Occurrence near Koratti in Tiruppattur Taluk—1 lakh tons—proposed for a processing and Exfoliation plant—used as loose fills, light weight concrete aggregates, for heat and sound proof materials as insulator.

NORTH ARCOT DISTRICT

The North Arcot District Industrial Seminar was held at Vellore on the 15th and the 16th of September 1964. Sri R. Venkataraman, Minister for Industries inaugurated the seminar.

The valedictory function was held on the afternoon of the 16th under the presidentship of Sri M. Bhaktavatsalam, Chief Minister.

The Chairmen of the committees presented to the conference the recommendations made by the respective committees. The Chief Minister then delivered the valedictory address.

The reports of the seven committees which discussed the various problems relating to the industrial development of the district are detailed below :

FINANCING OF INDUSTRIES

Leader : SRI T. N. LAKSHIMINARAYANAN, I. A. S.,
Secretary, I. L. C., Madras.

Associate : SRI V. KRISHNASAMY, I. A. S.,
Deputy Secretary, I. L. C., Madras.

The capital invested in large scale undertakings in this district is of the order of Rupees 4.40 crores and the capital investments in small scale sector is estimated to be of the order of Rs. 5.00 crores. This is very low when compared to the total investments in the State as a whole. This imbalance needs to be corrected during the plan period.

Strategy for the Fourth Plan : During the fourth plan period we should therefore, aim to have an industrial investment in this district which, to the total investments in the State, will bear the same ratio as the population and the area of the district bear to the total population and area of the State. On this basis the investment in North Arcot District should be atleast 10% of the total

investment in the State. (It may be noted that even this high rate will enable the District only to derive a due share of future development and will leave the old leak log to be made up in future).

Quantum of Investment : For the State as a whole, experts have indicated that the investments in the public sector should be of the order of Rs. 200 crores and that the investments in the private sector should be of the order of Rs. 300 crores. Assuming that in North Arcot District also the same ratio can prevail, the investment in the private sector will have to be of the order of Rs. 30 crores.

The Capital structure of any industry consists of equity capital (on own funds of the industry) and borrowed finance. It can broadly

be generalised that in any acceptable scheme the ratio between the equity and the borrowed finance should be at least 1 : 2. On this basis, for the programme we are contemplating, we will need an equity capital of Rs. 10 crores, and a borrowed capital of Rs. 20 crores.

Equity Capital: This equity capital is the very basis on which any borrowing can be done. The promoters and sponsors of industrial projects should be prepared to raise this fully from among themselves, and the public. True, they can secure the assistance of such organisations like M.I.C., or L.I.C., I.F.C., etc., for share participation to some extent. Based on considerations of returns and liquidity, these institutions have their own limitations and may not be able to contribute to the share capital to any extent above 5% or 10%. Thus the remaining 90% namely Rs. 9 crores, will have to come from the promoters and the public. This investment will have to take place over a period of 6 years from 1964-65. Thus the desired optimum annual investment will be of the order of Rs. 1.5 crores for the next six years. Of this roughly about 30 to 35% may be in the small scale sector and the rest will be in the large scale sector.

The Problem: Thus the main problem from now on, will be, to mobilise the investible surplus of the district towards an investment of this order. The general feeling is that the investible surplus in the Agricultural, Commercial and to some extent in the existing industrial sector of this district may be able to bear an investment of the size given above. However detailed surveys by competent organisations have to be undertaken to estimate with reliable accuracy the investible surplus in this district in various sectors like agriculture, industry and commerce. Similarly an estimate of the rural savings and hoarded money which is not brought within the purview of banking operations will have to be made. With these data we will have to verify whether

the public in this district can make investment of Rs. 1.5 crores annually. Allowance will have to be made for the export and import of the investments from and into the district from other districts and even other states. This committee would recommend that such surveys may be undertaken in this district immediately and sponsored by the non-officio organisations like the chambers of commerce and commercial banks.

Promotional work called for: Even assuming that the necessary amount of investible surplus is available in this district, tremendous amount of promotional work has to be done to attract actual investments. The integrity and the efficiency of the promoters should be such as to attract investment. The time lag between the collection of share capital and the commencement of production should be shortened by judicious and detailed advance planning. Unless this is done dividend cannot be declared in reasonable time and no investor may care to wait too long for returns. No doubt the investor has to be educated that in industry the gestation period is necessary and that investments of this type cannot be expected to yield quick returns. However the speed with which the stage of declaring dividends is reached is a factor entirely dependent on careful planning and efficient execution and unless these are ensured, the investors would not be attracted. Having ensured that all the factors that normally scare away the new investors are removed the promoters and the industry—enthusiasts in the district should educate and offer investment advisory wings which will offer independent investment advice to the new investors.

Borrowed Finance: To implement the contemplated programme, borrowed finance to the extent of Rs. 20 crores and share participation by financing institutions to the extent of Rs. 1 crore would be necessary. The normal

channels for the small industry are the State Government (State Aid to Industry Act), State Bank, Commercial Banks and Madras State Industrial Co-operative Bank. The normal channels for the large scale industry are the M.I.C., I.F.C., ICICI, I.D.E., RFC, and L.I.C. Commercial Banks and Co-operative Apex banks are also given assistance from RFC limited for granting long and medium term loans to industry. Handloom industry in the private sector can get assistance from the Handloom Finance Corporation of the State, Prima facie it is felt that if we manage to raise the necessary equity capital we may not find it difficult to get borrowed finance of the order mentioned above. There are also certain mitigating factors. In an investment of Rs. 30 crores, about Rs. 10 crores will be required as foreign exchange and atleast about Rs. 5 crores worth of the foreign equipment may be available on deferred payment basis. However at the state level, estimates will have to be made for the borrowed finance requirements for the state as a whole and action will have to be taken to strengthen the share capital base of the existing financing institutions and to augment their resources. Active steps should be taken by the entrepreneurs to get as such of

the capital equipment as possible on the deferred payment basis.

Conclusion: The Committee has indicated in this report the minimum that we should aim at for this district during the Fourth Plan period, and in that context has highlighted the financial implications. The committee feels that given this objective, there is little scope for reducing the investment necessities and would therefore recommend that this district may boldly accept to meet the challenge.

Notes on abbreviations:—

- I.D.B. Industrial Development Bank.
- R.F.C. Ltd. Refinance Corporation of India Ltd.
- I.F.C. Industrial Finance Corporation.
- I.C.I.C.I. Industrial Credit and Investment Corporation of India, Ltd.,
- M.I.I.C. Madras Industrial Investment Corporation Ltd.,
- L.I.C. Life Insurance Corporation of India, Ltd.,

LARGE SCALE INDUSTRIES

Chairman: SRI V. PANDURANGIAH

The Sub-Committee for large scale industries, under the Chairmanship of Sri V. Pandurangiah, met and discussed the scope for establishing large industries in North Arcot District. Sri Venkatesiah, Industrial Adviser to Government of Madras, guided the discussions.

After detailed discussions, the Committee feels that the following Large-Scale Units can be set up in North Arcot District:—

1. Establishment of a Central Composite Workshop for Machine-building, structural Engineering, Maintenance and Repairs of Transport vehicles, and proto-type development of new machines; particularly for machinery employed in Tanneries, etc., and to meet the requirements of spares and maintenance of tanneries, sugar plants etc ;

2. (a) *Fruit Processing and Canning Unit*: The large fruit wealth of the District to be exploited with machinery, processes, quality control, supervision etc., and to be developed into one of the large agro-industries in the District.

(b) *Fruit and Vegetable Preservation and Transport Industry* to be combined with the above.

3. Besides the expansion of the existing Ambur Sugar Factory to an ultimate capacity of 2000 tonnes per day, it is the recommendation of the Committee that this District can sustain one more independent *Sugar Factory* of 2000 tonnes capacity per day.

4. Establishment of an *Industrial Ethyl Alcohol Unit* with captive utilisation for other alcohols and plasticisers by full utilisation of the Molasses produced from the above factories in the District and also pooling additional molasses, if necessary, from the nearby factories.

5. Establishment of a *Factory for making Railway Materials, spare parts, Fasteners and Motorised Trolleys* to be ultimately developed into a large light-engineering workshop, specialising in Railway- equipment.

6. (a) *Chemical Industry*: Establishment of a Barium-Salt Industry with Sodium Sulphide with an approximate investment of 10 to 15 Lakhs of rupees for developing several compounds based on Barium Chemicals.

(b) *Basic Chrome-Tan crystals*—about 10 to 15 lakhs.

(c) *Synton Industry* about 10 to 15 lakhs.

(d) *Meates Foot Oil* based on hoofs and cloves from slaughter houses.

(e) Manufacture of *Glue Cellatine* from Tannery wastes.

(f) Effective utilisation of *Spent Myrabollam* as a Fertiliser. (This has to be investigated by the Agricultural Department).

7. *Training and Research Institute for Alloy Steel Manufacture*, with facilities for specialised instruction and in-plant training of Scientists required in the country's Alloy Steel Establishments.

SMALL SCALE INDUSTRIES

Group Leader: SRI T. A. S. BALAKRISHNAN, I. A. S.,
Director of Industries and Commerce, Madras

Joint Leader: SRI S. BALASUNDER,
Joint Director of Industries and Commerce, Madras

After reviewing the report of the Committee of Sub Group on Small Scale Industries, the Sub Group decided to recommend the following:—

1. **Foundries**: (a) In view of the general shortage of pig iron, it is recommended that the quantum of allotment made for the foundries in this district may be increased.

(b) It is recommended that a Steel casting Unit and also a Malleable casting unit may be set up in the private small scale sector.

2. **Spare parts for Textile Mills**: It is recommended that in view of the good number of textile Mills in the district there is good scope for the manufacture of spare parts required by the Textile machinery of these Mills.

3. **Forge Shop for Hand Tools and Small Forgings**: It is recommended that a modernised Forge shop for manufacture of hand tools and small forged components may be set up in the District.

4. **Machine Tools**: It is recommended that units manufacturing simple machine tools could be set up.

5. **Electrical Industries**: (a) There is a scope for a unit for the manufacture of Hot plates, Water heaters and Immersion Heaters at reasonable cost.

(b) Small units for the manufacture of compact battery chargers for automobiles may be set up.

(c) A unit for the manufacture of chokes and small transformers has good scope.

(d) Bakelite and plastic electrical accessories like switches, motor parts, knobs, covers etc., could be manufactured.

(e) Manufacture of Radio Cabinets is recommended.

6. **Electronic Industry**: (a) Radio components like output transformers, power transformers wire wound resistance, I.F. transformers, coils and Chasis having a good scope for being manufactured.

(b) Good scope exists for a unit for the assembling of complete radio set.

7. **Felts from Wool**: The availability of low grade wool promises scope for starting a Unit for manufacturing Felts and in this connection the Government Wool Processing Unit at Vinnamangalam may explore the possibilities.

8. **Glue**: A modernised unit for the extraction of glue, gelatine from Tannery waste and fleshings could be set up.

9. **Laboratory Glassware Equipments**: A unit for the manufacture of scientific laboratory glass apparatus required by the schools and colleges can be set up.

10. **Tanning Industry**: Wattle cultivation should be developed in Javadi and Elagiri Hills for the future requirements for starting a wattle extraction plant. The use of synthetic

tanning materials as recommended by the Central Leather Research Institute, Madras may be taken up by a unit in this District.

11. Battery operated Toys : It is anticipated that small miniature battery operated motors would be produced in this State shortly. Based on this there is very good scope for setting up some units for the manufacture of battery operated toys.

12. Sandalwood oil : There is good scope for setting up small factories for the distillation of Sandal Wood Oil in this District.

13. Transport Oriented Industries : Good scope exists for setting up units for the manufacture of spare parts and accessories for the automobiles.

14. Mineral Crushing Plants : It is recommended that units for crushing and semi-processing for stones available in the District, for the benefit of other dependent industries.

15. Bicycle Parts : There is very good scope for setting up units for the manufacture of the components and accessories required for the bi-cycles.

16. Builders Hardware : It is recommended that units for the manufacture of standard type of doors and windows, and ornamental windows required for house building would be set up. A compact carpentry and blacksmithy unit will be useful for this purpose.

17. Fruit Processing and Canning Industry : The setting up of units for fruit canning and preservation offers wide scope and would be set up in three parts namely :—

- (a) Fruit drinks.
 - (b) Extraction of pulps and
 - (c) Preparation of Jams, Chatnis etc.,
- Vacuum canning is recommended for this purpose. Manufacture of cerealised food like mixing up of Banana powder with wheat flour is recommended. Carrot juice, Tomattee juice and similar locally available juices and soups offer very good scope. The manufacture

of this can be brought under two main headings, namely the local demand and foreign demand.

18. Structural : With the de-control of iron and steel in many categories, common sections like rounds, bars flats etc., are easily available in the market. A structural shop in the small scale sector can be established with advantage for manufacturing ornamental grills for windows, Trusses iron gates etc., It is also suggested that as the period of construction of a small building takes a long time now-a-days for construction, it would be advisable to use pre-fabricated items required for building construction such as standard doors, standard windows, standard ventilators etc.

19. Miscellaneous Industries : It is suggested that small industries for the manufacture of link clips, stone rollers, printing roller composition, dyes etc., may be established. As there is a good export market for highly polished mirror finished stones on different shades, it is suggested that stones available in Katterimalai and Thekkal, near Vellore may be investigated for quality, hardness etc.,

20. General : The group recommended that as cement based industries on small scale industries are developing fast and as cement is required for the construction of factory buildings, it is considered necessary that a separate stockist in atleast every District Headquarters for dealing with Cement for industrial purposes is appointed and its stock operated upon by the Assistant Director of Industries and Commerce in the Districts concerned.

The Group also recommended that the allotment of the units in the Industrial Estates must be allotted to the Small Scale Industrialists in private sector in the first instance and if no such industrialist is forthcoming, it may be allotted for other purposes.

MINES AND MINERALS

Chairman: SRI T. S. PARAMASIVAM
State Geologist (incharge), Madras

The Sub-Group on 'Mines and Minerals' of this seminar discussed in detail about the availability of raw materials for mineral-based industries in this District. During the deliberations, the sub-group was apprised of the meagre mineral potentialities in the North Arcot unlike the neighbouring districts like Salem and South Arcot Districts. Nevertheless, it was resolved that the entire potentialities have not been fully assessed and therefore the State Geological Branch should take up more detailed mineral survey especially in the unsurveyed hilly tracks like the JAVADI HILLS. The following are the broad recommendations put forth by this sub-group for setting up industries and proper utilisation of the available mineral resources.

- (i) Kankary Limestone reported to occur in the Wandiwash-Thellar area have to be investigated in detail in connection with the setting up of a small scale cement plant of 50 tons capacity;
- (ii) Large reserves of good quality Kankar suitable for cement manufacture occur in the Dasampatti, Samalpatti area in Krishnagiri taluk adjoining the Tirupattur taluk. A small scale cement plant could be thought of in this Sector.

(iii) Iron ores averaging (33%) have been located in the Polur-Chetpet area. It is recommended considering the reserves of 4 million tons, that this ore may be beneficiated and the upgraded ore exported to Japan, where there is ready market for such ores. This would earn invaluable foreign exchange.

(iv) Small Reserves of buff-coloured transported class in the Rangampatti R. F. in Gudiyatham Taluk could well be utilised as a polishing powder.

(v) Red Ochrous clays, occurring around Tachur village (near Polur) though not conforming to standard specifications, could be washed and put to use as a distemper and colour wash on a small scale.

(vi) Impure steatite rock has been located between Mandandakuppam and Tangal in the Wallajah Taluk. Further detailed work is recommended and its applicability as a pesticide in the fertiliser industry determined by tests.

(vii) Good quality Magnesite occurs intermixed with less pure ore in the Terr-Mudiyanur area offering possibilities for making dead burnt magnesia.

VILLAGE INDUSTRIES AND HANDICRAFTS

Group Leader: SRI V. PADMANABHAN

Secretary, Khadi and Village Industries Board, Madras

Joint Leader: SRI D. MARIASUSAI

Joint Director, Department of Industries and Commerce

The Group discussed the objectives and approach for promoting an intensive and integrated programme for developing village industries in the rural areas in this district. The group felt that the skill of the artisans now pursuing the profession in villages should immediately be improved to enable them to provide the base for an effective rural industrialisation of the district, with its beneficial impact on the improvement in agriculture. Therefore, the types of programmes that should be formulated to cover each category of artisan in the district should be on the basis covering all existing artisans with improvement either in organisation, imparting of better skills, provision of tools and finance etc. There are 2952 carpenters and 1792 blacksmiths in this district. The group was of the unanimous view that the village carpenters and blacksmiths should be made to take to improved techniques of production by using much better tools and machines. The village blacksmiths and carpenters should be also benefited by the availability of power in most of the villages and provided with simple power operated machines. The group therefore, recommends the setting up of work-sheds costing not more than 3 to 4 thousand rupees to cover all villages where there are more than 5 carpenters and blacksmiths. The work-shed will be under the management of the local panchayat and

will be provided with one or two simple power operated machines which will be suited to the type of jobs the artisan is engaged in. The machines will be available for use by all the artisans in common and a nominal service fee will be levied by the panchayat for the use of machines by the artisans. In order to meet the financial requirements as also assist in the procurement of raw materials and marketing all goods outside his ability, a service co-operative may be organised to cover the panchayat union area with the artisans using the work-sheds and machines, as members. The artisans will also require technical guidance and it will not be possible for them to attend regular training Centres and hence, an Instructor should go round the villages where such worksheds have been established, stay with the artisan and improve his skill by practical instruction and demonstration. Such worksheds on a large scale have already been constructed in Madurai district from out of the funds of the Panchayat Union and have been found to be of real benefit to the artisan. The service co-operative at the Block level should within the 4th Five year Plan period develop into a small rural workshop-cum-service centre and function as a nuclear technical extension centre to meet the growing requirements of the rural areas and the village artisans. It is estimated that 850 sheds would have to be constructed in North Arcot District

to cover all the blacksmiths and carpenters. The total provision that would be required for this district will be Rs. 25 lakhs for work-sheds. Rs. 8 lakhs towards cost of machines and tools for the sheds Rs. 8 lakhs for setting up small rural workshops at the block level as part of the Service Co-operatives covering 38 blocks.

There are 2,707 village tanners in the district. In order to improve the skill of these tanners, the group recommends the construction of Community Tanning sheds in all the villages where there are more than 10 actual tanners. Each community Tanning shed will have a minimum of 20 pits, a few equipment as also adequate water facilities. Tanners service co-operative might be organised for a group of 5 to 10 such community Tanning Sheds, similar to the Service co-operatives envisaged in the case of carpenters and blacksmiths. The service co-operative will advance loans to the tanners and assist them in marketing. The service co-operatives will also have some technical staff to impart better techniques in tanning to its members. Groups of such service societies should be linked to small finishing Units with facilities to finish the leather and produce footwear and leather goods to the extent possible. It is not possible to estimate the number of villagers which will be covered by this programme. The rough expenditure for each community Tanning shed is however, estimated to be between Rs. 5,000 and Rs. 10,000 depending on the number of tanners it has to cater to.

The North Arcot district has more than 3172 potters. They are engaged in the manufacture of ordinary pots and pans etc., It may be difficult to convert all of them from red to white pottery. The group was of the view that all technical improvements in red pottery should reach all potters in the district as quickly as possible. For example, they should

have in common small pug mills, updraft kilns, common work places, claywashing tanks and transport facilities. They should also in addition to making pots and pans manufacture lacquer coated wares like jars etc., which will get them a better income. The manufacture of clay pipes used by the agriculturists for irrigation purposes and cheap flooring tiles which would be used in the rural housing programmes should also be taken up in a big way. Here also it is not possible to work out financial implication in the absence of particulars about the number of villages where potters are concentrated in large numbers.

In this district there are 3590 artisans under palm jaggery industry. The group recommends that demand for palm fibre in foreign countries should be fully utilised to develop the palm fibre extraction in this district. The target of palm fibre production should be of the order Rs. 10 lakhs annually providing employment to more than 3,000 people for a period of 3 to 4 months.

The group recommended the intensification of bee-keeping in the district in the Jawadi and Elagiri hills and other villages, where there is scope for the development of the industry. The target for this district should be 10,000 hives accounting for an annual flow of one lakh pounds of honey.

The Group also recommended that to provide large scale and seasonal employment to the rural women in the district the six spindle Amber Charkas should be distributed in substantial numbers. The present value of yarn produced in the district which is about Rs. 25,000 should progressively be increased to reach an annual production of Rs. 30 lakhs at least at the end of 4th Five Year plan. The group also felt that in order to make the Khadi programme effective and in view of its large scale introduction in the district for the first time, certain additional facilities and concessions should be provided. The group

also recommends the conversion of the yarn into Khadi locally by establishing Weaving Centres under the control of the institutions directly.

In regard to wool industry, the group was of the view that the available processed wool in Vinnamangalam should be exploited fully and a few departmental centres started at Wallajah, Natrampalli, Adiyur, Thandrapet, Muthur, Udayenthiram to produce blankets and druggets which are in great demand.

The group also recommended the organisation of more mat weavers societies in the district and examine the possibility of the introduction of some contrivances and simple equipment to improve the quality of weaving and increase the earnings of the workers.

The Group was also of the view that the wood carving talent now available in Wandiwash, Arni and Allalamangalam in Polur Taluk should be carefully developed to prevent its extinction as a specimen of South Indian Handicrafts.

The Group was also of the opinion that four more match co-operatives can be organised in

the district to provide large scale employment to the unskilled labourers in the district.

The Group stressed the need to bring the inland fishermen under some co-operative organisation and extend to them the loan and other facilities needed for the industry.

The Group impressed the necessity to organising Central sizing and bleaching Units to meet the growing demand of the handloom weavers.

The Group finally was of the unanimous view that village industries and handicrafts can develop and create an impression on the community only if Panchayat Unions take effective steps to encourage and develop them and hence appeals to all Panchayat Unions to give their attention in a much large measure for the implementation of the schemes suggested. The group also feels that to work towards a democratic socialistic goal the organisation of industrial co-operatives should be the pattern of organisation and the Government should take positive steps to educate the people to assure the leadership of such organisations.

PROCEDURAL MATTERS

Group Leader: SRI T. R. KRISHNASWAMY, B. Sc., (ENGG.)

Joint Director, Department of Industries & Commerce

The leader of the group explained to the members of the group procedures to be followed in obtaining industrial licences for setting up of large industries, registration with the Director General of Technical Development, New Delhi in regard to medium industries and registration with the State Director of Industries in regard to Small Scale Industries. The leader explained to the members of the group that industries can be broadly classified into four main groups viz., (1) Large Industries (2) Medium Industries, (3) Small Scale Industries and (4) Village Industries. Till recently the limit for large Industries was fixed as those industries whose value of fixed assets comprising of land, building and machinery exceeds Rs. 10 lakhs. These industries have to get an industrial licence under the Industrial Development and Regulation Act of 1951 for setting up large Industries. As the procedure to be followed in getting industrial licence for setting up large industries is a prolonged one and as it took more than 18 months for an entrepreneur to obtain the licence, the Hon. Minister for Industries, Madras, took up with the Government of India to revise the limit fixed for large Industries for getting the industrial licence. The Government of India have raised the present exemption limit for obtaining a licence from Rs 10 lakhs to Rs. 25 lakhs. A large scale entrepreneur has to prefer an application in Form "D" for the

establishment of a new undertaking. This application has to be sent to the Secretary to the Government, Ministry of Industries, New Delhi, with a copy to the State Director of Industries and to the Secretary to Government in the Industries Department. The applications are scrutinized and recommended by the Government to the Government of India and the Licensing Board set up by the Government of India finally decides the application and issues the licences which are issued by the Government of India.

The present exemption limit does not apply to a few selected industries like coal, vanaspathy, flour mills, leather, match and powerloom industries. These industries should get an industrial licence even if the value of their fixed assets exceeds Rs. 10 lakhs.

In regard to medium industries whose value of fixed assets exceeds Rs. 5 lakhs, but within Rs. 25 lakhs and if these industries require imported raw materials, component parts or machinery and indigenous scarce raw materials then these industries should get themselves registered with the Director General, Technical Development, New Delhi. They will have to send in their application in the prescribed form to the Director General, Technical Development through the State Director of Industries. These medium industries are then registered with the Director.

General, Technical Development and arrangements are made for the supply of scarce raw materials and imported raw materials, components or equipment.

In regard to Small Scale Industries the limit fixed is that the value of the fixed assets should not exceed Rs. 5 lakhs and in the case of ancillary industries it should not exceed Rs. 10 lakhs. These Small Scale Industries have to submit their applications for registration with the State Director of Industries in duplicate through the respective Assistant Directors of Industries in the Districts. These applications after due verification by the Assistant Directors are submitted to the Director of Industries who after scrutiny registers the Small Industries. Registration of Small Scale Industries by the Director is necessary if the Small Scale Industries seek assistance from the Directorate for the supply of scarce raw materials like sheets, wires, non-ferrous metals like zinc, copper, tin, lead, coal, coke and cement. Registration of Small Scale Industries will also help them in getting other assistance from the Government like telephone facilities, subsidy on power, subsidy on rent if they occupy units in Industrial Estates and Loans under the State Aid to Industries Act. Registration of Small Scale Industries in general is more for statistical purposes and if a small scale industry does require some scarce raw materials or controlled commodities like sheets and wires they are requested to apply in a separate form to the Director of Industries to get themselves registered as an approved fabricator. Hence, the Small Scale Industries have to comply with the following formalities before starting an Industry:—

1. To apply to the Director of Industries in the prescribed form through the Assistant Director of Industries for registration as a Small Scale Industry.

2. To apply to the Director of Industries in the prescribed form through the Assistant Director of Industries for registering their Industry as an approved fabricator.

If the small industries fill in all the columns of the application form correctly and send them to the Assistant Director of Industries, registration of their Industries does not take much time and in all the cases it can be done in a month's time.

For obtaining Essentiality Certificate from the Director of Industries or sponsoring Authorities to get import licences from the Port Licensing Authorities, the Government of India periodically lays down the import trade control policy and the instructions are contained in the Red Book. Detailed instructions in regard to the procedure to be followed for getting import licences and the due dates on which the applications are to be submitted to the Port Licensing Authorities and the Director of Industries are published in the Red Book. Small Scale Industries should comply with the instructions laid down and submit their applications to the authorities viz., the Director of Industries and the Port Licensing Authorities before the due dates prescribed. Essentiality certificates are issued after scrutiny of the applications and the Port Licensing Authorities then issue import licences to enable the Small Industries to import their requirements from abroad.

After discussing the above procedures laid down by the Government for getting assistance in regard to import licences, in regard to import licences, scarce raw materials, etc., the members of the group expressed that no change is necessary in the existing procedures. However, the group made the following suggestions:—

1. The Port Licensing Authorities while acknowledging receipts of applications from

the small scale industries for the import of raw materials, components or equipments, state that their applications are not accompanied by essentiality certificates issued by the Director of Industries. It is suggested that the Port Licensing Authorities may be asked to delete the words that the applications are not accompanied by essentiality certificates as the issue of an essentiality certificate rests with the Director and the applicants are not

responsible for the delay in the issue of essentiality certificate.

2. In assessing the value of land shown as security for obtaining loan from the Government under the State Aid to Industries Act, the members feel that the prevailing market value of the land is to be taken into consideration for assessing the value of the securities offered and not original purchase price of the land.

TECHNICAL EDUCATION

Group Leader: SRI M. A. RANGASAMY,
Joint Director, Department of Employment and Training, Madras.

The recommendations of the Sub-Committee on Technical Education was reviewed at the meeting.

The setting up of one Engineering College based on a population of 3 millions in this district was recommended. In recommending this, the group took into account the absorption of the graduates by the Government in salaried employment and also gainful self employment in the following industries which may be started in this district:—

- (i) Sandalwood oil,
- (ii) Fluorescent, Chokes and tubes,
- (iii) Bicycle parts and accessories,
- (iv) Paper making and
- (v) Radio components.

Polytechnics:—The group considered the recommendations of the Sub-Committee to start two more polytechnics in the districts, one purely for women. The Committee was of the opinion that instead of starting one more polytechnic for men, the two existing polytechnics could be expanded and as suggested by the Committee, the following courses could be introduced in these two institutions.

- (i) Leather Technology.
- (ii) Ceramics.
- (iii) Textile technology.

The group recommended the starting of a polytechnic for women with the following subjects:—

	Intake
(i) Electronics and radio engineer	20
(ii) Secretarial course	40
(iii) Ceramic and pottery	20
(iv) Commercial arts and painting	20

Junior Technical Schools:—The group felt that as the expansion of the Junior technical Schools has to be judged with reference to the

experience of the industry *vis-a-vis* the trainees from the I. T. Is, the number of J. T. S. in the District may be increased by one more and be attached to the polytechnic at Gudiyatham. The group was not in favour of having a J. T. S. exclusively for girls.

Industrial Training Institutes:—The group suggested the starting of two more Industrial Training Institutes in the District, of which one may be exclusively for women and training given in selected vocational and engineering trades.

The following trades were suggested by the group for the two I. T. I. S.

1. Bleaching and dying.
2. Instrument mechanic.
3. Radio servicing.
4. Armature winding.
5. Plastic moulding.
6. Plumbing
7. Cane, willow, and bamboo work.
8. Preservation and canning of fruits and fruit products.
9. Manufacture of leather goods and suit-cases.
10. Stenography.

Technical Information Centre and Industrial Reference Library:—

The group agreed to the recommendations of the sub-Committee and recommended that these units might be started in the Industrial Estates so that it may be useful for the Industrialists and also students of technical institutions.

Science clubs:—The group accepted the recommendation of forming Science Clubs at district level and recommended that they should be located in the Industrial Estates in the technical wing of the Industrial Estate.

SALEM DISTRICT

(1-11-1964)

SALEM DISTRICT

AREA (in square miles) :	...	...	7063
POPULATION :	...	...	3,80,4108
INDUSTRIAL ESTATES :	...	...	1. Salem (sanctioned) 2. Krishnagiri
SMALL SCALE INDUSTRIAL UNITS : (Government)	...	Salem	Handloom Parts, Quartz Crushing Plant.
		Krishnagiri	Wood Working, Cycle Assembly Unit.
		Mettur	Galvanising Plant.
		Omalur	General Purpose Engg. Workshop.
		Namakkal	General Purpose Engg. Workshop.
NO. OF REGISTERED UNITS : (Small Scale Industries)	...	...	1365
IMPORTANT LARGE SCALE INDUSTRIES :	...	Textile Mills-8 (7+1) Cement Factory-1 Sugar Factory-1 Aluminium Factory-1 Synthetic Fibre-1 Paper and Straw Board-1	

N. B :—Figures in brackets indicate split up figures of the factories functioning and those either licensed or under construction.

MINERAL WEALTH

Name of Mineral	Chemical Composition	Industrial Application
1. Bauxite	Aluminium ore 30% to 52% of Al_2O_3	5 million tons of ore deposit being worked by Madras Aluminium Co., for their Aluminium Plant at Mettur.
2. Magnesite	Mg CO_3 95% to 97%	Salem-Chalk hills and around Reserves 82 million tons-deposit worked by manufacturer of refractory bricks viz., M/s. Dalmia Magnesite Co. Salem Magnesite Corporation.
3. Quartz and Felspar	Quartz (SiO_2) & Felspar (alkali silicates)	Reserves-Felspar 50,000 tonnes-Quartz-1 lakh tonnes-used for Ceramic Industry as glass and also for glass industry as crushed quartz.
4. Crystalline Limestone	Ca CO_3 Flux grade, Cement & Chemical grades	In Sankaridrug, Tiruchengodu and Namakkal Taluks-47 million tonnes of reserves Utilised for cement factory near Sankaridrug for Indi Cements and for producing chemicals by Mettu Chemicals.
5. Iron Ores	Magnetite — Quarzite about 35% of iron	Kanjamalai area—containing a reserve of 16 million tonnes—proposed for setting up a steel plant.

SALEM DISTRICT

The Salem District Industrial Seminar was held on the 31st October and 1st November 1964 at Sahadevapuram, Salem. The Seminar was inaugurated by Sri R. Venkataraman, Minister for Industries, Sri G. Bhuvarahan, Minister for Information and Publicity released a Souvenir and Sri T. N. Lakshminarayanan, Secretary to Government, Industries, Labour and Co-operation Department released the publication 'Know Your District'. On the second day, Sri M. Bhaktavatsalam, Chief Minister addressed the delegates. There were group discussions on both the days. In the final session on the afternoon of the second day, the Chairman of the various Committees

read the recommendations of the respective group after which the Minister for Industries summed up the recommendations in his concluding remarks.

The Seminar was well attended and more than 400 delegates from all over the District including many from Madras participated in the discussions. There were six Committees, viz. Large and Medium Industries, Mineral-based Industries, Small Scale, Cottage and Village Industries, Agriculture-based Industries, Industrial Finance and Technical Education.

The reports of the various committees constituted on the occasion are published below :

Recommendations of the Committee for

LARGE AND MEDIUM SCALE INDUSTRIES

Chairman : Sri R. V. RAMANI

DIRECTOR, MANAGING AGENTS,

THE METTUR CHEMICAL & INDUSTRIAL CORPORATION LIMITED, METTUR DAM R. S.

The Committee examined the various projects enumerated in the discussion papers prepared by the Large and Medium Scale Industries Sub-committee and also took up for discussion several other projects not covered in detail in the papers already circulated. The Committee also considered the necessity for the existing industries in the District to sustain production at full rated levels and to expand into ancillary or associated lines of manufacture. After detailed discussions, the

Committee makes the following recommendations :—

ALLOY STEEL PRODUCTS

1. A number of industries utilising the special alloy and tool steel produced at the All Steel Industries Corporation Limited, Doddampatti should be developed.

WELDING RODS

2. A unit for manufacture of welding rods based on alloy steel wires that would be made

available from the All Steel Industries Corporation Limited, Doddampatti should be set up.

MACHINE TOOLS

3. A machine tool factory either in the medium scale or in the small scale sector (based on the steel casting capacity available at Doddampatti) should be established.

CRANES

4. The manufacture of cranes and chains based on the special alloy steel available should be considered.

AUTOMOBILE COMPONENTS

5. Small and medium scale units for the manufacture of such automobile components as are not being produced elsewhere in the State in the large scale sector should be commenced. Items such as steering columns, King Pins and Leaf Springs can be fruitfully considered.

FORGED STEEL VALVES

6. Manufacture of a complete line of forged steel valves for high pressure and special applications, with a capacity of at least 1,00,000 pieces per year should be set up in view of the large demand for this item. As an ancillary to this unit, the manufacture of forged steel balls may also be undertaken.

STRUCTURALS AND TANKS

7. A structural plate, and tank shop with an annual capacity of about 15,000 tons should be set up for providing the necessary structural work and fabrication capacity for the various new factories coming up in Salem and the neighbouring districts.

CHEQUERED PLATES

8. A plate rolling mill for manufacture of chequered plates with a capacity of about 10,000 tons should be set up in view of the large unsatisfied demand of chequered plates for construction purposes. The same unit can take up the manufacture of subway grills.

POWERLOOMS

9. A production unit for the manufacture of power-looms and for conversion of hand-

looms to power-looms, with an economic size capacity should be set up, based on the casting and other facilities that will become available in the district.

NON-FERROUS INDUSTRIAL PRODUCTS

10. A cold rolling mill for fabrication of non-ferrous shapes, primarily of brass and copper, to meet the fabrication industry in the district should be undertaken.

SERVICING FACILITIES

11. To assist the medium and small scale industries that would develop, the shop facilities in the units of the Industries Department should be expanded and new tool room services instituted. Also the setting up of the Industrial Estate at Salem should be speeded up.

MAGNESIUM

12. In view of its utility in Aluminium alloy production, efforts should be made for starting at least an experimental Magnesium metal production unit with a minimum capacity of 300 tons per year. Eventually production on Magnesium Aluminium alloys for extrusion for aeroplane and other parts should be undertaken.

BY-PRODUCT UTILISATION

13. Efforts should be made for setting up of plant facilities to utilise the red mud which is a by-product of the Aluminium manufacture at Mettur Dam with a view to recovering the Ochres as well as the Titanium compounds in the shape of Titanium di-oxide.

LEATHER FINISHING

14. The setting up of a unit in the State Sector at Mecheri for the complete finishing of sheep and goat skins should be actively pursued. This assumes special importance in view of its export potential and in view of the special quality of the skins from the Omalur Rural Industries Project area which are quite famous.

CENTRAL SERVICING UNITS FOR TEXTILES

15. A Central Bleaching, Calendering, Mercerising and Dyeing unit for processing of yarn and cloth should be set up at Mettur Dam making use of the water facilities of the Cauvery and of chemicals available locally, to process yarns and textiles for the Salem area.

VAT DYES

16. Steps should be taken for promoting the setting up of a 300 tons per year Vat Dyes unit based on intermediates either from the public sector or from other sources, since there is a large scope for consumption of dyes by the Handloom sector in the district.

RAYON

17. The setting up of a rayon unit to meet local demand of the handlooms as well as of a texturizing unit for processing of synthetic fibres except cellulose fibres should be actively considered.

CHEMICAL INDUSTRIES

18. In the chemical field, the castor oil based and sugarcane molasses based industries should be developed to meet the demands of the paint and other industries.

ORGANIC ACIDS

19. The possibilities of manufacture of Oxalic and Salicylic acids based on carbon monoxide, caustic soda etc. should be explored.

CHEMICAL INDUSTRIAL ESTATE

20. In addition to the above, the setting up of satellite units to process the products of existing industries and industries which are being established at Mettur, should be developed. For this, the establishment of a chemical industrial estate at Mettur Dam should be expedited.

CHEMICAL ANCILLARY UNITS

21. At the Chemical Industrial Estate at Mettur Dam, setting up of ancillary units for manufacture of Plasticisers for PVC and other plastics should be developed.

CHIP BOARDS

22. Efforts should be made for the starting of a chip board factory of at least 10,000 tons

per annum capacity, utilising the inferior woods available in the district.

DETAILED SCHEMES

23. Since data on many of the proposals enumerated above have not yet been fully worked out, it is recommended that the Follow-up Committee with the assistance of the Industries Department be entrusted with the task of obtaining exact estimates of cost, size, processes, etc. to make proper recommendations to interested entrepreneurs and to assist them in starting these industries.

In addition to the above specific recommendations, the Committee makes the following additional recommendations of a general nature whereby Government can assist the entrepreneurs in the starting of industries.

RAW MATERIALS

24. All efforts should be made by Government to ensure full supply of raw materials and other facilities for the existing heavy and medium industries in the district to maintain production at full rated levels and to expand their capacity to the maximum extent possible. It also recommends that these industries should take on lines of manufacture, ancillary to their existing production lines and also based on their by-products.

CENTRAL TESTING LABORATORY

25. A Central Testing Institute run by the Industries Department may be set up for carrying out mechanical and chemical tests to enable manufacturers of machine tools etc. to comply with the requirements for grading and quality marking of their products.

RAILWAY SIDINGS

26. The Railways should be prevailed upon to provide assisted sidings for medium and heavy industries instead of insisting that the industries should provide their own sidings. Apart from the cost, the difficulties of land acquisition make it almost impossible for private industries to secure sidings.

DEVELOPED PLOTS

27. As regards land for industries, in view of the recent difficulties encountered in the acquisition of land, it is recommended that Government may acquire the land in their own name, and while retaining the title, lease the land to the industries on either a 50 or 99 year lease basis. This will help industries not only by way of reducing their initial capital expenditure but would also assist in securing the land speedily.

POWER TARIFF

28. As a measure of encouragement to medium and heavy industries especially those which are electro-intensive, it is recommended that for an initial 5 year period, the State Government may be pleased to waive the electricity tax on such industries. In addition, the Electricity Board may be requested to afford a specially favourable rate for heavy and medium industries and above all, to main-

tain the same rate for the agreed periods without change, since the economics of the industries would be adversely affected by frequent changes in the electricity rates

ADVISORY BODY

29. The Committee recommends that a registered advisory body comprising of persons already experienced in industries as well as of officers of Government, operating on a no-profit no-loss basis be set up to advise and assist entrepreneurs in the setting up of new industries, so that the experience gained by existing industries can be made available to the new comers.

LIAISON OFFICER

30. Finally, the Committee recommends that a Special Officer be designated in the Industries Department to act as an Industrial Liaison Officer, to help the industry tackle its day-to-day running problems.

Recommendations of the Committee for MINERAL BASED INDUSTRIES

Chairman: Sri S. SATYANARAYANA
MANAGING DIRECTOR,
SOUTH INDIA GLASS AND ENAMEL WORKS, SALEM.

The Committee considered the paper already prepared by the Mineral Based Industries Sub Committee and discussed in detail the Industries that could be started based on the minerals available in this district. The following are the recommendations of the Committee:—

INVESTIGATION FOR ASBESTOS

1. *Asbestos*: It was reported that no occurrence of Asbestos capable of supporting an industry or being worked commercially is found in this area. Further investigation on the availability of workable deposits in the district may be considered by the Industries Department.

UTILISATION OF RED MUD FROM ALUMINIUM INDUSTRY

2. *Bauxite*: The Bauxite occurring in Shevaroy hills is utilised for producing Aluminium and fused Alumina abrasives. The iron fraction of Bauxite, if it could be recovered from the waste material during the manufacture of Aluminium would supply a desirable quantity of Fe_2O_3 , very useful in the Cement Industry and also as an ochre which can fetch high price. As such this could be examined and the possible recovery of Fe_2O_3 from the red mud during the manufacture of Aluminium may be taken up.

BAUXITE INVESTIGATION IN KOLLI HILLS

3. The Committee was informed about the probable availability of Bauxite containing 35%

and more of Alumina in the Kolli hills in Namakkal Taluk to be of the order of 24,000 tonnes. It was suggested to carry out further investigation for Bauxite occurrences in this region.

Beryl: The occurrence in Salem District being small, the mineral is only of academic interest.

BRICKS AND TILES

4. *Brick Clay*: The Committee was informed that suitable brick clay is available in large quantities in Hosur taluk. Mechanised units for the manufacture of bricks and tiles are recommended.

POLISHED STONES

5. *Building Stone*: There are a number of areas in Salem district where granites and syenites suitable for polishing are found. The possibility of polishing some of these crystalline rocks for producing ornamental stones should be considered.

Calcite: The estimated reserves of lime stones of various categories amount to a total of about 43 million tons of which high grade lime stone containing below 5% silica is estimated at 4.5 million tons. A note was made of by the Committee to the increasing demand for lime stones for various uses like manufacture of Cement, Chemical Industries and also Metallurgical Industries. The Committee was informed that the estimated reserves were based on exhaustive geological

surveys conducted on the occurrences of the Mineral in various parts of the District. A better appreciation of the reserves will be available when the drilling programme is extended.

HYDRAULIC LIME

6. The possibilities of manufacturing Hydraulic Lime from impure lime stone bands within the district should receive further consideration.

Chromite: It was brought to the notice of the Committee that a process has been developed by the National Metallurgical Laboratory by which it has become possible to use low grade Chromite ore wherein the chrome grains are of poor quality, for the manufacture of refractories. While the general technique of manufacture is the same as followed in existing Chrome Magnesite refractories, the importance of the invention lies in the adjustment of the batch composition to get the desired mineral ratio in the final product and proper selection and control of grain size of the low grade Chrome ore. Addition of other ores are made, where necessary, to get high refractory product with the desirable physical properties. The novelty of the process lies in the utilisation of the Chrome ores which were so far considered unsuitable for refractory purposes.

BENEFICIATION OF CHROMITE

7. The Committee recommends that the National Metallurgical Laboratory, Jamshedpur be requested for carrying out beneficiation and utilisation of the low grade Chromite in Salem district for the manufacture of Chrome-Magnesite bricks. The National Metallurgical Laboratory may also be requested to indicate the possibilities for the manufacture of Ferro-Chrome.

Columbite and Corundum: Discussions on these two minerals which came up in the agenda did not assume much importance as the occurrences are small.

WHITE CEMENT

8. *Feldspar*: This Mineral is mostly used in ceramics and glass industries and about 50,000 tons are estimated to occur in Salem district. Exports may be done in a powdered form to make it paying. The Annarthosite rock in Tiruchengode Taluk could be tested for the possible utilisation in the manufacture of White Cement.

MAGNESIUM

9. *Magnesite*: The possibility of extracting Magnesium metal out of Magnesite has been under study for some time now. Extraction by the National Electro-Chemical Laboratory at Karaikudi. The Committee recommends the setting up of a unit for producing Magnesium metal out of Magnesite available in Salem district, in view of the fact that the Magnesite available in Salem district is of high purity.

WALL TILES

10. *Quartz and Feldspar*: In Madras State there are a number of units engaged in the manufacture of sanitary wares. But we do not have in the South a unit for producing wall tiles. One such unit can be considered for implementation. The Committee therefore recommends that in view of the fact that Quartz and Feldspar of good quality are available in Salem and that 50% of this mineral go into the manufacture of white wares, a unit for the manufacture of wall tiles may be set up in Salem district. The other 50% of the white ware, namely, china clay can be obtained from Neyveli area.

SHEET GLASS

11. The Committee also recommends that a Sheet Glass Factory may be started as Quartz, Dolomite, Limestones and Feldspar are available locally.

OPHTHALMIC GLASS

12. It was also reported that there is no factory in the South for the manufacture of Ophthalmic glass. With the available

materials it is considered that there is very good scope for the manufacture of Ophthalmic glass.

INSULATORS

13. *Steatite*: The possibility of utilising Steatite as an Insulator in the electrical industry and also as a Refractory material is to be studied, to determine the feasibility.

TALCUM POWDER

14. Efforts are to be made to ascertain how far steatite powder can be used to replace white talcum powder.

FILLER

15. With growing industrialisation in India fillers will have a growing demand. But some research work has to be done about the various uses to which Steatite can be employed. With the large quantities of Steatite available, it is worthwhile to make a detailed study on this subject. However Steatite Powder can be successfully used as a filler in the manufacture of insecticides.

INVESTIGATION FOR VERMICULITE

16. *Vermiculite*: The references to Vermiculite occurrences in this district are not sufficiently informative. Further investigations may be taken up by the Department of Industries and Commerce as Vermiculite finds an extensive use as an Insulator.

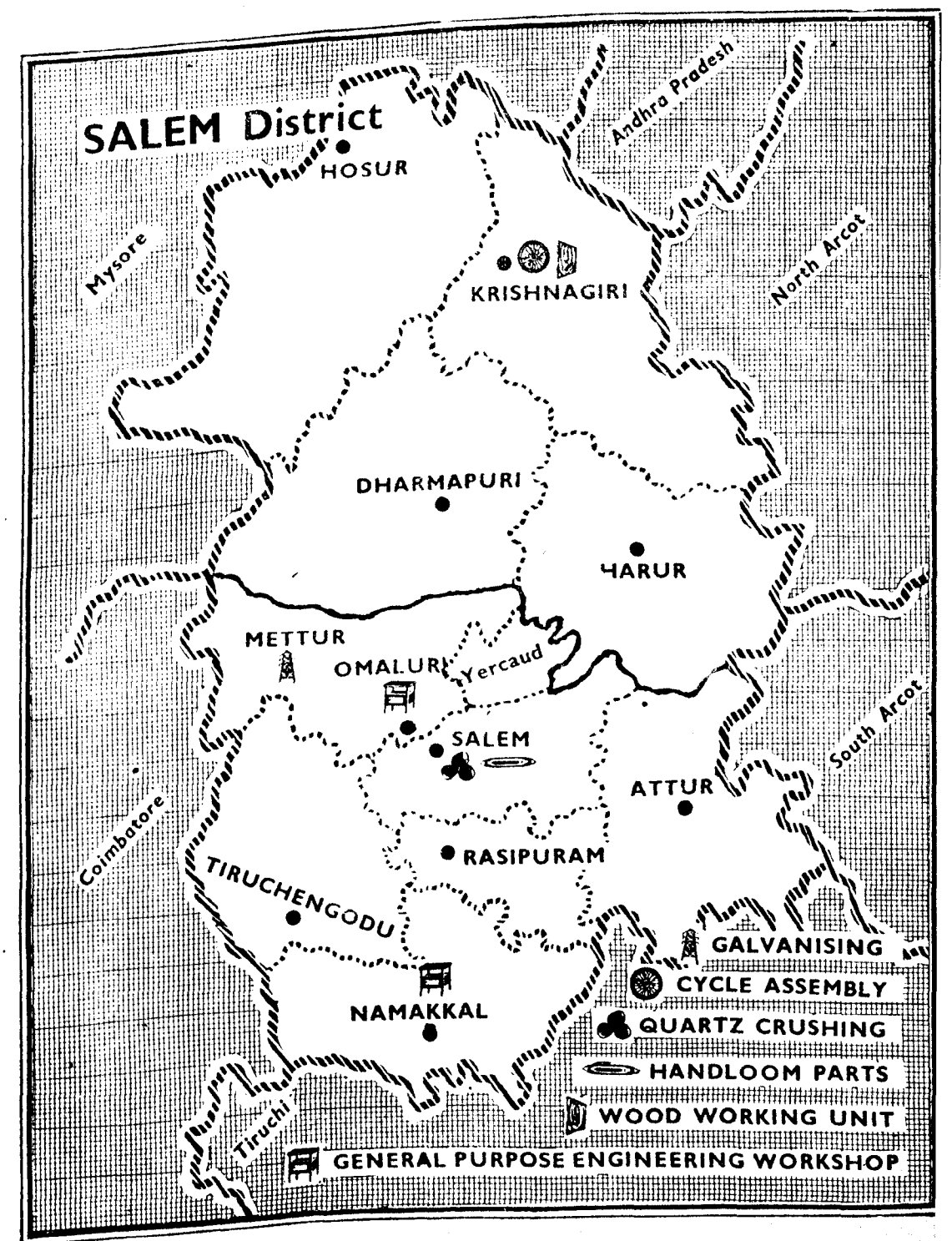
STEEL PROJECT

17. *Magnetite*: A brochure summarising the consulting Engineers' Report on the Neyveli-Salem Steel Project was circulated amongst the members of the Committee. It was pointed out that the commercial possibility

and the economic viability of the proposed steel plant have been placed beyond doubt by the consultants. In this connection, it was enquired whether the beneficiation of the Iron ore could be taken up independent of the establishment of the Steel Plant and possibilities for its export as beneficiated ore could be explored. It was felt that the export of the beneficiated ore may not be financially attractive on account of the high cost. It was also felt that we should take the beneficiated ore to the end-product, namely, alloy and other steels rather than stop with the beneficiation of the ore.

ACID JARS AND SILICA BRICKS

18. The availability of silica tailings after magnetic separation of the ore which will be a byproduct of the Steel Plant was indicated to be of the order of over a million tonnes per annum from the concentration plant. That is to say, the output will be above 3000 tonnes per day which is expected to increase with increase in the capacity of the Steel Plant. The tailings would contain mainly Silica (over 70%). The iron content would range from 12-16%. In view of the high iron content it may not be possible to produce quality glass, but the possible use of the mineral in the manufacture of acid jars and lime-silica bricks may be explored. It was decided to study this in greater detail by a Sub-Committee. This quantity of tailings from the concentration plant would otherwise have to be hauled as waste, and thus its utilisation on a commercial scale would improve the picture of the Steel Plant.



Recommendations of the Committee for SMALL SCALE, COTTAGE AND VILLAGE INDUSTRIES

Chairman: Sri R. GANESAN,
PRESIDENT,

MADRAS STATE SMALL SCALE INDUSTRIES ASSOCIATION, MADRAS.

The Committee was asked to consider and recommend Small Scale, Cottage and Village Industries schemes suitable for implementation in Salem District. The excellent report prepared by the Small Scale Industries Sub-Committee of which Sri V. P. M. Govinda Das was the convener formed the basis for discussion.

The group leader explained the details regarding the facilities available to the small scale sector in India particularly in Madras State and requested the members present to start any one of the industries recommended below as early as possible to avoid competition from other districts which might start the same industries in the near future.

AUTOMOBILE LEAF SPRINGS

1. Spring steel to be used in this manufacturing line will be available from All Steel Industries Corporation Limited, at Doddampatti from 1966. This industry can be developed as a medium scale industry as the cost of machinery along comes to Rs. 7 lakhs.

On specific orders, other types of steel can also be manufactured at Doddampatti and bearing this in mind starting of industries for other products can also be considered.

A. C. S. R. CONDUCTORS

2. In view of the difficulty of getting Aluminium as a raw material, it is desirable

to work out a detailed scheme to use Aluminium wire which is available as the starting material and if feasible this can be started as a small scale unit.

FIVE GALLONS DRUMS

3. Manufacture of drums does not appear to be feasible for the present because of the non-availability of raw materials. This can be started if the required sheets are made available. Drum making industry is essentially a small scale one and as such the Government of India can be approached to include this item in the list of products exclusively allotted for manufacture by the small scale sector.

MOSAIC TILES

4. Some of the Mosaic tiles manufacturers in the State get cement at controlled rates and hence have an advantage in production cost over others who buy the raw materials at open market prices. In view of the big building programme for residential houses and industries, the demand for Mosaic tiles is on the increase. Hence this industry is recommended as cement can be supplied at controlled rates.

This unit can very easily be located in rural areas also.

PAINTS AND VARNISHES

5. In view of the recent report published by the Ministry of Industry, a large variety of

paints and varnishes can be manufactured by the Small Scale Sector. Madras Government are of opinion that progress in this line can be made only after the Government work out detailed plans and set up a pilot plant. It is recommended that in view of the availability of raw materials in Salem District, the pilot plant may be set up in this District.

Most of the raw materials are available locally and assurance can be given for quality and price. Hence there is good scope for this industry in Salem District. However it is suggested that before any entrepreneur ventures into this line, it is advisable to get expert advice from the Small Industries Service Institute.

CALCIUM CARBONATE

6. This project is feasible since the machinery and the requisite raw materials are available in India. It would not be difficult to start this industry. The number of units in the small scale sector manufacturing this item are very few. Hence this project could be pursued.

READY MADE GARMENTS

7. This is also a feasible item in view of the local availability of handloom fabrics. If the required number of good tailors are available, the scheme could be put through. It should be noted that places like Madras, Madurai are having such units. Care should be taken to see that proper designs are made to catch the eye of the buyers. Ready made garments from mill-made cloth are to be supplemented. An integrated plant would cost less than Rs. 3 lakhs.

PAPER MILL

8. Establishment of a paper mill for manufacture of brown wrapping paper should be considered. For this purpose, a mill of 1 ton capacity will be economical. Hence this is recommended.

The economic unit for a Paper Mill for white writing paper is believed to be 10 tons per day and such a unit requires Rs. 25 lakhs.

DRAWING AND FILTER PAPER

9. This is well within the small scale ambit. The demand is large and hence sales will not be difficult if the quality is upto the standard. The scheme is recommended.

CARD BOARD

10. This is also well within the small scale ambit. The demand is large and hence sales will not be difficult if the quality is upto the standard. The scheme is recommended.

CATTLE FEED

11. This project is feasible and can be easily started. The manufacturing technique is also simple. The sales could be effected in the district itself provided the product is marketed at a price equal to that of O. K. cattle feed.

GLUCOSE

12. The starting point for glucose is refined starch. The technical know-how is important as the glucose is to conform to B. P. standard and should withstand competition in regard to quality and price with the big industries like Anil, etc. This is to be manufactured under hygienic conditions.

BUILDERS HARD-WARE

13. Industrial products viz., builders items such as door handles, window panels etc., can be manufactured from Aluminium and they will find ready market. This line of production is therefore recommended.

COATED ABRASIVES

14. In view of the availability of raw materials like quartz, garnet, and emery in this district and the ready market for these products the scheme for manufacture of coated abrasives is recommended.

MISCELLANEOUS

15. The following industries are found to merit consideration after going through the project reports.

- i. Sizing for textiles.
- ii. Brick-making with the aid of limited machinery.
- iii. Carton making
- iv. Sisal fibre.
- v. Cold processed bolts and nuts.

VILLAGE INDUSTRIES

The State Khadi and Village Industries Board is concerned with the development of the 15 Village Industries mentioned below :—

1. Blacksmithy and Carpentry Industry.
2. Palmgur Industry.
3. Village Pottery Industry.
4. Brick making.
5. Bee-keeping Industry.
6. Village Leather Industry.
7. Ghani Oil Industry.
8. Processing of Cereals and Pulses.
9. Non-Edible Oils and Soap Industry.
10. Gur and Khandasari Industry.
11. Lime stone and its products.
12. Hand-made Paper Industry.
13. Cottage Match Industry.
14. Fibre Industry.
15. Manufacture and use of manure and methane gas from cow-dung and other waste products.

FUNDS FOR IMPLEMENTATION

Funds for the implementation of the schemes are provided either through co-operative societies or through registered associations. The Board itself runs some centres under its direct control.

TAPPERS

Among the artisans in this district the largest are the tappers. They have grouped themselves into co-operatives. Much has to be done to ameliorate their condition in the coming years.

BLACKSMITHY AND CARPENTRY

Next come the Blacksmiths and the Carpenters. To improve their traditional skill, provision has been made to open training centres in the blocks so that they can be given training as far as possible near their homes. They would also be supplied with improved tools and equipments at concessional rates besides a common workshop with some power-operated simple machines which will have to be found for them.

TANNING AND LEATHER GOODS

Tanners and cobblers rank third in strength among the village artisans. Majority of them are Harijans. They deserve help. Model Tanneries, common workshops, and grant for the construction of pits and purchase of implements are some of the forms of aid given to them. The co-operatives formed for them go a step further and advance them money for the purchase of raw hides and get it back after the finished goods are sold by the tanners. Individual cobblers are given a grant of Rs. 50 per head for the purchase of tools.

POTTERY AND BRICKS

Pottery plays a vital part in the village economy in spite of the modern rush for aluminium and ever-bright steel articles. The village artisan is not unaware of that change. He is to take over to new methods of work, attract business and retain his customary trade. There is provision for giving him training in white pottery, lacquer-coated articles etc. Wherever possible, he will be induced to take to the manufacture of bricks (chamber kilns), tiles and pipes. The formation of co-operatives for those items of work also has been kept in view.

VILLAGE OIL INDUSTRY

Village Oil Industry, because of its quality, still survives in spite of the heavy competition from the rotaries and expellers. The artisans are brought under the co-operative fold and

are given advances for the purchase of ghanies, bulls and sheds. The societies get the usual type of aid for working capital, stocking loan and the like.

LIME KILNS

Construction of lime kilns to meet the demand of the building programme has been one of the items taken up for implementation. The industry is run as co-operatives or by the Panchayat Unions. Cumbly Weaving Industry, basket making and mat weaving at the Block level are also taken up.

TRAINING FACILITIES

To meet the requirements of the technical personnel in each industry and improve the skill of the artisans almost every scheme has provision for training with usual stipend for the candidates.

SOAP MAKING

With special reference to the availability of raw materials in this District, procurement of

non-edible oil seeds and converting them into oil and opening soap units have been considered and plans drawn up.

BEE-KEEPING

Bee-keeping industry has also been given due consideration in the plan because of the large extent of forest areas both on the hills and the plain.

MATCH INDUSTRY

One cottage match unit is functioning at Hosur. After judging its performance, further units will be started. The splints used in the manufacture of the matches are of bamboo.

It can be said to the credit of the Department that out of a total of over 80,000 artisans in the District, more than 50 per cent have been covered already. The total number of departmental units, co-operatives and block units is expected to be of the order of 765.

Recommendations of the Committee for AGRICULTURE-BASED INDUSTRIES

Chairman : Sri VENKATESAYYA,
INDUSTRIAL ADVISER TO GOVERNMENT OF MADRAS

This Committee was assigned the task of considering the various industries that could be set up in Salem District based on the major agricultural products. The Committee, therefore, concentrated its attention on such of the Agro-based industries that have good commercial possibilities and also on some of the important problems faced by those who are already engaged in these industries.

The excellent report of the Sub-committee headed by Sri N. Jagannathan provided the necessary back-ground material for discussion. A large number of delegates took active part in these discussions and each proposal was examined from all important aspects and the contributions from some of the delegates who had special knowledge and practical experience in the field helped greatly in deciding the feasibility or otherwise of the projects under consideration. The following are the main recommendations of this Committee.

Tapioca: Sago industry based on the cultivation of tapioca which is currently gaining immense popularity is the foremost Agro-industry in this district. The existing factories numbering more than 300 have an annual capacity of 1,25,000 tons of sago, starch etc. The Committee desired that one important aspect of this industry which is vitally affecting its growth should be highlighted. Starch, which is mainly required in the textile industry is obtained from two main sources, namely maize and tapioca. In

the northern part of our country, starch is prepared from maize and it is disheartening to note that an appreciable amount of the maize imported into our country under PL 480 is converted to starch. This has certain obvious price advantages, so that the starch from this source is sold at a comparatively cheaper price than starch produced from Tapioca and this poses an unfair competition for the producers from this district.

BANNING STARCH PRODUCTION FROM IMPORTED MAIZE

1. It has generally been accepted both in practice as well as by accepted standards set by the textile industry that the starch from Tapioca is in no way inferior to the starch from maize. It is therefore represented that in the interest of encouraging a product which is cent per cent indigenous and also to save foreign exchange which is unnecessarily utilised for importing maize for conversion into starch, steps should be taken to prevent the manufacture of starch from imported maize.

CENTRAL SAGO FACTORY

2. The Committee recommends that a Central Sago Factory be set up to manufacture approximately 200 tons of sago per day by utilising the starch produced from the smaller units. This large central unit can adopt modern scientific methods of production using the most up-to-date machinery and have the benefit of quality control at each stage. This will ensure an end-product of assured quality

to any prescribed specification so that there will be good possibilities for export also.

IRRIGATION FACILITIES

3. The Committee further desired that the Government should take necessary steps to provide adequate water supply for raising the tapioca crop which would be essential for meeting the additional requirements.

GLUCOSE ETC.

4. The Committee further recommended that new units for manufacture of Glucose, Dextrine etc., be taken up from starch as the base material.

Groundnuts: Having in view the fact that this district has an area of approximately 2,70,000 acres under groundnut cultivation, the Committee recommended the following:—

SOLVENT EXTRACTION PLANT

5. At least two units for Solvent Extraction of oil cake of approximately 25 to 50 tons capacity per day be taken up. All the machinery for such units are available indigenously. The Committee further desired to stress that a good amount of propaganda and publicity from the agricultural department and other agencies have to be made to educate the cultivators that de-oiled oil cake is really a better fertilizer than ordinary oil cake in as much as de-oiled oil cake is more easily assimilable in the soil than oil cake containing 4 to 5% of residual oil.

MULTI PURPOSE FOOD

6. People in our country are generally under-fed and suffer from chronic mal-nutrition. To help solving this deficiency the Central Food Technological Research Institute at Mysore has evolved a recipe which is gaining popularity on account of its cheap cost and nutritious food value. Groundnut flour is one of the major elements in this recipe. The Committee therefore recommends that to start with, two units may be set up for the manufacture of multi-purpose food, the full details

of which are available from Central Food Technological Research Institute.

PARTICLE BOARD

7. It has now been well established that groundnut husk can be very advantageously utilised for the manufacture of particle board which is used as a substitute for wood. With the progress of pre-fabricated houses, the demand for particle boards would increase considerably. The necessary resins and binding materials are also of late, produced indigenously. Considering the fact that all the principal raw materials are of indigenous origin, the Committee recommends that one unit be started for the manufacture of particle boards. The full details of the scheme may be had from the Department of Industries.

Castor Seeds: Having in view the abundant availability of castor seeds in this district, the Committee recommends setting up of six units for the manufacture of the following items.

REFINED CASTOR OIL

8. A plant for refined castor oil with a capacity of one tonne per day would require a capital investment of Rs. 4 lakhs.

TURKEY RED OIL

9. Turkey Red Oil is Sulfonated Castor Oil, and a plant of 1/2 ton per day capacity would cost about Rs. 1.5 lakhs.

BLOWN CASTOR OIL

10. A small plant for Blown Castor Oil (Oxidised Castor Oil) of 1/2 ton per day capacity would require an investment of Rs. 1.5 lakhs.

GINNING FACTORY

11. **Cotton Seeds:** The Committee recommended setting up of a unit for de-linting cotton seeds and making the seeds available for existing oil mills.

COTTON RESEARCH STATION

12. The Committee recommended setting up of a Central Cotton Seed Research Unit so

that the benefits of the same may be available for the people in this district.

Sugar Cane: The Committee considered that in view of the large demand for sugar in the country, this district should play its part in contributing to the increase in sugar production in Madras State. The measures proposed are:

EXPANSION OF MOHANUR SUGAR FACTORY

13. Expansion of existing factory at Mohanur to increase its crushing capacity to 2000 tons of cane per day.

ADDITIONAL SUGAR FACTORY

14. Setting up another sugar factory with a crushing capacity of 1,000 to 1,250 tons of cane per day in the northern part of this district since it is known that there is sufficient potential in these parts to develop sugar cane crop to sustain the plant of the above-mentioned capacity.

KHANDASARI FACTORY

15. Establishing at least two Khandasari units of approximately 50 tons per day in locations where about 300 to 400 acres of sugar cane planting is available and which is not earmarked either for the Mohanur Factory or for the proposed plant in north Salem area.

PAPER MILL

16. **Paddy Straw:** In view of the abundant availability of paddy straw the Committee recommends that two small scale paper plants of approximately 10 tons per day be set up, at the location where surplus straw is available after meeting the requirements of cattle fodder.

STRAW TUBES

17. In advanced countries like Japan, straw has been utilised for the manufacture of bags and drinking straw tubes. The Committee

therefore recommends that by utilising the technical know-how from Japan, a small unit be set up for the manufacture of the above items in this district. The details for this can be had from the Industries and Commerce Department.

FRUIT PROCESSING

18. **Fruits:** Considering the abundant availability of the large varieties of fruits like mangoes, tomatoes, oranges, pine apples and bananas in this district, the Committee decided that one composite unit for cold-storage of fruits, processing the same into mango nectar juice, pulp etc., and packaging the same together with the dehydration and packaging of available vegetables, be started. The plant to handle approximately 10 tons of fruits per day would cost approximately Rs. 15 to 20 lakhs.

FRUIT JUICES

19. The Committee also considered it desirable that smaller units for preparation of juices, squashes etc. be set up in hill stations with a view to effectively using the fruits grown in these hill stations since at the present time it is reported that there has been a woeful wastage of such fruits for want of proper transport facilities.

BANANA FIBRE BAGS

20. **Banana:** The Committee desired that further investigations be conducted in regard to the commercial possibility of utilising the unit which has recently been developed in Germany for the manufacture of fibre from plantain stems. This composite unit comprises of two parts one for producing the fibre and the other for weaving them into cloth and making bags from them. The unit to produce fibre is portable and can easily be shifted from station to station where abundant banana crop is available. The second part can be located at a central place and fed with the fibre produced from the portable unit. The cost of

the plant is approximately Rs. 25 lakhs. It is learnt that one such unit is going to be set up in Maharashtra State. The Committee recommends that a detailed investigation of this project be taken up and if it shows that this industry has bright commercial prospects, one such unit should be set up in this district.

TANNIN

21. **Tamarind Seeds:** One of the entrepreneurs Sri N. Ramalingam, Linga Villa,

Cherry Road, Salem-7 in this district has already conducted experiments to prove the feasibility of extracting tannin from tamarind seeds. Further investigation is necessary for obtaining more statistical data regarding the commercial aspect of such a scheme. The Committee therefore, recommends that the matter should receive a high priority for immediate investigation, as tamarind is one of the important agricultural products of this district.

Recommendations of the Committee for INDUSTRIAL FINANCE

Chairman: Sri A. R. GANESAN,
MANAGER, DALMIA MAGNESITE CORPORATION, SALEM-5.

This Committee discussed the various financial aspects connected with the expansion of the existing industries and starting of new industries in this District. It also considered the available assistance offered by the Government and the financing institutions to promote growth of industries in the district. Valuable suggestions were put forth by the participants. Special mention must be made about the note prepared by the Agent, State Bank of India explaining the liberalisation of the Bank policy in extending credit facilities.

STATE BANK LOANS

1. The Bank is prepared to advance funds to Industrialists on materials which can be converted into finished goods and sold easily in the market. An opinion was expressed by some of the members that generally Banks lay down stringent conditions on the securities offered, giving only a secondary consideration to the potentialities and the profitability of the industry. It was explained by the Agent, State Bank of India, that the advances granted by the Bank nowadays are based more on the needs of the Industries than on security although security is an essential aspect in extending credit facilities. The Bank is prepared to grant clean overdraft to accredited parties for purchase of raw materials and release goods under pledge on trust letters pending despatch to destination and presentation of document for discount.

STATE AID TO INDUSTRIES

2. The grant of block loans under the Madras State Aid to Industries Act was considered by the Committee. As per the existing rules, such loans are granted for

a period of 7/8 years. Certain items of accessories for e.g. sugar cane pans whose life is comparatively shorter are left out of consideration at the time of grant of such facilities. It is suggested that the Government may consider grant of loans for such items also reducing the period of repayments to 2/3 years. It is also understood that Government rules provide for giving subsidy to new scientific inventions. The Committee is of the view that the Government can go a long way in helping new entrepreneurs with such new ideas subject to any limitations which may be considered necessary.

LIBERALISATION OF ADVANCE TAX

3. In recent times, budgets have been defence-oriented and hence there has been a stagnation or even deterioration in the growth of consumer industries. A valuable suggestion has been put forth in the Committee that a liberalisation of advance tax will help improve the finances of existing industries. This concession may be granted to deserving industries which launch expansion programmes and which otherwise cannot raise adequate resources so that a portion of the tax may be ploughed back to promote industrial growth.

JOINT LENDING BY BANKS

4. Sometime back a scheme of joint lending by banks was suggested by the Governor of the Reserve Bank of India. Although the details of the Scheme are not yet available, it is felt that it is a very useful suggestion from the point of view of the entrepreneurs who will be benefited to a large extent. Such

joint lending by banks not only help the industrialists but also the smaller banks in extending credit facilities to sound industries.

EXPANSION OF BRANCH BANKING

5. The question of expansion of branch banking was considered. The Agent, State Bank of India, informed the Committee that bank is opening a number of branches in many rural areas with a view to attracting more deposits. In our district two branches are to be opened shortly and one pay office is to be upgraded to a Branch.

SIMPLIFICATION OF INDUSTRIAL LICENSING

6. The simplification of Governmental procedures would help setting up new concerns at a reasonably short time. The Committee is glad to note that the Government have already been working on these lines and there had been decentralisation of powers in order to minimise delays. It is understood that the report of the Swaminathan Committee for simplification of procedures for industrial licensing is being implemented.

RESOURCES FOR FOURTH PLAN

7. The Committee feels that in this context the raising of internal resources in the District for financing the fourth plan needs study. It has been reported that out of the allocation of funds for the plan, our State is likely to have an outlay of about Rs. 600 crores. Of this, we can reasonably expect that about 1/3rd of the total capital outlay may have to be raised locally. We may also estimate that the plan outlay for our district to be to the tune of about Rs. 60 crores, for the next Five Year Plan period. As this Committee observes from the reports of the various other Committees that there are enough potentialities to start several industries in this District in the next Five Year Plan and the capital outlay may be of the order of about Rs. 60 crores. The responsibility of raising resources to the extent of Rs. 20 crores

may devolve on local resources. The remaining Rs. 40 crores will, of course, come by way of assistance from Government, Banks, and other financial institutions. The question of raising these funds may have to be examined in detail vis-a-vis the feasibility of starting new industries when the various suggestions to start new industries in this District take a concrete shape.

In order to encourage the raising of capital for the private sector industries to be established in the district in the Fourth Five-Year Plan period, it is necessary for Government to revise its policies in respect of taxation of individuals as well as of companies. Individuals should be encouraged to save and invest their savings in private sector companies. Companies should be helped to distribute a reasonable part of their income to investors and plough back the surplus for expansion and modernisation. With a view to achieving these ends and to get a minimum of Rs. 20 crores invested in private sector industries in the district during the Fourth Plan period, the following recommendations are made.

TAX HOLIDAY

(i) It is becoming more and more difficult for new industries to raise capital because the industries reach the stage of profitability which would enable them to declare dividends only after a weaning period of about 5 years. The tax holiday which is now given to new industries should cover a period of 5 years from the financial year in which the companies reach the taxable income earning stage.

TAXATION POLICY

(ii) Taxation of the corporate sector should be stabilised so that earnings of corporate sector companies will not suffer the violent fluctuations to which they are now subject as a result of increased taxation from year to year. The individual investor should have the assurance that the conditions under which he first made his investment does not suffer

serious changes thereby adversely affecting the return which he had originally thought possible on his investment.

ANNUITY DEPOSIT SCHEME

(iii) Taxation and other measures affecting individual incomes in a manner which results in mopping up the savings of the individual and diverting them to Government channels should be discontinued. The annuity deposit scheme recently introduced is one of such measures which will result in diversion of funds which would have otherwise been invested directly in the private sector enterprises and should therefore be discontinued.

INCOME FROM SHARES

(iv) Individual income from Corporate sector investments upto the limit of Rs. 1,000 per annum should be freed from assessable income in order to encourage investment. This is on lines parallel to the exemption limit granted in respect of investments made in the funds of the Unit Trust of India.

UNIT TRUST OF INDIA

(v) The funds of the Unit Trust of India originated from the individual investor and should therefore be invested in private sector industries to the maximum benefit of the private sector. The funds of Unit Trust should therefore be used not only for investment in established concerns but a reasonable percentage should also be invested in new enterprises.

DEVELOPMENT REBATE

(vi) There is a fear that the grant of development rebate to industries might be discontinued from next year. Companies should immediately be given an assurance that the grant of development rebate will be continued for further periods in order to help industries to plough back their earnings for further development.

SURTAX

(vii) Super profits tax has recently been replaced by a surtax on Companies' profits at

40% on the residue of profits after tax and after deduction of 10% on the capital base which includes capital, reserves and long-term borrowings. This surtax should be abolished as it tends to take away from industries an increasing proportion of their profits.

TAX CONCESSION

(viii) A rebate of 10% in Corporation tax and 20% in Surtax is being given to certain basic industries, but not to all. Such concessions should be extended to all capital-intensive basic industries.

DIVIDEND TAX

(ix) Public Companies have to pay dividend tax at 7.5% on the amount distributed as dividend on capital other than preference shares. As this looks more like a penalty on the better managed and efficient companies, it should be abolished.

MARGINS FOR BORROWINGS

(x) The present margins for borrowings from financial institutions on long term basis as well as banks on short term basis are very high and these high margins adversely affect formation of capital resources as well as liquid resources for working capital. Margin should be so reduced as to enable borrowing of twice the value of the available security.

EXPENDITURE ON NEW COFFEE AND TEA ESTATES

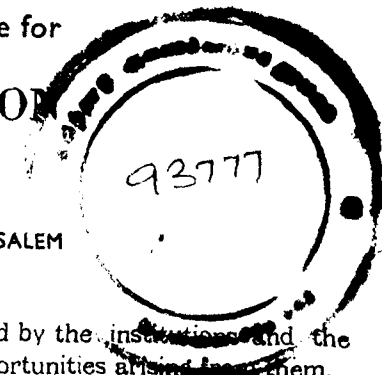
(xi) Development expenditure on expansion of Tea and Coffee estates is now treated as capital expenditure which adversely affects the further expansion of the acreage. Suggestions have already been made to the Central Government that this expenditure should be treated as revenue expenditure in order to provide the incentive for increased production. It is well-known that Tea is a foreign exchange earner and deserves special consideration. It is, therefore, recommended that this request of the Coffee and Tea plantations may be supported by the State Government.

Recommendations of the Committee for

TECHNICAL EDUCATION

Chairman : Dr. U. S. SINGH

MANAGER, BELPAHAR REFRACTORIES LIMITED, SALEM



The Committee considered in detail the paper prepared by the Technical Education Sub-committee and offer the following recommendations.

COMMITTEE TO POPULARISE TECHNICAL STUDY COURSES

1. Salem District has three Industrial Training Institutes and a Science College. A Government Engineering College is expected to be started during 1965. It is noticed that the seats available in the Technical Institutes are not fully utilised at present as quite a number of seats remain vacant. This shows that either the people are not fully aware of the educational facilities offered by these institutes or they are not fully informed of the advantages of these courses. It therefore becomes important to disseminate information to the public so that they may take full advantage of the facilities in these institutions. Towards this end, it is recommended that a Committee consisting of the Principals of Technical Institutions, Headmasters of High Schools, District Educational Officers, District Employment Officer, Panchayat Union Chairmen and such other persons who may be useful be constituted to popularise these technical courses.

It is further recommended that it should be impressed upon the Headmasters of High Schools that they should take particular interest in educating the students regarding

the trades offered by the institutions and the employment opportunities arising from them.

ADDITIONAL TRADES

2. The Committee recommends that at the Craftsmen level, in addition to the existing trades in the Industrial Training Institutes, additional trades like Motor Mechanics, Radio Mechanics, Instrument Mechanics including watch repairing, and Bleaching and Dyeing should be started.

GLASS BLOWERS

3. Glass blowers are required in the existing glass factories and also for making Scientific Instruments for schools, colleges, and research institutes. Facilities for training in glass blowing for a limited number of trainees is available at present at the Government Scientific Glass Factory, Guindy, Madras. It is recommended that this training should be arranged for a larger number of persons than at present.

TELECOMMUNICATION

4. During discussions it was brought out that there is no sufficient demand at present to start a separate course at the Diploma level for specialised training in chemical and physical testing. It was however considered necessary that more emphasis should be given on telecommunication and instrumentation for the Diploma course in Electrical Engineering.

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FUELS AND FURNACE TECHNOLOGY

5. Fuels and Furnace technology has assumed a very great importance in modern scientific developments and production techniques. Unfortunately this important course does not find a place in any of the Technical Institutions in Madras State. It is therefore recommended that a course in Fuels and Furnace technology should be started at the Diploma level to begin with and then at the Degree level later on.

MINING ENGINEERING

6. There is no course in Mining Engineering in Madras State. Further the number of seats available for this course on an all India level is also not sufficient to cater to the needs of Mining industry with the result there is a great dearth of Mining Engineers. Therefore it is recommended that a degree course in Mining Engineering should be started in the proposed Engineering College at Salem. For this purpose some arrangements with the large mining companies of the north should be made to provide for practical training in the mines for students. It should not be difficult to have 3 to 4 months of practical training in the during mines during every year of the degree course.

METALLURGY

7. Similarly for gainful exploitation of the minerals in Salem district, a degree course in Metallurgy should also be started in the Salem Engineering College.

CHEMICAL ENGINEERING

8. A wide range of chemical industries is developing in Salem District. Hence it will not be out of place to point out the desirability of starting a degree course in Chemical Engineering in the new Engineering College proposed for Salem.

PRACTICAL TRAINING

9. It is increasingly realised and recognised by one and all in industry that the ability of

the students coming out from the technical institution to apply in practice what they have learnt is not of a high order. Hence it is recommended that stress on practical training should start from the high school level in the bifurcated course which should be of 3 years instead of the present 2 years, with all-round development in Blacksmithy, Carpentry, Fitting, Electrical wiring and Geometrical drawing. This will be of great help to the students in developing their talents for practical applications when they go for higher education in technical courses. These students should be given preference for admission to Technical institutions. Further the Committee is of opinion that the syllabus for Diploma Courses is so heavily packed that it leaves very little scope for giving practical training to the students which is equally important for producing able engineers.

It is therefore recommended that the curriculum be so rearranged, recognising the due importance of practical training so that the students get practical training during their course of education.

Also while admitting students into technical institutions, preference should be given to those who have some practical experience in addition to the Engineering students from the bifurcated course in High Schools. Practical training benefits the employer as well as the trainee. It will therefore be beneficial to both if a decent emolument is given to the trainees.

COURSES OFFERED BY PRODUCTIVITY COUNCIL

10. Every factory aims at efficiency in production by trying to get maximum production with minimum investment in materials, men, and time. Towards this end, the Salem Productivity Council has been conducting courses in different aspects of production like Production Planning, Cost Control, Work Study etc. As the industrialists attending

these courses find them to be beneficial, it is recommended that the Salem Productivity Council should arrange to offer similar courses to cover wider aspects of Industrial Management and Production.

RESEARCH

11. The need for research cannot be over-emphasised. The minerals available in Salem District offer great scope for mineral based industries. It is technically made feasible to exploit most of the mineral occurrences. But research has to precede. Hence a research institute for mineral based industries should be set up in Salem Town with the co-operation of Government and Private Industry.

TECHNICAL LIBRARY

12. There is no technical library in this District. The individual collections by the factories or engineers are not sufficient to meet the requirements of the industry. Therefore it is recommended that a technical library which can also carry out documentation work, review of literature and circulating information about technical developments in India and abroad, should be opened. Perhaps the local library could be developed to have a separate wing for technical subjects covering a wide range.

TIRUNELVELI DISTRICT

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TIRUNELVELI DISTRICT

AREA (in square miles)	...	...	4,407
POPULATION	...	...	2,73,0279
INDUSTRIAL ESTATES	...	...	1. Koilpatti 2. Pettai 3. Tuticorin (Co-operative)
SMALL SCALE INDUSTRIAL UNITS (Government)	...	...	Pathamadaai ... Wood Working Unit Tuticorin ... General Purpose Engg. Workshop Pettai ... Tool Room, Common Lease Shop, Wood Working Unit, Model Foundry.
NO. OF REGISTERED UNITS (Small Scale Industries)	...	...	658
IMPORTANT LARGE SCALE INDUSTRIES	...	Textile Mills	... 16 (12+4)
		Cement Factory	... 1
		Heavy Chemicals	... 2
		Explosives	... 2

N. B: Figures in brackets indicate split up figures of the factories functioning and those either licensed or under construction.

MINERAL WEALTH

Name of Mineral	Chemical Composition	Industrial Application
1. Crystalline Limestone	Cement grade 46 to 52% of CaO	Important deposits are found in Tirunelveli, Ambasamudram, Kovilpatti and Sankarankovil taluks. Fandapuli area 5 million tons Ramayanpatti area 5.8 million tons Nanguneri Taluk 1.25 million tons of Limestone averaging about 48% CaO is available. The Talayuthu deposit is being worked by the India Cement Co. for their factory at Talayuthu.
2. Cement Sands	—	Ovari, Navaladi area in Nanguneri Taluk reserves 23,000 tons utilised by Abrasive Industries.

TIRUNELVELI DISTRICT

The Tirunelveli District Industrial Seminar was held on the 14th and 15th June, 1965. Sri M. Bhaktavatsalam, Chief Minister of Madras inaugurated the seminar. Sri R. Venkataraman, Minister for Industries presided over the function. The exhibition conducted on the occasion was declared open by the Minister for Local Administration.

The following are the reports of the Group Discussion Committee formed on the occasion with Sri S. J. Adithan as Chairman and Sri A. Chelladurai, Sri R. Guruswamy Nadar and Sri T. R. Sundararajan as members.

TECHNO-EDUCATION COMMITTEE

Tirunelveli District which has nine taluks is primarily an agricultural district. The Tambaraparani river basin, consisting of the taluks of Ambasamudram, Tirunelveli, Srivaikuntam and part of Tiruchendur has rich paddy fields. This area is also thickly populated, and the main occupation of the people here is agriculture. Agriculture is also the main occupation of the people in the other taluks, but as it is dependant, in these Taluks, on seasonal rains only, the people there have to take up to other vocations. To obtain a self-generating economic standard it has been found that the vast proportion of the population engaged in agriculture should be brought down to about 1/3rd its present strength. This can be done by providing training in skills on a large scale, organisation of agriculture seed development and improved production of agriculture.

Tirunelveli District is educationally forward in the South. But it has not so far concentrated on education towards industrialisation.

The mineral wealth of this district is meagre. There are small deposits of iron ores along the foot of the Western Ghats. Iron smelting

which was once done as a Cottage Industry at Vasudevanallur, Kadayanallur, Vallam and elsewhere has, however, disappeared with the import of cheap iron. Graphite of good quality is found in the Singampatty hills, but it is not being worked profitably. Limestone is found in abundance in many parts of the district, particularly in the black cotton soil area.

The post independence period provided plenty of opportunities for the entrepreneurs of this State to come forward to start industries. This district has played its role in starting a few major industries in Cement (The India Cements Ltd.) Chemicals (Industrial Chemicals Ltd., manufacturing of Calcium Carbide. The Dharangadhara Chemical Works Ltd. manufacturing Caustine Soda etc.,) Textiles (Madura Mills Ltd., Lakshimi Mills Ltd., etc.) salt manufacture is a well established major industry in this district.

The District must be considered still industrially backward, in spite of the establishment of a few major industries and a number of small scale industries in the recent past. However, in the near future, we have the

possibility of starting new industries to manufacture Soda Ash, Potassium Chloride, Potassium Chlorate, fertilisers, Polyvinyl chloride, paper, Sugar, etc., besides many small scale industries. There is also a possibility of an Oil Refinery at Tuticorin and a Thermal Electricity Generating Plant is coming up at Tuticorin shortly. The Tuticorin Harbour is being expanded, and this may be expected to facilitate the expansion of industry and commerce of this region.

We can have a number of automobile workshops and other factories and industrial undertakings like the rice mills, ginning factories, railway departments, electrical undertakings and hydro-electric project, etc., to absorb the technicians who will be trained during the next five to ten years especially as more and more industrial establishments are expected to spring up during these years.

Besides the industries mentioned above we suggest the following also to be started in our district.

1. Surgical Cotton Mills.
2. Manufacture of Salt by-products like Magnesium Sulphate gypsum etc., in commercial quality.
3. Manufacture of the above bye-products and chemicals and Chlorine products in British Pharmacopeia standard in Pharmaceutical laboratories.
4. Manufacture of glandular products like Pituitary Extract, Thyroid extract etc., as it is found that quite a large number of animals are slaughtered in this district for hydes.
5. Manufacture of laboratory needs like the water stills, room coolers, domestic boilers etc.
6. Making of Scientific instruments.
7. Manufacture of plastic adhesives, rubber adhesive cement seating compounds, etc.
8. Making of containers.

9. Fruits-canning industry.

10. Making of wire mesh, weld mesh, fencing wires, wirenails, iron and wooden screws, bolts and nuts making.

11. Casting and forging, making metal windows, doors etc., concrete vibrators and manufacture of concrete mixers (as during the next few years a lot of buildings will becoming up in this district).

12. Supply of the needs of the automobile workshops large industries like the Heavy Electricals Boiler Plant at Trichy, Integral Coach Factory etc., laying stress on quality.

13. Radio Assembling and allied industries.

14. Manufacture of Tube light and electric bulbs.

15. Making of Engineers' and Carpenters' tools.

16. Distillation of essential oils like lemon grass oil, Eucalyptus oil etc.

17. Herbarium at Courtallam may be started and tinctures, decoctions, and medicinal preparations may be made.

18. Fish curing and canning industry.

19. Boat Building.

20. Sheep breeding, Poultry farming, and dairy farming industry.

21. Slaked lime manufacture for building purposes, hydes curing etc.,

There is good scope for starting the industries suggested above. It is evident that requirements of technical personnel will be very largely increased due to the envisaged industrial development in this district. And this group suggests that suitable training facilities at the required levels to man the industry we organise in this district, should be made forthwith.

The main classification of technical manpower that will be required can be classified as,

1. Skilled workmen.
2. Supervisors.
3. Engineers (for Erection of plants and maintenance.)
4. Design and planning engineers.
5. Research scholars.

Skilled Workmen: Training the skilled workman or the craftsman is an important urgent problem as they form the very basis of industrial development. Training is covered through a number of Government agencies and private institutions in our country. There has been a wide gap between the number of craftsman required and those available for a developing industry. There are 8 industrial centres in this district training men and women in vocational trades as below.

- (a) Needle work, dress making, embroidery and lace making in Girls' Industrial Schools.
- (b) Carpentry, Cabinet making, handloom weaving, matweaving, blacksmithy, fitting, tailoring and wireless telegraphy are distributed in the six other industrial institutions of this district.

By far the largest number of craftsman are produced through the craftsman training scheme under the National Council of Technical and vocational training. There are 80 Industrial Training Institutes in the State in this scheme of which 3 are located in our district at Pettai, Tuticorin and Tiruchendur with a seating capacity of 320, 280, 256 respectively totaling 856. The trades and number of seats available are as follows.

Trade	I. T. I. Pettai	I. T. I. Tuticorin	I. T. I. Tiruchendur	Total
Fitters ...	64	64	64	192
Motor Mechanics ...	64	—	—	64
Moulders ...	32	—	32	64
Turners ...	48	48	—	96
Welders ...	48	48	—	96
Wiremen ...	64	—	64	128
Electricians ...	—	32	—	32
Painters ...	—	32	—	32
Plumbers ...	—	32	—	32
Machinists ...	—	24	—	24
Blacksmithy ...	—	—	32	32
Carpentry ...	—	—	32	32
Sheetmetal workers ...	—	—	32	32
				856

It is understood that the seating capacity will be more than doubled during the fourth plan period and there will be facilities to train 2000 trainees. To obtain this the existing 3 institutes will have to be expanded and if necessary one more institute may have to come up. The increase in number of seats has to be naturally in accordance with the requirements of the industries envisaged. The suggested trades therefore will be as follows in addition to the existing trades.

1. Radio mechanics.
2. Refrigeration machanics.
3. Instruments machanic.
4. Grinders.

It is also suggested that an Industrial training institute for girls may be provided in Palayamcottah area in offering training in the following trades.

1. Stenography.
2. Leather Goods manufacture.
3. Wireless Telegraphy.

4. Radio Servicing.
5. Printing.
6. Cutting and tailoring.
7. Power Spinning and Weaving etc.

While the above trades offer scope for employment of woman in small scale and large scale industries such training facilities in vocations such as mat weaving, Poultry farming, Bee-keeping, Needle work and Knitting may be extended through suitable Government Agencies, to keep the housewives engaged on remunerative basis.

The existing skilled workers may be provided evening classes in the industrial training institutes so as to qualify themselves suitably to meet their work responsibilities.

Apprentice Act 1961 is a great step forward by implementing of which/it has been made a statutory responsibility of industry to train draftsman in designated trades in industrial units. This forms a very important source for training skilled workers. About 1,400 apprentices are being trained at present and it is expected that at the end of Third Plan 2,000 apprentices will be under training. Facilities for training apprentices in this State are being constantly surveyed. It is felt that by using

the existing facilities the number of apprentices could even be larger. In this connection this group is of the opinion that all attempts should be made to attract larger number of apprentices if necessary by paying attractive stipends through the Act lays down only the minimum stipends. This will be beneficial for the industrialists themselves in the longer run.

(ii) There are two polytechnics in this district, one at Tirunelveli, the Shankar Institute of Polytechnic, and the other the Government Polytechnic at Tuticorin, training students to the supervisory cadre and conducting diploma courses in Civil, Mechanical and Electrical Engineering, and training, in all, 200 students per year.

(iii) So far as Engineering and research personnel are concerned, they have to come only from outside, as there are no institutions in this district to train such personnel.

When industries as envisaged in paragraph 2 are started, especially, in and around Tuticorin, we may need (a) technical personnel to start and run the industries and (b) technical institutions to train them up. Our needs, in this regard, will be as follows:

Categories	No. of seats required	Total No. of Institutions required	Existing institutions	Future of the district
Craftsmen ...	1000/Year	4	3	1
Diploma holders	400	3	2	1
Degree course Engineers	200	1	Nil	1
Post-graduate and Research Scholars	100			

at present such personnel are getting trained at other technical institutions.

An Engineering College that is to be started here, the following courses are recommended, so as to satisfy the needs of the district.

1. Textile technology.
2. Chemical technology.
3. Production technology and Industrial Engineering.
4. Instrument technology.
5. Marine Technology.

In the Polytechnics, the following courses of study are recommended diploma courses in :

1. Automobile Engineering.
2. Textile technology.
3. Printing technology.
4. Fisheries technology.
5. Communication engineering.
6. Radio engineering.
7. Agricultural engineering.
8. Production technology and industrial engineering.
9. Instrument technology.
10. Machine tools.

It is found that in our district, every year about 12000 students appear for the S. S. L. C. Examination, of whom about 6000 are declared eligible for the College course.

It is found, on a broad analysis, that the number that join the P. U. C. Course in the Colleges of the district will about 5000 and that the number that pass in the P. U. C. Examination and enter the various colleges for degree courses whether Arts or Technical will be about 2000.

The following is a break-up of this 2000.

- | | |
|---|-------|
| 1. Engineering Course ... | 50 |
| 2. Medical Courses ... | 50 |
| 3. Veterinary, Agriculture, Forestry, Pharmacy etc. ... | 100 |
| 4. B. Sc., B. A., Degree Courses ... | 1,500 |

It is seen that those who pass in the degree courses numbering about 800 divide into the following main streams as below.

Those that take up post degree courses ...	200
Those that take up teaching course ...	200
Those that take up other vocations ...	300

Of the 5,000 who are declared ineligible for the college courses as a result of the S.S.L.C. Examination, it is understood that about 1,000 seek admission to training in the various trades in the industrial training institutes of the district, the rest seeking miscellaneous occupations. Of the students who failed in the Pre-University course, the ineligibles of the college course and those that did not get seats for degree courses about 1,000 go to ministerial services. There are also many among those who have completed the S. S. L. C. course or passed or failed in the P. U. C. course who come to the Polytechnics. At present about 240 students are selected every year for the L. C. E., L. M. E., and L. E. E. courses in the two polytechnics in this district.

We require for this district Polytechnics to institute diploma courses as follows :

1. L. M. E. Students	100/year
2. L. E. E.	100 "
3. L. C. E.	100 "
4. L. A. E.	25 "
5. L. Textile Technology	50 "
6. L. Printing	15 "
7. L. Fisheries	10 "

These courses, it is estimated, will absorb 400 students per year. It is estimated that about 200 more will take up courses in pharmacy (diploma), Nursing 30, Veterinary compounding 30, Agricultural Assistants or fieldmen 30, and other trades 150.

There is a need to improve the traditional artisans in the villages. Schemes for supply of improved implements to the artisans have already been in force. There are also blacksmithy and carpentry units run by the Industries Department to train artisans in this trade. It is suggested that the training in these units will be orientated to the needs of the skills required in the villages and facilities for training such people may be expanded.

As the number of technical institutions are increasing it is becoming more and more difficult to get suitably qualified and experienced personnel to handle the theoretical and practical classes for the students in engineering. Hence technical teachers' training institutes are very essential to train the personnel qualified to teach and impart training in technical institutions.

The other needs of the District in technical personnel in the non-industrial sector, during the next 5 to 10 years, is estimated as follows:

Medical Officers	...	500
Sanitary & Health Staff		500
Pharmacists	...	300

With the opening of the Medical College here, this need will be satisfied. Such of those P. U. C. passed students who have not secured admission in the Medical College may be persuaded to take up the Pharmacy degree or diploma courses, Hospital Assistants' Course, and sanitary engineering and Public Health diploma courses. Those who have passed pharmacy degree courses, may be taken into the Medical College for the M.B.B.S. Course, cutting short the pre-medical course. The rest of them may be employed in private dispensaries, in chemists shops, or in Panchayat and Government dispensaries, where there is shortage of men.

The Agricultural and Forest Departments should be induced to open research wings in

this District, at suitable places, employing top research personnel, to help Cardamom, tea and coffee growers of this district. The forest department should grow Eucalyptus and lemon grass etc., to help the starting, in this district, of the distillation industry of these products. The Veterinary department should have sufficient personnel to offer advice and help to village folk, especially women, to start poultries, dairies, sheep breeding centres etc., which may be controlled by the Block Development Department.

The Agricultural Department should have a Tractor farm for the benefit of the Tirunelveli and Kanyakumari Districts stationed in a Central place, with sufficient number of tractors and with an adequate corps of agricultural engineers, tractor mechanics, maistries etc. to manage them.

A laboratory with various wings, the textile, the chemical, the physical, the engineering, the analytical etc., is a positive need of this district. When started, it will serve the needs of the Southern Districts. This laboratory will analyse and issue test certificates on the quality of samples submitted to it. Analysis of alloys, minerals, food materials, leather materials, salt and salt products, chemicals, soil cotton, yarn etc. can be undertaken here, and this will save a lot of time and bother to the industrialists and exporters of the various products of our district. Research departments may also be opened in this laboratory and managed by highly qualified personnel like M. Sc., and Ph. Ds. The laboratory-cum-research centre should be run by the Government or by the various industries joining together on a co-operative basis, like the S. I. T. R. A. of Coimbatore.

We also need a very good library of upto date technical books and journals in Tirunelveli town to serve the many industrialists, college staff and members of the public. We do not have any such library in the south.

In this connection, mention may be made of the endeavour of the Science club, Tirunelveli started early in 1963, to start a library and a laboratory, as envisaged above. This Science club, the first of its kind in the South, started to promote and exchange ideas on the advancement, in Science and technology and, in the short period of its existence, has earned a good reputation, some of the most eminent men in the field of science and technology having come down and delivered very interesting and highly informative lectures on their subjects under its auspices.

It is also suggested that the Industries Department may bring out an Industrial Directory and a Directory of Raw materials and Mineral available in this district. A periodical survey of the district may also be made from time to time and the directory made upto date. This directory may be issued to the Central Library, Chamber of Commerce, and to all industries so that any investing member of the public may have at his disposal the data necessary to start fresh industries and may be helped to venture and strike out in the directions of his choice.

The following suggestions are also submitted.

Radio talks on technical subjects in the regional languages for the benefit of the workers can be introduced. At taluk centres, libraries of technical books in the regional languages should be started for attached to the Industrial Training Institutes. As there do not seem to be sufficient number of technical books in Tamil, competent technical persons may be encouraged and induced to bring out and publish such books. The Productivity Council may organise and conduct courses for the workers in taluk centres in various trades, the usual audio visual and other instructional aids being pressed into service in imparting knowledge to these workers.

The students in schools in the villages and the metropolis could be made to take greater interest in Science subjects. Audio visual aids, more experiments in Science subjects, frequent tours and excursions to small and larger factories and trades, places of engineering marvels etc. are some of the ways of creating interests in the young in science and technology. This scientific bias created in the early years will surely guide the student to shape his career.

II. LARGE SCALE INDUSTRIES

1. This District will offer excellent opportunities for import based industries to be developed since a major harbour is coming up at Tuticorin.

2. **Cement Industry:** There is already a large scale cement factory existing at Talaiyuthu and since a 200 ton cement plant at Vallioor and a 50 ton cement plant at Koilpatti have been licensed.

3. **Marine Chemicals:** Industries Department has been requested to send

feasibility reports on specific items of marine chemicals.

4. **Soda Ash and other alkalies:** There is scope for a Soda Ash industry in this District of 200 ton capacity. The follow up Committee may take up this question and try to interest industrialists in this District and from outside to take up investigation of this scheme.

5. **Calcium Carbide:** One more plant could be considered.

6. **Fertilisers** : The Follow-up Committee is requested to take up the question of establishing a medium size fertilizer plant based on imported raw materials if necessary.

7. **Insecticides and pesticides** : Feasibility notes on D.D.T., B.H.C. Copper exychloride and pentachlorophenol to be prepared by the Industries Department and sent to the follow-up Committee.

8. **Cotton Seed Oil** : One 60 ton / day plant is being set up at Sankarankoil. Prospects for expansion of the above plant or setting up another plant has to be explored.

9. **Paper and Pulp products** : A straw board plant with 5 to 10 capacity can be set up.

10. **Textiles** : Recommended for setting up of semi-automatic looms for helping hand-loom industry.

11. **Textile machinery** : In view of the number of textile mills in existence in this District there is an immediate need for setting up a medium size unit for manufacturing textile machinery.

12. **Rubber** : In view of the satisfactory supply position of raw material, a medium sized industry manufacturing rubber products can be set up.

13. **Fisheries** : In view of the vast coastal area and the execution of the Tuticorin Harbour Project, there is scope for setting up a Corporation for deep sea fishing with the connected facilities like deep-freeze etc.

III. SMALL SCALE INDUSTRIES

1. **Brass Industry** : Copper and Zinc are scarce materials. Brass based industries are requested to switch over their production to aluminium products and still use the scarce copper and zinc available for preparation of more essential and important products.

2. Defence authorities need large number of Ammunitions Charges made of brass. They require 2 million numbers per month. The follow up Committee may go into this question in detail.

3. **Absorbent Surgical Cotton** : There is good scope to establish this side by side with the other 15 Textile Mills in this District. The follow up Committee may take up the investigation of this scheme.

4. **Match Industry** : This industry faces shortage of potassium chlorate. The Santha Chemicals Private Limited, Ambasamudram may be asked to start it at once. Industrialists

in Tuticorin may also be requested to start a similar factory.

(ii) Match wood is scarce. The use of impregnated cotton threads may be examined in place of match sticks.

Fire-works : There is good chance for export of the Tom Thumb type crackers but transport by sea is fraught with difficulties. The India Marine Company may be requested to relax restrictions such as use of specially made containers. The follow up committee may take up this case.

Salt and other Chemicals from sea bitters : There is good scope for the manufacture of chemicals such as Potassium Chloride, Magnesium carbonate, Magnesium sulphate etc. This may be further examined.

Printing and Packaging Industries : Unit for manufacture of treadle presses may be started.

Glass ware : There is great demand for test tubes and other scientific glass instruments. Glass rods can be purchased and blown to sizes. The starting of an industry may be investigated.

Coir Industry : Starting of one small scale industry for dry coconut fibre extraction may be examined.

Agro industries and industries for Automobile accessories can also be taken up besides manufacturing of pump sets.

Fisheries : There is a great scope for taking up for manufacture of cultured perls at Tuticorin. The manufacture of fish meals from fish wasted can also be examined.

IV. KHADI, VILLAGE, COTTAGE INDUSTRIES AND HANDICRAFTS GROUP

I. VILLAGE INDUSTRIES

INTRODUCTION

Village Industries have a vital role to play in the economy of the Madras State. The problem of overcrowding on land is actually more serious in Madras than in most other State. This coupled with phenomena of the migration of labour from rural areas are unmistakable signs of prevalence of unemployment in the villages. Hence, rural industrialisation in this context has to be approached from the view-points of provision of employment, raising the per capital income, employment of local raw materials and man power. While all these factors are important any undue importance on any one factor to the detriment of others is bound to vitiate the programme sapping its vitality. Hence keeping in view the resources available, we have to think, in terms of creating employment in the villages on a substantial scale with relatively small capital cost assuring a level of income which will not be less than the National

minimum. Thus Village Industries Programme must increase employment, production and wages level. It must also prevent the present migration of rural labour and talent to urban areas.

One other feature which has to be kept in mind while formulating any programme of rural industrialisation is the changing pattern of rural living and the consequent change in the needs of the rural people. Unless the large number of artisans in the villages are enabled to improve their very low technology and skill to meet this change in the needs of the people, there will not be any evident industrialisation in the rural areas.

Another equally significant development is the wide spread education facilities and the enormous number of partially educated youths reluctant to involve themselves in traditional

vocations and agriculture. Unless opportunities multiply to attract this class of youngmen in useful occupations providing them a certain minimum return, the result of the spread of education will itself create problems and throw the economy of the country wide out of gear. One way of employing at least a good portion of the partially educated youth in the villages will be to create opportunities for them to furnish the leadership in organising the vast

numbers of existing artisans into Co operative guilds and institutions. The problem of rural industrialisation will largely be the absence of leadership amidst the artisans and the urge to take to new methods of production. Tirunelveli district has a big potential for the development of such schemes. A perusal of the existing number of artisans given in the table below will show the nature of the available skill and the scope it offers.

TABLE SHOWING THE DIFFERENT CATEGORY OF
ARTISANS IN THE DISTRICT
1963—64

Sl. No.	Name of the Industry	No. of artisans in the district	No. covered by programmes of the Board and the Block	Their average daily wage	The annual production value of goods they produce
1.	Pottery ...	5,887	947	2 to 3	4,81,178
2.	Brick & Tile ...	6,065	746	2 to 3	53,842
3.	Oil producers ...	1,670	300	2—00	6,94,893
4.	Lime makers ...	2,615	303	1—00	15,330
5.	Bee Keepers ...	2,454	1,632	1—00	50,000
6.	Hand Pounding ...	1,709	776	1—00	2,90,340
7.	Palm leaf ...	10,850	207	1—00	4,970
8.	Leathers ...	5,098	38	2—00	18,090
9.	Hand Made Paper ...	115	115	1—00	3,017
10.	Carpentry and Blacksmithy ...	14,077	1,394	2 to 3	39,823
11.	Tappers ...	39,858	39,858	2 to 3	19,72,434

Let us now take industry and discuss the plan for its future development.

2. Palmgur Industry: Palm trees are abundant in this district and palm tappers constitute a major portion of the artisans engaged in different traditional vocations. They are concentrated in Tiruchendur, Nangunari, Koilpatti and Srivaikuntam taluks.

The total value of Palmyrah products that are produced and marketed in this district every year is estimated to be over Rs. 2. Crores. This included palmyrah jaggery, fibre stalks and palmyrah wood and leaf articles. Of the total estimated market value of Rs. 2. lakhs, palmyrah Jaggery, fibre and stalks account for over Rs. 1.75 lakhs and the other articles Rs. 0.25 lakhs. The number of artisans engaged in this industry in a District is estimated at 60,000 families.

There are about 400 jaggery manufacturing co-operative societies with 69,467 members with a paid up Share Capital of Rs. 89,225. One District Jaggery Marketing Federation is functioning in this District with the object of coordinating the activities of these primary Jaggery manufacturing Co-operative Societies. The District Federation exports fibre and stalks to foreign countries and earns valuable foreign exchange. The Federation has so far exported fibre and stalks to the value of Rs. 12-80 lakhs to U. S. A., U. K. and Malaya.

During the season, the tappers' families produced gur and in the off season utility articles from fibre, leaves etc. Improved techniques are being adopted in all these items of work. It is possible with a new systematic planning for the palmgur industry to provide employment to the artisans all the year round and ensure sufficient income. All the palm tappers have been brought under the co-operative fold.

The sweet juice of the palm tree is a beverage which can be collected, stored and distributed for consumption in a more clean manner. The juice can be put in the coolers and stored without the fear of fermentation. The District Federation will have to cover all Municipalities and the Panchayats for this scheme of distributing neera in hygienic conditions. As Palm Candy is in great demand in the market and has also medicinal value, 10 candy production centres may be started.

There are fibre palm leaf workers' Co-operative Societies in this district engaged in the production of Palm leaf mats, baskets etc. Palm leaf mats are in great demand as packing materials. The formation of more Industrial Co-operatives in Tiruchendur, Tuticorin and Panagudi may be taken up.

Sized fibre is exported to other countries. It is possible to manufacture brushes using these fibres. Hence, small brush making units well equipped with machineries may have good scope.

In Tirunelveli District, Palmyrah trees form the important resource of the district. It is recommended that suitable importance should be given to step-up the possibilities of utilising the Palmyrah products. With this object in view the group recommends (i) establishment of research centre for better utilisation and marketing methods for Neera and its products like Palmcandy, toffee, Jaggery etc., as consumable products of good finish (ii) to set up a design centre for Palmyrah leaf-products (iii) setting up of mechanised brush making factory (brushing, Crushing and Combing) in any suitable place in the District (iv) starting a Palmsugar unit in the District.

PRIMARY SOCIETIES

Year	No. of Industrial Co-operatives	No. of members	Paid-up Share Capital Rs.	Financial Assistance		Production	Sales	Employment offered	Wages paid Rs.
				Loan Rs.	Grant Rs.				
60-61	401	68,777	85,935	84,211	14,416	33,59,850	36,28,200	49,375	Self
61-62	400	69,402	88,517	33,010	21,685	34,52,625	26,08,600	48,252	Employed
62-63	400	69,472	89,680	50,312.50 (including share capital loan of Rs. 60,000)	2,312.50	35,15,825	38,12,725	48,322	do
63-64	400	69,467	89,225	5,360	—	4,88,762	4,62,577	48,297	do
64-65	400	69,467	89,225	4,00,000	—	10,54,10-63	1,02,660	15,134	do

DISTRICT PALMGUR FEDERATION

Year	No. of Industrial Co-operatives	No. of members	Paid-up Share Capital Rs.	Financial Assistance	Production	Sales	Employment offered	Wages paid Rs.
60-61	1	1,126	75,167	15,000	1,639	4,68,993	47,078	Purchases & Sales
61-62	1	1,178	75,545	1,01,575	2,347	4,14,799	53,42,851	—
62-63	1	1,126	76,219	50,000	2,347	4,74,939	6,23,735	—
63-64	1	1,194	76,540	88,075	6,053,41	10,13,784	11,74,269	—
64-65	1	1,194	1,07,904	1,00,000	—	19,72,434-25	19,18,418-40	—

3. Pottery Industry: There are 22 Potters' Co-operative Societies with 946 members and paid up Share Capital for Rs. 77,015 providing employment to 674 persons. Total production of pottery wares was Rs. 3,60,734 during 63—64 in all these societies. A sum of Rs. 2,40,490 has been paid as wages in these societies during the year 1963—64. A sum of Rs. 29910 and Rs. 32,701-16 by way of loan and grant were disbursed to these societies in 1963—64.

It is interesting to note that out of 22 Pottery Societies functioning 18 are working on profitable lines in this district. The importance of the industry could be assessed from the statement furnished below:—

POTTERY INDUSTRY

Year	No. of Industrial Co-operatives	No. of members	Paid-up Share Capital Rs.	Financial Assistances		Production	Sales Rs.	Employment offered	Wages paid Rs.
				Loan Rs.	Grant Rs.				
As on 15-9-60	12	494	23,930	18,730-34 (outstanding as on 15-9-60)	11,183 Issued upto 15-9-60	1,53,371 (from 1-4-60 to 30-9-60)	1,43,893	310	1,02,247
60-61	12	525	27,395	17,000	1,816	2,71,027	2,98,274	403	1,84,837
61-62	15	663	39,290	1,19,800	89,433	3,48,340	3,74,154	495	2,00,417
62-63	17	769	61,695	46,688	26,228	3,51,437	3,83,313	592	2,34,397
63-64	22	940	74,315	1,86,292	32,701	3,60,734	3,98,953	674	2,40,940
64-65	24	947	89,940	77,210	37,963-18	4,81,178	4,75,219	855	2,20,786

The provision of common worksheds and kilns and the introduction of new techniques of production will alone improve the lot of potters; whenever there are more than 50 potters living in a compact area, there should be a pug-mill to prepare the clay for the potters.

Pottery Co-operative Societies can be formed in the following places:

Name of the place	No. of artisans	Name of the place	No. of artisans
1. Singathakurichy ...	21	9. Vazhavanallur ...	15
2. Seriakulam ...	40	10. Eruvadi ...	32
3. Vallanad ...	43	11. Uvarikadu ...	19
4. Kohilankulam ...	21	12. Kottarakurichi ...	20
5. Thirukarankudi ...	20	13. Eruvappapuram ...	15
6. Kovilammalpuram ...	17	14. Srivaikuntam ...	39
7. Panankulam ...	15	15. Athichnallur ...	25
8. Devanallur ...	32	16. Karisalakulam ...	19
		17. Mettupatti ...	20
		18. Muthusamipuram ...	20
		19. Melakaranthai ...	34
		20. Kelakaranthai ...	19
		21. Pudur ...	40
		22. Karuppur ...	21
		23. Muthiapuram ...	20
		24. Vowalthothai ...	25
		25. Nagalapuram ...	20

In the following places where the concentration is less than 10, facilities like construction of common workshop, improved kiln, can be provided.

Name of the places		No. of Artisans Residing
1. Murappanad	...	3
2. Singikulam	...	9
3. Dhomavppr	...	8
4. Kallikulam	...	6
5. Sivagalai	...	7
6. Parakiramapandi	...	6

4. Brick and Tile Industry: There are 21 Brick Workers' Co-operative Societies with 686 members and paid up share capital the tune of Rs. 11,770. The production and sales amounted to Rs. 30,491 and Rs. 36,079, respectively during 1963-64. Steps are being taken to start more of these as the demand for them is increasing. Three housing schemes at Tirunelveli and the Harbour Project at Tuticorin are under implementation. The demand for bricks will continue to exist for several years to come. In the near future 25 more brick workers' Co-operative Societies can be organised with a coverage of 4456 artisans. These artisans will be trained in table moulded bricks and in the manufacture of mangalore tiles and flooring tiles. Brick Industry can be concentrated in Vallanad, Authoor, Thenthirupurai, Tirunelveli, Panankulam, Panagudi, Keelapavoor, Tenkasi and Surandai where good clay is available. There is scope for the establishment of several table moulded chamber brick units in this district.

5. Lime Industry: With a view to meet the shortage in the supply of cement Lime Workers' Co-operative Societies have been formed and there are at present 10 such societies functioning in this district with 273 members and paid-up share capital of Rs. 4010.

These societies have been given financial assistance for purpose of construction of kiln on 50% loan and 50% grant basis and towards Share Capital and working Capital. During the year 1963-64 a sum of Rs. 21500 by way of loan and sum of Rs. 7850 by way of grant have been disbursed to these societies. Many societies have not yet completed the construction of kiln and it is expected that all these ten societies will go into production in full swing during the year 1965-66.

VILLAGE OIL INDUSTRY

From 15-9-60 to 30-6-64, forty four Industrial Co-operative were started and functioning.

The societies purchase oil seeds from outside the District thereby incurring heavy transport charges. The ryots should be persuaded to cultivate Oil Seeds in the District itself. It has been programmed to organise 10 more Oil Co-operative Societies with 526 artisans. Loan and grant should be given to local oil mongers for the purchase of bulls.

HAND POUNDING (OF PADDY) INDUSTRY

From 15-9-60 to 30-6-64, 86 Co-operatives were organised. The average production per year works out to 2 lakhs of Rupees.

The Committee requests the Collector to give priority for supply of paddy to the Hand Pounding Industries without administrative surcharge.

HAND MADE PAPER INDUSTRY

There are 3 Hand-made Paper Units functioning in the District. There is plenty of raw materials for the manufacture of Paper and Card Boards available in this District. The existing Units and Societies will have to be strengthened and developed into bigger centres of production.

BEE KEEPING INDUSTRY

There are nearly 6,600 Bee Colonies in the District accounting for a production of 12,500

Kgs. of honey besides a small quantity of wax. The value of honey alone comes to Rs. 50,000 development carrying each block into several convenient group of villages having one Bee fieldman with a minimum of 300 Bee colonies under his care and also fixing a minimum target of 2000 to 3000 Bee Hives for each block so that a separate bee keepers Co-operative Society can be formed and run with good business. The programme should include (1) The distribution of hives at subsidised cost of individuals desiring to start small units of 20 to 30 Bee-hives. (2) Encouraging large scale Apiaries of 100 to 200 colonies close to Reserve forests and Plantation areas; (3) Starting Pilot Production Apiaries by the Panchayat Unions. (4) Free distribution of Bee Hives under Harijan Welfare programme among the Hill tribes and other scheduled castes, (5) Systematic introduction of Bee Keeping in Educational institutions and formation of Bee clubs (6) Enlisting the Co-operation of all institutions and departments for establishing small Apiaries at suitable sites. Schemes may be drawn for distributing another 40 to 50 thousand hives in the course of the next 5 years to intensify the development of bee keeping in the District which will result in the production of about 1,20,000 kgs. to 1,50,000 kgs. of honey and 2,400 to 3,000 Kgs. of Bee wax the value of which may be Rs. 4,80,000 to Rs. 6,00,000 and Rs. 12,000 to Rs. 15,000 respectively. Apart from the above, monetary benefit to the Bee Keepers by way of cross pollination service will be substantial.

LEATHER INDUSTRY

There is one Tanners' Co-operative Society at Rayagiri and Village Mode tannery Unit at Sankarankoil. It is proposed to start tanneries at Koilpatti, Tuticorin, Tisayanvillai, Eruvadi and Melapalayam. To promote sales, sales depots in places like Koilpatti and Tuticorin may be opened.

The introduction of improved techniques in tanning and provision of a small finishing unit in a central place will be the line of development in the Industry.

FLAYING AND BONE CRUSHING UNITS

There are 3 Flaying and Bone Crushing Units in this District situated at Kuruvikulam, Vasudevanallur and Pudur. The Unit at Kuruvikulam alone is functioning now. At Pudur the construction of the building is not yet over and at Vasudevanallur the bone digester has not yet been received. These will commence work shortly.

VILLAGE MODEL TANNERY

There is one Village Model Tannery at Sankarankoil. It serves mainly as Servicing Centre for the Local Tanners. One Foreman Cum-Supervisor renders technical guidance to the artisans. The local tanners bring the raw hides and sock them in the socking pits provided in the tannery and use the chemicals and appliances. A nominal charge of 10% on the value of raw materials is collected as servicing charges.

BLACKSMITHY AND CARPENTRY INDUSTRY

Almost all blocks have a Blacksmithy and Carpentry Unit functioning which serves both as Production and Training Centres.

These Blacksmithy and Carpentry Production Units should be made to develop as small service workshops and they should also train a few local villagers in repairing simple electrical appliances and pumpsets. This will help the villages who have to come to the taluk or district headquarters even for small repairs to their pumpsets. The foreman and the trainees may be provided with tool kits and cycle, enabling them to serve as mobile units. Raw materials like Iron should be made available for the units.

SOAP INDUSTRY

There is one non-edible Oil Soap Unit at Sankarankoil. Besides Soap Units have been

established at Idaikal, Siyasailom and Panagudi. During the year 1964-65, the Soap Unit at Sankarankoil produced goods worth Rs. 37,457 and effected sales to the value of Rs. 40,178. At Panagudi Sarvodaya Sangh in 1964-65, the production and sales was Rs. 80,000.

The Soap produced in these Units has a great demand in the market and these units can be started in places where good water available in plenty. Five more Units can be organised in this District during the fourth plan period. Six non-edible Oil Seeds collection centres should be started to get the required quantity of non-edible oil. There is also scope to organise a Non-Edible Co-operative Society at Rastha in Manur Block.

FIBRE INDUSTRY

Fibre is obtained from certain plants like Banana, Sisal, Sunhemp etc., Owing to the labour involved in the processes, and the nature of implements, villagers have not been able to achieve anything in this industry.

In order to utilise the banana stems in productive purpose and to provide employment to the villagers, one Fibre cum-Starch cum paper Unit is functioning at Karuniyapuram in Valliyoor Block. Fibre is extracted out of the Banana Stems and twines, ropes etc., are manufacturing. Packing cloth can also be weaved from the Banana fibres. The pith that are obtained after the extraction of the Fibre are being used for the manufacture of packing paper and Card boards. The stands which is also fibre in an uncared for is used for manufacture of jacquard board.

It is programmed to start more Units at Karungulam, Pudukottai, Srivaikuntam and Udangudi where banana sisal and also plants are available in plenty. Sisal fibre is produced in large quantities and centres are proposed to be started to produce finished goods.

COTTAGE INDUSTRIES AND HANDICRAFTS

There is scope for the development of the following Cottage and Handicrafts Industries in the District.

- 1. Aloe Fibre.
- 2. Coconut Fibre.
- 3. Metal.
- 4. Lacquered Work.
- 5. Glass Toys.

SERICULTURE

The Government silk farm, Courtallam was started in 1958. The Department of Industries and Commerce has shown that the Silk Industry can be practised successfully in Tirunelveli District. At present only 11 acres are under mulberry cultivation in the District. In view of important of Sericulture and as it can provide additional income to the farmers it is recommended that atleast 200 acres should be brought under mulberry cultivation in the District during the 4th Plan. The Director of Industries gives various assistances. Future expansion should be through the Panchayat Unions. Each Union can have two or three acres for sericulture. As loans are issued by Panchayat Unions for digging irrigation wells perhaps a condition may be imposed that each loanee should plant half to one acre of mulberry and practise sericulture.

KHADI SCHEME

Khadi Scheme in Tirunelveli District is being implemented by the Madras State Khadi and Village Industries Board and Tirunelveli District Sarvodaya Sangh Khadi work in this District provides employment for about 13,000 artisans who get annually about Rs. 9.3 lakhs as wages.

It is proposed to produce Khadi worth Re. 1 per head of the total population of the district by the end of the Third Five Year Plan and Rs. 2 per head at the end of the Fourth Five Year Plan.

As estimated produced 32.65 lakhs Ambar and 31.77 lakhs. Kisan hanks, 2,000 Ambar and 3,700 Kisan spinners are required, 2,000 Ambar Charkhas with 6 Spindles and high draft charkas will have to be instructed in the field.

To achieve this goal 130 Pariahramalayas have to be started 250 carding modias run on

power have to be installed. Little more than 2,000 weavers are required, and atleast about 700 new weavers have to be trained during the next 5 years by providing adequate training facilities.

Washing, Bleaching and dyeing facilities should be provided within the District. Small dyeing houses, and washing sheds have to be constructed in 10 places during the next 5 years.

Instead of sending the Khadi cloths to Tirupur for being printed, arrangements are to be provided within the District.

By producing 25 lakhs of meters of Khadi every year, not less than Rs. 35 lakhs will be distributed as wages 20,000 artisans depending on this industry. This goes to say that per capital income of the entire district will go up by one rupee.

ANNEXURE

	At the end of the 3rd Five Year Plan	At the end of the 4th Five Year Plan
1. Total population of the District approximate	28,63,976	30,04,229
2. Cloth required per head approximately at Re. 1 and Rs. 2 (presuming each head will purchase one rupee worth Khadi.)	28,63,979	60,08,458
3. Khadi cloth required for one year in metre	11,45,500	24,03,383
4. Ambar hanks required for the production of Khadi shown in Col. 2.	32.65 lakhs.	68.50 lakhs.
5. Kisan hanks required to be produced	21.77 lakhs.	43.00 lakhs.
6. Ambar Spinners required for the production or hanks given in Col. 4.	2,000	3,800
7. Kisan spinners	3,700	7,700
8. Earnings per head, per year:		
Ambar	270	288
Kisan	102	108
9. No. of weavers to be engaged to produce cloth shown in Col. 3.	700	1,400
10. Wages earned by weavers per year	1,405	1,423

**ARTISANS ENGAGED IN KHADI PRODUCTION (INCLUDING WEAVING,
SPINNING) AS ON 1-4-1965**

	Artisans at present	Artisans in 3rd Plan period	Artisans to be enlisted or trained during 3rd Plan	Artisans to be enlisted or trained during 4th Five Year Plan
Ambar Spinners ...	745	2,000	1,000	2,000
Kisan Spinners ...	11,519	12,000	...	3,500
Weavers ...	558	600	100	700
Kisan Charkhas required for distribution ...	...	...	...	...
Ambar Six spindle Charkhas required for distribution ...	...	...	1,000	2,000

**ANNEXURE
FINANCIAL IMPLICATIONS**

	At the end of 3rd Plan period	Financial assistance by way of subsidy from Khadi Commission	At the end of 4th Plan period	Financial assistance by way of subsidy from Khadi Commission
1. Value of Kisan Charkhas to be introduced ...	8,000	4,000	18,000	8,000
2. Value of Ambar Charkhas to be introduced ...	1,60,000	48,000	2,99,000	90,000
3. Stipend to Ambar Spinner trainees ...	21,000	21,000	40,000	40,000
4. Rent for Parishramalaya Building ...	5,000	—	8,000	—
5. Establishment charges for Ambar instructors Follow Up Supervisors and Carpenters ...	1,00,000	1.92 Lakhs	1.84 Lakhs	3.6 Lakhs
6. Other expenses ...	15,000	—	30,000	—
7. Rent for the building to conduct weaving training ...	500	—	4,000	—
8. Stipend to Weaver trainees ...	8,000	8,000	65,000	65,000
9. Establishment Charges ...	3,000	3,000	30,000	30,000

SOUTH ARCOT DISTRICT

(31-8-1966)

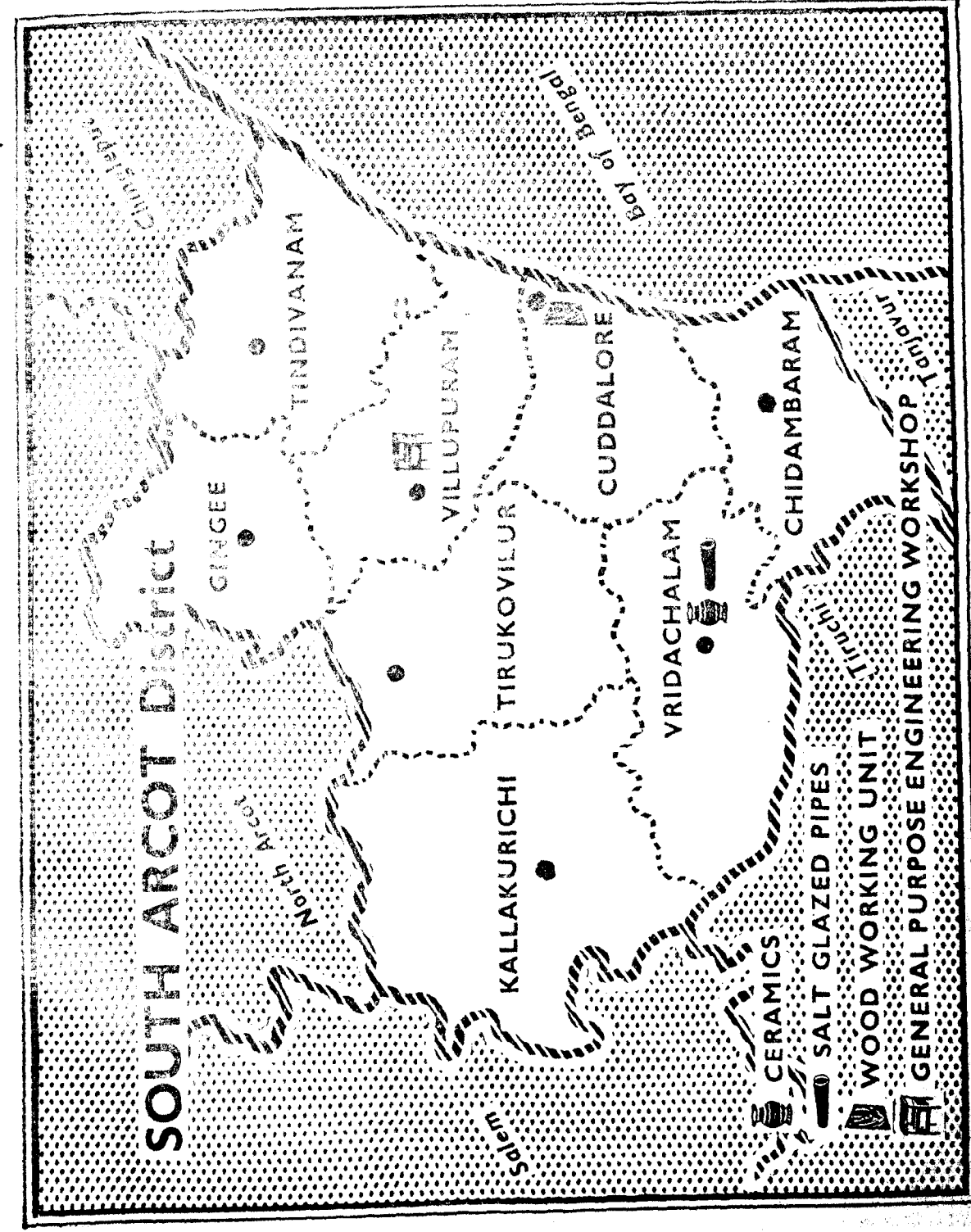
SOUTH ARCOT DISTRICT

AREA (in square Miles)	...	...	4208
POPULATION	...	...	3,04,7973
INDUSTRIAL ESTATES	...	...	1. Vridhachalam (Functional Ceramics)
SMALL SCALE INDUSTRIAL UNITS (Government)	...	Villupuram	General Purpose Engineering Workshop.
		Cuddalore	Wood Working Unit.
		Vridhachalam	Salt Glazed Pipe Factory.
NO. OF REGISTERED UNITS (Small Scale Industries)	...	...	282
IMPORTANT LARGE SCALE INDUSTRIES	...	Textile Mills-5 (2+3)	
		Sugar Factories-4	
		Lignite and Fertiliser-1	

*N. B. :—*Figures in brackets indicate split up figures of the factories functioning and those either licensed or under construction.

MINERAL WEALTH

Name of Mineral	Chemical composition	Industrial application
1. O Lignite	Brown Coal of low grade — Fixed Carbon 22.2%	At Neyveli ore-Reserve 2,000 million tonnes occurs in Vridhachalam, Chidambaram and Cuddalore Taluks. Being mined by Neyveli Lignite Corporation for Thermal Power Station, for fertilizer for (urea) and for Carbonized briquettes.
2. Clays	Refractory clays $Al_2 O_3$ 30 to 33%	In Cuddalore taluk—Reserve 3 Million tonnes Clays are utilised by the Government Ceramic Unit at Vridhachalam and units of private entrepreneurs.
3. Multi—Metal deposit, copper & Lead and Zinc	Metal content 0.63% copper 2.6% Zinc 2.5% lead.	1 Million ton of reserves of total ore bearing rock. Based on this, a mines project is envisaged for exploitation and beneficiation



and pickles with a cold storage plant at Neyveli or Panruti after obtaining necessary data from the Central Food Technological Research Institute, Mysore. The Committee also suggested that a project report be obtained from the Government Industries Department.

The cashewnut industry is facing acute shortage of tin for packing nuts for export. In as much as the export of nuts earns foreign exchange, the Committee appealed to the State Government to allot sufficient quota of this or alternatively suggest suitable containers.

The committee also opined that the skin available from cashew shell could be collected and sold for manufacturing tanning material.

2. GROUND NUT

The Committee recommended that a particle board industry may be put up at Villupuram using Groundnut Shell as the base material as about 30% of the Groundnut in the District is decorticated mostly near Tindivanam and Villupuram. Technical data on the project may be obtained from CSIR, Jorhat. The Project may cost about Rupees Ten lakhs.

3. COTTON

In view of the fact that three spinning mills are expected to work in the District, a ginning factory with a capacity of fifteen candies per day will be ideal for locating at Villupuram or Tindivanam. The machinery will cost around rupees four lakhs and a further sum of rupees five lakhs will be needed as working capital. The Marketing Committee could help the marketing of the cotton.

4. TAPIOCA

Tapioca is thriving well at Salem, Trichy and Coimbatore Districts and therefore, intensive cultivation of the above may be encouraged in Kallakurichi, Panruti and Ulundurpet areas in this District. When sufficient quantity of Tapioca is available a factory for manufacturing starch could then be thought of.

5. COCONUT FIBRE AND COIR

Only about 1,100 acres are under coconut cultivation in this District and even this area is in small patches. This has to be developed further. However, a small scale industry based on Coir Fibre on village level under Block Development Scheme was recommended.

6. TAMARIND SEED

Tamarind seeds are available in large quantities in this District and they are exported to Kerala State. The Committee recommended the setting up of a Factory at Gingee, Tindivanam or Ulundurpet for manufacturing starch out of Tamarind seeds. The Project may cost about Rupees Two Lakhs including the cost of machinery.

7. CATTLE FEED

In general, there is good scope for starting cattle feed manufacture by utilising Sago wastes, Cotton seed, Groundnut Cake, Molasses, etc., which are available in plenty in this District. An Economic Unit will have to manufacture at least about ten tonnes per day and this will cost about Rupees Three Lakhs for machinery, buildings, etc. The suitable centres for locating the Industry will be Cuddalore, Tindivanam and Vridhachalam.

8. AGRICULTURAL IMPLEMENTS

To meet the requirements of seed drills, ploughs, interculturators, ridgers for Sugarcane cultivation, incubators for poultry, etc., the Multipurpose Agricultural Engineering Unit at Villupuram may be asked to expand in this direction. The Project may cost about Rupees Two-and-a-half lakhs.

9. FISH INDUSTRIES

The Committee also recommended the setting up of a unit at Cuddalore for manufacturing fish meal which is used for poultry feed, manurial purposes etc.

The Agro — Industries Sub Committee recommended the formation of a follow up

Committee consisting of the following members :

1. District Forest Officer
2. District Agricultural Officers, Cuddalore & Kallakurichi
3. Asst. Director of Industries & Commerce Cuddalore
4. Representative of Sugar Mills
5. Representative of the South Arcot District Cashewnut Industry

In summing up, it may be stated that the Committee have made the above recommendations based on the following :

1. To restrict the capital investment to an economic limit so that a number of industries with more entrepreneurs could participate in the development of the District and the State.
2. As far as possible the recommendations have been based on the utilisation of raw material available in this District and consumption of the ultimate product within this District and with the possibility of export promotion for earning foreign exchange.

DECEMBER 1966

CHEMICAL INDUSTRIES

Chairman : Dr. C. V. S. RATNAM,

SUPERINTENDENT : B. & C. PLANT

NEYVELI LIGNITE CORPORATION Ltd., NEYVELI.

RECOMMENDATIONS

1. A Chemical Industrial Estate can be established near about Neyveli or Cuddalore with the following Industries in the first stage-

- (i) Leather chemicals.
- (ii) Cleansing agent from flyash.
- (iii) Activated carbon from Lignite (The Government of Madras has already sanctioned a unit).
- (iv) Phenol formal-dehyde and urea for mal-dehyde resin.
- (v) Bituminous paints from Lignite par
- (vi) Wax paper and cartons.
- (vii) Salymilic acid.
- (viii) Disinfectants from phenols.
- (xi) Electrode carton from Lignite tar.
- (x) Ion exchanges from Lignite
- (ix) Activated clays.

2. ' Using Lignite tar, rod binder and paraffin wax industries could be established as a part of the Neyveli Industrial complex.

3. Malamin Industry could be established as part of the Lignite Project at Neyveli.

4. Pulp Mills and fibre board units could be established near the existing sugar factories. Bagasse will be the raw materials for these units.

5. A Methanal and formal-dehyde unit can be established at Neyveli.

6. Carbide Industry using lignite char can be established near Neyveli.

7. Furfural could be manufactured from Bagasse.

8. Detergents, paints and varnishes can be made from cashew nut shell oil.

9. Possibilities of extracting rice bran oil should be investigated.

10. Extraction of wax from filter press made from sugar factories should be investigated.

11. Ammoniated lignite as fertiliser could be manufactured.

12. Light weight aggregate could be made from flyash available at Neyveli.

13. Industrial alcohol industry can be established in South Arcot District. The raw material will be molasses from sugar factories.

ENGINEERING INDUSTRIES

Chairman : Sri K. B. PATTAVARADHAN

GENERAL MANAGER, SESHASAYEE INDUSTRIES, VADALUR

RECOMMENDATIONS

1. Establishment of an unit for manufacture of non-ferrous metal parts required for fuse bases manufactured by Government Ceramic Unit, depending upon the availability of raw materials such as brass, phosphrous bronze and copper.

2. Establishment of an unit for manufacture of metal fittings required for Sanitary wares manufactured by M/s. Neyveli Ceramics and Government Ceramics Unit.

3. Establishment of an unit for manufacture of polythene bags required for fertilisers as well as Ceramic Units.

4. Establishment of an unit for boat building at Cuddalore.

5. (A) Establishment of Industrial Estate at Cuddalore.

- (a) Unit for making polythene bags.
- (b) Boat building unit, consisting of processing the wood and the manufacture of suitable horse power engines.
- (c) Fish net making unit.
- (d) Fabrication shop for the needs of the Sugar Factory-
- (e) A precision machine shop for manufacture of jigs and fixtures.

(f) A unit for manufacturing electric motors and pumpsets.

5. (B) Establishment of Vadalur Industrial Estate with making unit.

- (a) Bolts and nuts.
- (b) Fabrication shop for making different line assembly components.
- (c) Pattern shop.
- (d) A unit for making ceramic tools.
- (e) Machine shop.
- (f) A small galvanising and aluminising unit.
- (g) A small forge shop.

6. Aluminium Conductor: Discussed and decided not to take up this item in small scale sector.

7. Machine tools: In view of the keen competition etc., the manufacture of machine tools had been dropped.

8. Establishment of units to manufacture pumps and electric motors for development of agriculture in this District.

9. Establishment of an unit for the manufacture of alloy cast irons and alloy steel castings and billets etc., at Vadalur.

MINERAL BASED INDUSTRIES

Chairman: Sri N. NEELAKANDAN

SUPERINTENDENT OF MINES, NEYVELI LIGNITE CORPORATION Ltd., NEYVELI

RECOMMENDATIONS

The Committee discussed the various minerals available in the district. The Lignite deposits of the district have been investigated well and the exploitation is now being carried. The Committee also discussed the lead, Zinc, Copper deposits of Mamandur of Kallakurichi Taluk. The deposit is in the early stage of investigation.

The Ceramic Industry which is one of the biggest mineral based industry of the district was discussed. The requirements of the Ceramic Industry were discussed and the various materials required to make it self sufficient were discussed. The recommendations are given below:

LINING MATERIAL FOR THE BALL MILL

Silyx which is used as lining material for the Ball mill is obtained now from foreign countries. Hard, wear resisting material known as Chart is available in the neighbouring district of Trichy and this could profitably be used for this purpose. At present 30 tons a year is used by the Ceramic Industry in the district and the demand may increase with the increase in the activities of the ceramic industry in the State. It is suggested that the mining of 'Chert' can be investigated either by the private industry or by the State. The deposits of 'Cherts' are sufficient for this purpose.

Plaster of paris: The ceramic industry is at present getting its requirements of plaster of paris from Calcutta. The supply of this material is not reliable.

There is no modern mechanised plant in the Madras State for the manufacture of Commercial type plaster of paris required by the ceramic industry. There are good deposits of both salt-pa Gypsum and mineral deposits of Gypsum at Ariyalur. So it was suggested that a plant for the manufacture of commercial type plaster of paris may be located in the State, preferably in this district, so that the ceramic industry may have a steady continuous and reliable supply of this material.

Refractory Bricks: Difficulty is experienced in getting special shape refractory bricks by the various industries in the District. Industries like Ceramic, lime, foundry, glass, sugar etc., use firebricks for lining their furnaces and for special shape of refractory bricks, it was suggested that a small scale unit for the manufacture may profitably be located at Vridhachalam.

Lime Kilns: There is dearth of lime for the building industry in the State. Limestone deposits are available in the Vanur area near Pondicherry. A shaft kiln for lime calcination and a cement plant (vertical shaft) were

recommended for consideration in the district near the limestone deposit.

Fly ash bricks and mosaic tiles: Large quantities of Fly ash with Pozzolanic properties are available at Neyveli. It was suggested that the Plant for manufacture of fly ash bricks, mosaic tiles, panel for partition could be made by using the fly ash available at Neyveli so that the construction cost in this area could be reduced considerably. Pilot studies for the large scale manufacture of fly ash bricks may be taken up with the equipments available at the Ceramic laboratory at Vridhachalam.

It was also suggested that the advantage should be taken of pozzolanic properties of the fly ash for the manufacture of pozzolanic cement in the district.

There is dearth of moulding sand for foundry works in the State. The sand available from the clay-washing plant at Neyveli is suitable for foundry works. The foundry industry may be informed of the availability of this sand.

Investigation may also be made for the presence of rare earth metals in the fly ash available at Neyveli.

SMALL SCALE INDUSTRIES

Chairman: Sri A. R. DAMODARA MUDALIAR, M. L. C.

1. Unit for the manufacture of disinfectants utilising locally available raw materials. Although it was mentioned that creosote of the requisite grade was not available easily, it was felt that since this will be available as a by-product of the B & C Plant at Neyveli there would be no difficulty in obtaining this raw material.

2. A unit for the manufacture of utensils made out of Aluminium as such utensils have now become more popular in the rural parts. It was felt that it would be a more economic proposition to have a composite unit with a rolling mill as part of the unit to enable utilisation of scrap aluminium.

3. A Unit for the manufacture of re-inforced cement concrete pipes by spun process as there is good demand for such pipes for culverts, sewage and water supply canals etc.

4. A Unit for the manufacture of mosaic tiles.

5. A Unit for the manufacture of Plastic hand bags, suit cases and other travel kits made out of P. V. C. Sheets.

6. A Unit for the manufacture of polythene bags used in packaging industry and particularly fertiliser industry.

7. In view of the anticipated demand for laboratory equipments from High Schools during the Fourth Plan, units for the manufacture of such items were recommended. Since a large variety of items have to be manufactured and very little capital invest-

ment would be required a number of small units could be set up. The list of equipment required is available with the Department of Industries and Commerce and interested parties may approach the Assistant Director of Industries and Commerce, Cuddalore for fuller particulars. This sudden demand is because of the optionals being reintroduced. According to the Education Department, value of laboratory equipment is estimated as Rs. 4.6 Crores during the next 4 years. This demand is in addition to the existing demand.

8. A unit for the manufacture of various plastic articles for industrial uses and to meet consumer demands.

9. In view of the availability of ground-nut husks, the committee requested the State Government to set up a pilot plant for the manufacture of card board out of ground-nut husks.

10. The Committee recommended the setting up of a fish canning industry, Deep Freeze Unit and Cold Storage Industry for the preservation of fish and prawns. It also recommended that this unit could undertake the export of deep frozen prawns in polythene packing.

11. A Unit for crushing granite jelly in various sizes with mechanical crushing equipment as these materials are required in house construction by Highways Department.

12. A Unit for the manufacture of Automobile components namely propeller shaft yoke as there is considerable demand.

13. A Unit for manufacture of extruded aluminium sections used for industrial purposes etc.

14. A Unit for the manufacture of Card Board Boxes and other packaging material required by local industries in South Arcot District. Messrs Bush Products of Nellikuppam have an annual demand of 4,00,000 numbers worth about Rs. 1,50,000 and a small scale unit could function economically with the anticipated demand.

15. A Unit for the manufacture of cotton yarn and nylon fishing nets. Such nets are also being used increasingly in fruit orchards.

16. A Unit for the manufacture of metallic fittings for sanitary ware.

17. A Unit for the manufacture of mechanical toys using torch light batteries.

18. A Unit for the manufacture of Ragi-malt and a Biscuit Industry using Ragi as the basic raw material.

19. Coir Industry utilising locally available raw material for manufacture of ropes, mats, carpets etc.,

TECHNICAL EDUCATION

Chairman : Prof. A. SREENIVASAN,
Dean, Engineering College, Annamalai University, Chidambaram

1. To improve the quality of instruction and training in Engineering Colleges and Polytechnics, a scheme of a supervised practical training was recommended. Under this scheme, the professors and senior lecturers in Engineering institutions may be deputed to work in Industrial establishments continuously for a period of at least two years, to get them acquainted with live problems facing the Industries. The students may be asked to take practical training under competent supervision and their proficiency assessed suitably and incorporated as a part of their academic work.

2. The Technical training establishments should provide facilities for imparting training at the Artisan level on elementary knowledge of the behaviour of several materials used in engineering construction, the ways of testing and the economic ways of substitution under emergent circumstances.

3. The technicians have to be given special training in the greater use of aluminium as a substitute for copper and to train them specially in techniques of brazing, soldering, welding etc.

4. Industrial training institutes may consider setting up of institute where special training in armature winding and servicing of electrical appliances may be given.

5. The present scheme of training Radio mechanics in the Industrial Training Institutes

being very inadequate for the electronics industry, training on electronic appliances, controls, etc., is a very important need.

6. A course of training to prepare refrigerator mechanics to maintain and service refrigerators, air condition and cold storage equipments was also strongly recommended.

7. A special training course to train mechanics for servicing and repairs of the various process instruments may be taken up immediately. In this connection, the Neyveli Lignite Corporation may be contacted to get the details of the training facilities to be offered.

8. Special training combining the traditional carpentry with the modern techniques like lacquering, polishing etc., may be imported in the Industrial Training Institutes.

9. The Industrial Training Institutes may concert measures for training technicians in fabrication, transport and site structural fitting works.

10. While the training of welders is done even now at the Industrial training institutes, it was mended that a greater skill and standard of welding was desirable. The committee also felt that greater use of Gas welding was also desirable.

11. The proposed Industrial Training Institute at Gingee, while incorporating some of the conventional course of training may be asked to open a course of tractor service mechanics, so that the tractors and agricultural implements in this district can be efficiently maintained.

12. A course of Plastic Technology covering the elementary knowledge of plastics and the modern techniques may be introduced in the Industrial Training Institutes.

13. The Industrial Training Institutes may consider training of persons to appear for the technical examination for being employed as building maistries or similar positions.

The training capacity for civil draughtsman in the Industrial training Institutes may be increased.

14. The following were the trades recommended in the proposed Industrial Training Institute at Gingee.

(i) Armature winding, electric motor servicing.

(ii) Structural fitting.

(iii) Refrigeration and air - conditioning mechanics.

(iv) Tractor mechanics.

(v) Surveyor's course.

15. All the above proposals can be satisfactorily implemented only when a competent staff is available. The present salary structure is not conducive to attract competent personnel and hence it was strongly recommended that the salary structure should be so revised as to be on par with that existing in industries.

SEMINAR ON ELECTRICAL INDUSTRIES

The Seminar on Electrical Industries was inaugurated by Sri R. Venkataraman, Minister for Industries, Madras at the Children's Theatre, Madras on 3rd March, 1965. This two day functional Seminar, the first of its kind to be conducted in this part of the country was organised with the view to analyse the progress and development of the electrical industries in Madras State and also to assess future potentialities for new industries in the field and the expansion of the existing industries. The Seminar evoked a lot of interest among the industrialists and was well-attended by the industrialists of the large, medium and small scale sectors not only from Madras State but from all over the country. Among those who participated in the delibera-

tions of the Seminar, mention may be made of Dr. S. T. Merani, Development Commissioner (S. S. I.), Sri K. Eswaran, Dr. K. S. G. Doss, Director, Central Electro-Chemical Research Institute, Karaikudi, Sri G.R. Damodaran, Director, P.S.G. Institute, Coimbatore, and Sri R. K. Swamy, Director, J. Walter Thompson & Co., Sri T. N. Lakshminarayanan, Secretary to Government, Industries, Labour and Housing Department wound up the proceedings of the Seminar. The recommendations of the five working groups which discussed the problems relating to the industry are given below.

An exhibition which followed the Seminar was inaugurated by Sri M. Bhaktavatsalam, Chief Minister on the 4th March 1965.

REPORTS OF THE COMMITTEES

GROUP I

EQUIPMENT FOR GENERATION, TRANSMISSION AND DISTRIBUTION, INCLUDING OVER-HEAD CONDUCTORS, INSULATORS AND MAIN CABLES

Chairman : Sri A. R. NARAYANA RAO

I. The group felt that the manufacturing capacity for power transformer now existing is adequate for the present.

Regarding distribution transformers, however there is a need for a few more units to bring in an additional capacity of 2 to 2½ lakhs KVA per year. There is very great need for stampings insulating wires, insulating materials, sheet steels for tank manufacture and transformer oil for the transformer industry. The Group recommends that adequate supply be

guaranteed for these raw materials. The group also feels that there is necessity for location of a core stamping unit in Madras for regular supply of stampings to the transformer factories.

II. There is scope for establishment of modern tower manufacture and testing unit of a capacity around 10,000 tons per year in Madras. The group also recommends assured supply of structural steel and zinc to be provided for by the State.

III. The group further felt that the three insulator factories within the Southern Zone to an aggregate total of around 15,000 tons of H.T. porcelain is adequate to meet the requirements for the present. These insulator factories are also adequate to provide the necessary bushings for transformers and switchgear equipments. These insulator factories however require assistance in the import of ball clay, glazing materials, zinc, lead, high tensile steel and phosphorus bronze.

IV. Regarding lightning arrestors, it is felt by the group that the present licensing capacity is adequate.

V. There is very good scope for the manufacture of L. T. porcelain and hardware and telegraph insulators and pressed porcelain. Establishment of 3 or 4 units in the ceramic belt area of Trichy, Vriddhachalam and Salem is recommended.

VI. Regarding the control equipment upto 11 KV such as cubicles, P.T.'s, C.T.'s, switches, etc., the group recommends expansion by a few more units in this State.

VII. In the opinion of the group, there does not exist any scope for additional cable manufacturing units for the present. Regarding bare aluminium conductors, it is strongly felt that the aluminium plant at the Mettur should be geared up to manufacture re-drawn rods and supply to manufacturers of conductors.

VIII. Regarding winding wires, there is scope for two more units provided adequate raw materials are guaranteed.

IX. The group strongly felt that there is necessity for a testing laboratory to be located in Madras for testing the electrical and other characteristics of electrical equipments manufactured and issuing certificates. This may be an extension to the Government Industrial Testing and Analytical Laboratory at Guindy. The cost is expected to be around Rs. 35 lakhs.

X. To continuously review and take proper and adequate action this group strongly

recommends formation of an Electrical Development Association for Madras comprising manufacturers and the Government, as members, and should periodically meet, deliberate, and submit recommendations to the State for their consideration and prompt action.

XI. The group recommended the establishment of a functional industrial estate for the electrical industries in the various centres of the State.

DISCUSSIONS

The Chairman invited the gathering of the members of the group and requested them to give their valuable suggestions based on their experience in the industry. He said that the scope of this Seminar was to bring out a realistic assessment of manufacturing capacities available in the Madras State as well as in neighbouring States in the Southern Region, and take adequate timely steps to meet the requirements in the area and also export, if possible to neighbouring countries.

Sri V. P. Appadurai, Chairman of the Madras State Electricity Board, initiated the discussions. He complemented the transformer industry in Madras and said that good transformers of rating 10 MVA and 110 kV are being made within the State, but that the delivery quoted needed improvement. He stated that there was difficulty in procuring raw materials required by the industry and stressed the need for arranging to get these quickly. He also said that L. T. insulators made in the State were very good and the manufacture of high voltage and extra high voltage insulators is also very promising. He preferred low oil volume circuit breakers to bulk oil breakers, in view of the resulting economy and he also suggested that oil should be used only as a cooling medium in electrical equipments and not as an insulating medium.

As regards fuses, he said that better fuses should be manufactured for the higher current

rating, or alternatively, satisfactory circuit breakers should be manufactured to deal with the higher currents. He preferred P. V. C. insulated cables to paper cables as paper cables are combustible and cannot be overloaded. He said that the requirement of distribution transformers for the Madras State Electricity Board at present is 1.5 lakhs KVA per year and is likely to rise to 4 to 5 lakhs KVA per year at the end of the 4th Five Year Plan. He suggested that 11 kV circuit breakers may be of 250 MVA rupturing capacity and switches may be of current rating as below :—

11 kV	...	400 amps
22 kV	...	600 amps
33 kV	...	800 amps
66 & 110 kV	...	1,000 amps

He considered that short circuit tests are not necessary.

Prof. A. Srinivasan of Annamalai University said that industries should make use of the testing and other facilities available in the educational institutions for research work connected with the design and manufacture of electrical equipments. He also wanted the industries in the State in turn to help educational institutions in assisting them in the manufacture of proto-types or models for the research projects of educational institutions.

Mr. Joseph of Aluminium Industries (P) Ltd., Kundara, pointed out that High Tensile Galvanized Steel Wires were not available for the A.C.S.R. Industry and suggested instead the use of aluminium alloy wires.

Mr. Sethuraman of W. S. Insulators, Madras pointed out that there is difficulty in procuring ball clay and suggested that the Madras Government should recommend to the Government of India the allotment of their full requirements of ball clay and zinc for the industries.

Aluminizing as an alternative to galvanizing was considered but was dropped as the initial cost of equipment was reported to be of 3

times that involved in galvanizing and not suitable for malleable casting due to caustic embrittlement.

Sri H. K. Ramaswamy, Seshasayee Industries, Vadalur, stated that there are difficulties in obtaining suitable raw materials of standard quality and stressed the need for standardisation of raw materials. He said that the capacity of 15,000 tons of high tension now established appears to be adequate for the present.

Sri K. R. Radhakrishnan, Director of Central Water Power Commission, said that the requirements of capacitors would be around 15 to 20 per cent of the installed generating capacity, power transformers four times of the installed generating capacity and distribution transformers 2.6 times.

Mr. Gopalan of Easun Engineering Co., stated that there is a growing preference of oil minimum breakers. He also stated that S.F. 6 breakers are coming into use now.

The suggestions made in the article prepared by the Chairman were then discussed by the group :

Power Transformers : Besides the existing units in Madras, Bangalore and Bhopal, two more units one with Hitachi collaboration in Kerala, and the other with A. E. G. collaboration at Bangalore are coming up. With these additional units the requirements of the Southern Region are likely to be met and it was felt by the working group that with necessary main raw materials, such as stampings, sheet steel for tanks, insulating materials etc., assured, and with regulated supply of raw materials, the present capacities in the existing units could be enhanced and requirements of the Southern Region easily met. Hence, the working group decided to go slow in the matter of opening an additional unit in the region.

Distribution Transformers : In respect of distribution transformers, it was felt by the

4. That the Southern Branch of I.E.M.A. should establish and run a material testing and electrical type testing laboratory. If this is found to be too ambitious a project, then the Southern Branch should collect together details of all testing facilities in existence within South India and make available these details to all manufacturers so that maximum use of existing facilities can be ensured. Special care should be taken that the facilities available at the teaching institutions be analysed and positive and practical arrangements be made for manufacturers to use this equipment on a commercial basis.

5. That an examination be made to determine whether or not an Electrical Industrial Estate in Madras should be established—this estate to act as sub-contractors to the larger manufacturers as well as produce on their own small finished products. There was disagreement within the group as to whether or not such an industrial estate

would, in fact, successfully contribute to electrical production.

6. That priority be given to building up to full production in existing factories before additional manufacturing licences are granted. As far as Switchgear, Relays and Meters are concerned, it is recommended that no additional manufacturing licences be granted unless an existing licence is rescinded. The future requirements for both transformers and instruments promise to be so large that immediate steps should be taken to increase the manufacturing capacity within the country. Care must be taken that existing factories are enabled to produce to the full.

7. That encouragement be given for the manufacture of bakelised paper condenser bushings and Epoxy resin components—there is no producer of these items in India at present.

In the Seminar, each product within Group II was considered independently and the final report on these products are as follows:

PAPER NO. 1

ELECTRICAL SWITCHGEAR

INTRODUCTION AND HISTORY

This paper reviews the switchgear requirements of the electricity authorities and of industry generally. It excludes motor control gear and contactor gear for the lower voltages. Pioneers in Madras were M/s. Hivelm Industries, who produce a wide range of outdoor air-break disconnecting switches and ancillary equipment. Additional manufacturers are now in production and the present range of manufacture extend from equipment for operation of voltage of 440 volts upto 11 kv for indoor and out-door application and upto 220 kv for outdoor disconnecting switches. Madras State

is therefore almost self-reliant for the greater part of its switchgear requirements save only for the largest and very high voltage equipments. Appendix I shows the types of switchgear already manufactured in Madras State and also outside Madras State. The large very high voltage equipments are at present manufactured by Heavy Electricals at Bhopal and additional production facilities can be expected shortly when collaboration arrangements with German, French, Swedish and Swiss manufacturers become productive.

Ancillary equipment for switchgear production, such as indicating instruments, C.T.'s,

control switches etc., are available in India, but so far integrating instruments have yet to be imported.

MARKET POTENTIAL

Whilst detailed information is not readily available, such information as its available indicates that the licensed manufacturing capacity for the equipment detailed below is more than sufficient to meet the requirements of the Southern area and also India. The ranges of equipment are:

- (a) Low voltage industrial switchgear and fuse switchgear.
- (b) Medium voltage switchgear, 660 volts to 3.3 kV for heavy industry.
- (c) High voltage switchgear, 3.3 kV to 11 kV for heavy industry and Electricity Boards.
- (d) Extra high voltage isolators, air-break switches upto 220 kV.

It must be stressed that production statistics are in no way similar to licensed manufacturing capacity statistics and it is urgent that manufacturing licence holders should read their licensed production levels and efforts should be directed towards achieving this rather than issuing additional manufacturing licences to other parties.

MANUFACTURING PROBLEMS

The basic raw materials for building switchgear are steel, non-ferrous metals and insulation. The shortage of these raw materials together with the uncertainty of supply and quality have contributed to the slow build-up of production. In common with all other electrical industries, this raw material problem requires urgent solution.

It is believed that there are no manufacturers in India of bakelised paper condenser bushing and Epoxy resin mouldings. The demand for these two items is sufficient to

warrant the establishment of at least one factory and encouragement should be given to any interested entrepreneur.

STANDARDISATION

The work of the Indian Standards Institute is directed towards standards of performance.

Great efforts are now necessary to persuade purchasers, particularly the Electricity Boards towards standardising their purchasing specifications. A single standard for Switchgear and Transformer equipment must be the aim, and whilst this is a considerable task it must be remembered that such a standard has been achieved in foreign countries. A single standard will result in savings in cost of production and consequently in expense to customer and an improved service to all users by reduced delivery periods. Reduction in delivery periods allows both purchaser and Electricity Boards to earn revenue from their expansion programmes very much earlier than at present.

CO-ORDINATION BETWEEN MANUFACTURERS & USERS

Special problems affecting manufacturers in South India do exist and in order to ensure that adequate representation of these problems is made, it is suggested that an Association should be formed of South Indian Electrical Manufacturers which could seek affiliation with the Indian Electrical Manufacturers' Association. This Association could do useful work in presenting in a consolidated form to the authorities, the raw material procurement difficulties and requirements and also could play a leading part in representing the manufacturers in the efforts towards achieving the single standard for Switchgear and Transformer equipments referred to above.

EXPORT

The cost of the raw materials built into this type of product in India is frequently found to

working group that a few more additional units to bring in an additional capacity of 2 to 2.5 lakhs of KVA should be recommended, subject to guaranteed supply of principal raw materials, such as sheet steel for the tank, core stampings, copper winding wires and insulating materials. The need for a core stamping unit in Madras was also keenly felt and this was recommended by the group.

Transmission Lines: Sri A. Krishnaswamy of Hivelm Industries stated that about 80,000 tons of zinc would be available by 1967 in India from the three newly licensed smelters. He said that the requirements of prime zinc of 98.4% purity for galvanizing would be around 3,000 tons per year for the Madras State. He was of the view that secondary zinc of 97.2% purity alone should be allotted to brass and other industries.

Towers: The Government of Madras has already set up a plant in Mettur for manufacture of towers and other structures. The Madras State Electricity Board has its own tower manufacturing shop at Mettur. However, in view of the large requirements of the neighbouring states and countries, a modern tower manufacturing and testing unit with a capacity of about 10,000 tons per year was recommended by the group.

Insulators: The group felt that the existing capacity of manufacture of H. T. insulators is adequate and that with assured supply of principal raw materials like zinc, lead, and other items, the full requirements may be met. The group was of the opinion that there was, however, wide scope for manufacture of L. T. insulators and L. T. hardware, as also insulators required by the Post & Telegraphs Department. Three L. T. insulator manufacturing units may be set up, one in each of the areas, viz., Vridhachalam, Salem and Trichy (Dalmiapuram).

Similarly the need for one or two units for the manufacture of pressed porcelain was felt

by the group as it was learnt that there was a large demand for this on the utilisation side.

Bushings: The group felt that the existing insulator factories would be able to meet the demands of the bushings required. Sri A. N. Srinivasa Rao of Hivelm Industries pointed out that there was a need for a common testing laboratory for testing the electrical and other characteristics of the electrical equipments manufactured in Madras. The group recommended that the Government Industrial Testing & Analytical Laboratory at Guindy may be suitably expanded, as a high investment of over 35 lakhs of rupees would be necessary. The laboratory should be a certifying one which can do type and other tests required by the industries and give them the necessary certificates.

Control Equipment: The group was of the opinion that there was a scope for units manufacturing low voltage switch-gear, cubicles, C. T.'s and P. T.'s of the moulded and other types and air break switches for lower voltage ratings.

Cables: Sri Radha Mani, of Aluminium Industries, Kundara, pointed out the difficulty in getting the aluminium rods for the manufacture of aluminium cables. The group felt that there was need for establishing a Rod Rolling Mill to feed the existing cable industries. The group also opined that there was an excess capacity in the manufacture of insulated cables. Mr. Nallaperumal, of Omega Cables Ltd., stated that the price of P. V. C. in India was very high being $4\frac{1}{2}$ times the international price. The duty on this raw material also was high being 105%. The group felt that the scope for additional units does not seem to exist for the present.

Winding Wires: The group was of the opinion that there is scope for one or two units for manufacture of winding wires, subject to a guaranteed supply of essential raw materials. Also, for transformer winding wires and flats one or two units might be necessary.

GROUP II

TRANSFORMER, SWITCHGEAR AND CONTROL EQUIPMENT INCLUDING RELAYS AND METERS

Chairman: Mr. R. W. ENGLAND

It became very apparent that all manufacturers of equipment covered under the Group II heading experienced one or two common problems and arising out of these problems, the Group recorded certain recommendations.

The conclusions reached were:

Raw Material Supply: The insecurity of supply and inconsistency of supply, both quality and quantity-wise constitutes the major difficulty in the electrical industry—it is this problem that is mainly responsible for the under-utilisation of manufacturing facilities and the uneven flow of production leading to high production costs and uncertain deliveries.

Standardisation: Whilst manufacturers have achieved some success in the standardisation of their products, no dramatic and real progress can be made until the customer can be persuaded to standardise on his requirements. The group believes it to be of paramount importance that customers, especially the Electricity Boards, evolve a single All-India Standard for Switchgear and Transformers, covering not only the basic equipment themselves but also ancillaries. If this standard can be evolved, customers will immediately benefit from the reduction in manufacturing costs and quicker deliveries.

On the above conclusions, the following recommendations were made:

1. That a Southern Branch of the Indian Electrical Manufacturers' Association be

formed with the object of representing to I.E.M.A. and the Government, the special problems, difficulties and aspirations of the South Indian electrical industry. This branch should co-ordinate the requirements of all members concerning statistics appertaining to the industry, raw material requirements and all other topics of general interest.

2. The Indian Standards Institute should be encouraged to enforce their standards both as regards the final product and the raw material built into that product. The Indian Standards Institute should be encouraged to lead the way towards evolving a single All-India Standard for Switchgear and Transformers and in this connection they should concentrate on convincing the Electricity Boards of the benefits of such standardisation.

3. That an organisation should be established in co-operation with the Governments of the Southern States which would gather statistics of idle manufacturing capacity from all factories on a monthly basis. Details of this idle capacity will be circulated to all other manufacturers. This organisation would therefore act as a clearing house within the Southern States with a purpose of ensuring the maximum use of installed plant and machinery. It is recommended that this organisation would also, if asked, monitor relations between manufacturers and sub-contractors to ensure smooth working.

be equivalent to the selling price of a foreign competitor. It follows therefore, that when price is the main consideration, Indian manufacturers suffer an over-whelming handicap. Whilst existing export incentives help, such help does not sufficiently offset this disadvantage. Switchgear produced by Indian manufacturers compares favourably, in all respects

except price, with the world manufacturers. It would seem therefore that until the raw material problem can be solved, the quantum of export in the switchgear industry will be small. The Indian manufacturers' costs could be reduced as stated above if they can be allowed to produce to their full capacity rather than fractional production as at present.

PAPER NO. 2

TRANSFORMER INDUSTRY

This paper deals with the manufacturing industry for power and distribution Transformers in India in general, and in Madras State in particular. Welding Transformers, Instrument Transformers and miscellaneous Transformers used in the Electronic Industry and for Protection Equipment, are not covered in this paper.

HISTORY

The manufacture of Transformers in India started before the Second World War at the Government Electric Factory in Bangalore. Since that time the industry has made substantial progress; the progress during the last 10 years has been spectacular as indicated in the table given by Mr. Pandit in his article on the "Transformer Manufacture" published in *The Electrical India* which is reproduced below:

	1937	1953	1963
Installed			
Manufacturing Capacity (MVA)	6	370	3,980
Output (MVA)	6	308	2,670
Largest rating	250 KVA 11 kV	2,600 KVA 37.5 kV	75,000 KVA 132 kV

In Madras State, Radio & Electricals Ltd., located at Adyar were the pioneers in 1949. Just after Crompton Parkinson started manu-

facture at Tiruvottiyur, but after two years transferred their Transformer manufacture to Bombay. In 1955 Hackbridge-Hewitt-Easun started manufacturing Transformers at Tiruvottiyur. In 1957 Transformer & Switchgear Co. started production at Adyar. Hackbridge-Hewitt-Easun are now the largest manufacturers in Madras State. They have already delivered a large number of 132 kV, 15 MVA Transformers, and are manufacturing 132 kV, 20 MVA Transformers. Transformer & Switches Ltd., also make the larger size transformers, and have delivered a number of 33 kV, 5 MVA Transformers. They are extending their range and will be producing 25 MVA Transformers at 132 kV in 1966.

CLASSIFICATION

Technical know-how, plant and machinery, working capital required, problems connected with purchase of materials and sales differ in relation to the various ratings. Hence to obtain a clear picture it is necessary to classify transformers under three headings, i.e.

- Small Distribution Transformers upto 500 KVA.
- Medium size Transformers above 500 KVA. upto 5,000 KVA.
- Large Power Transformers above 5,000 KVA.

PRESENT DEMAND AND THE TREND

The demand for transformers is closely related to the installed generating capacity and the utilisation pattern. The ratio between installed generating capacity and transformer capacity differs from country to country. It can be as high as 8 or 9. In India it is approximately 5, but this ratio is increasing and can be expected to rise to 8 or 9 in the coming years. The installed generating capacity is increasing in India at a very rapid rate and the Tariff Commission, in their report published in 1963, have given the following target:

	Addition of generating capacity in million KW.	
1959-60	...	0.36
1960-61	...	0.703
1961-62	...	0.58
} actual figures		
1962-63	...	0.54
1963-64	...	1.03
1964-65	...	1.90
1965-66	...	3.39
} estimated figures		

Further, the Tariff Commission, assuming the ratio between the generating capacity to the transformer capacity as 5, estimate a transformer demand of 5 million KVA in 1963-64, 10 million KVA in 1964-65 and 17 million KVA in 1965-66.

Assuming that there is delay in installing new generators and assuming that the ratio between generating capacity and transformer capacity is less than 5, it remains obvious that there must be a very steep increase in the demand for transformers. Further, in order that one may get the full picture, it is necessary to know in what ratio this total demands is distributed between the 3 categories mentioned above. The Committee proposed to undertake a Market Survey, will do well to examine

this question. For the present, it can be assumed that the approximate KVA ratio between the 3 categories (i.e. Small Distribution Transformers; Medium Transformers; Big Size Power Transformers) is of the order of 3.5 : 2.5 : 1.

NATURE OF INDUSTRY

Large and medium sized transformers can be manufactured only by factories having sufficient technical background, the required plant and the capital. For the smaller size transformers, smaller factories can produce successfully. It is of vital importance that small factories spend an adequate amount of money on plant and any equipment to ensure first class quality—a large number of small transformers are required in India representing a large investment by the customer.

PRESENT CAPACITY

There are at present approximately 25 companies manufacturing transformers. Out of these, 5 or 6 are capable of manufacturing the larger size. The remaining companies make small transformers. The total transformer manufacture capacity, as estimated by the Tariff Commission in 1963, was about 4 million KVA per year. At that time a large number of companies were in the process of increasing their range and capacity and the total estimate of this increase in 1963 was about 3.4 million KVA. The total transformer manufacturing capacity is now about 7.5 million KVA; this seems to be in target. Great efforts must be made to achieve full production of the existing factories. This is perhaps more important than considering the question of starting new factories.

QUALITY

Transformers are expensive and it is vitally important that first class quality of product is achieved. The major contributor to the cost of a transformer is the cost of the materials that are built into it. Many purchasers

RELAY MANUFACTURE IN INDIA

judge a transformer offer by the price, delivery, iron loss and copper loss. Manufacturing Transformers to Indian standards or any other international standards does not *ipso facto* ensure good quality. To enable purchaser to judge correctly, transformer manufacturers must be prepared to make available more detailed technical information that is customary at present.

If the end product is to be good, the various materials used in the manufacture of the transformer must also be good. Many manufacturers do not have facilities for testing the quality of the materials they buy. It is suggested that college laboratories and other national laboratories, suitably equipped, be encouraged to test these raw materials, e.g. covered winding copper, insulating paper, insulating boards, oil, etc.

RAW MATERIALS—GENERAL

Inadequacy of raw materials supply has prevented manufacturers from achieving their maximum output. Raw materials of foreign origin demand foreign exchange and the importance of maintaining a regular supply must be continually stressed with the authority—meanwhile the manufacturer should examine their designs and processes to satisfy themselves that they are achieving maximum utilisation of raw materials.

SPECIAL NOTE ON COLD ROLLED STEEL

The Tariff Commission have strongly recommended the use of Cold Rolled Steel. If a large number of transformer manufacturers have not already changed over to Cold

Rolled Steel, it is because the savings on material is offset by the high price of the Cold Rolled Steel. If Guest, Keen, Williams who are the only suppliers of Cold Rolled Steel in India (in cut and annealed form) are not able to reduce the price, it is, because the demand is not sufficient.

Cold Rolled Steel in coils of standard widths are now available in annealed condition and can be cut and used without further annealing. This will appreciably reduce the cost of material. It will also avoid wastage. If transformer manufacturers can standardise on the coil widths, it will reduce the total number of sizes of Silicon Steel to be stocked. The biggest difficulty in the use of Cold Rolled Steel is the unpredictability of the iron losses. If manufacturers quote prices corresponding to iron losses and the customer will accept the transformer, at a price on this basis, it will solve this problem.

STANDARDISATION

It is recommended that the Electricity Boards and purchasing authorities standardise their transformer purchase specifications. This would cover standardisation of capacities, voltage ratios, tapping ranges, losses and ancillary equipment, also capitalisation of losses formulae. This will bring swift benefit to the customer in that manufacturers costs will be reduced.

STANDING ADVISORY COMMITTEE

It would be desirable to have a Standing Committee which would undertake work similar to that mentioned in the Paper on Relays and Switchgear.

HISTORY

The manufacture of relays in India is of recent origin. The Indian Telephone Industries at Bangalore were the first organisation to manufacture relays. Owing to the nature of the undertaking, the products necessarily had a limited range—the primary purpose being to make telephone type relays. The growth of this organisation has been impressive and currently they also manufacture certain types of auxiliary relays and signalling equipment but, their products are almost entirely outside the requirements of power supply and industrial undertakings.

In 1961 The English Electric Company of India Limited (then called The English Electric Company of India (P) Limited,) established a new Division in their Works at Pallavaram, Madras, with the object of meeting the relay requirements of power supply undertakings and industry. This Division has expanded rapidly and after three years they now meet a large share of the total demand of the country for the consumer types of protective and auxiliary relays. The current range of manufacture includes—

- (a) Non-directional and directional inverse time, overcurrent and earth fault relays having standard, very inverse and extremely inverse characteristics.
- (b) Transformer percentage differential relays.
- (c) Instantaneous high set overcurrent relay unit.
- (d) Instantaneous overcurrent and earth fault relays with adjustable settings.

- (e) Voltage controlled non-directional inverse time overcurrent and earth fault relays.
- (f) Buchholz protective devices for 1" and 2" pipe diameter transformers.
- (g) High speed tripping relays.
- (h) Voltage and current operated auxiliary and annunciator relays.

It is expected that the Division will substantially increase the range of their manufacture. It can, therefore, be said that they are the pioneers in relay manufacture in India.

The following organisations are manufacture relays—

- (a) Messrs. Swift Engineering Works, Bombay (Sole Distributors: A S U Traders Private Ltd., Kashmeri Gate, Delhi-6)—Inverse time, non-directional induction disc relays.
- (b) Messrs. Prayog Electricals Ltd., Bombay, manufacturing earth leakage relays, suitable for mining equipment (Sole Selling Agents: Messrs. Kilburn Ltd., 20, Barakhamba Road, New Delhi) and Buchholz protective devices for transformer ratings: 1,000 KVA to 10,000 KVA and thermal time delay relays (marketed by Messrs. Indian Engineering Co., Wadia Building, Dalal Street, Fort, Bombay-1).

RELAY MANUFACTURING ORGANISATIONS TO BE SET UP IN THE NEAR FUTURE

It is believed that the following organisations are to start manufacture of protective and

auxiliary relays, suitable for requirements of Power Supply Undertakings and Industry—

(a) Messrs. Baroda Electric Meters Limited

Inverse time and definite minimum time, non-directional and directional overcurrent and earth fault relays, instantaneous overcurrent and earth fault relays and auxiliary and annunciator relays. Manufacture is to be in collaboration with Messrs. Reyrolles of U.K.

(b) Messrs. Jyoti Ltd., Baroda

A manufacturing licence has been obtained to manufacture various types of protective and auxiliary relays of both the primary and secondary types, control relays, timing relays, signal relays and various types of special purpose relays in collaboration with C.D.C. of France.

(c) Messrs. Tata-Merlin & Gerin

This company promoted by Messrs. Voltas jointly with the firm of Establishments Merlin and Gerin of Grenoble, France and Tata Sons Private Limited, Bombay, will manufacture various types of switchgear and allied power distribution equipment and in addition, they are expected to take up the manufacture of various types of relays and measuring instruments. Production is expected to start towards the end of 1965 at Thana, Bombay.

(d) Other Manufacturers

Messrs. Remco of Bangalore have a manufacturing licence for making relays in collaboration with Messrs. Toshiba of Japan.

It has been reported that Messrs. Hindustan Electric Company are hoping to enter into collaboration with Messrs. Brown Boveri of Switzerland for the manufacture of relays in India.

MARKET POTENTIAL FOR THE MORE USUAL TYPES OF RELAYS

Based on the Second Annual Power Survey, estimates have been prepared by The English Electric Company of India Limited, to assess

the market potential for the more usual types of relays during the Fourth Five Year Plan (i.e. 1966-67 to 1970-71). These estimates are given below as the total demand for the five years. It is to be noted that these estimates exclude auto-reclose relays, timer and other relays required for special power system application and industrial control circuits—

	Single pole units
(a) Non-directional induction disc relays	1,40,000
(b) Directional induction disc relays	6,000
(c) Circulating current relays	2,000
(d) Check alarm relays	Nos. 1,500
	Single pole units
(e) Transformer percentage differential relays without harmonic restraint	12,000
(f) Transformer percentage differential relays with harmonic restraint	1,800
(g) Motor protection relays (for motors of 100 H.P. and above)	Nos. 1,200
(h) Semaphores	20,000
(i) Switched distance schemes	1,200
(j) Unswitched distance schemes	600
(k) Buchholz relays	5,000
(l) Annunciator relays	12,000

MANUFACTURING PROBLEMS (a) Indigenous Availability of Materials

It is known that most electrical industries have been suffering from shortage of raw materials, with consequent adverse effects on their production targets. The Hindu 1964 Survey of Indian Industry article titled "Raw Material Shortage Haunts Industry" states—

"At a Seminar organised in Calcutta in October 1964 by the Indian Institute of Foreign Trade, it was revealed that a study recently made by the Central Statistical Organisation established that

even on single-shift basis, nearly half the capacity in most of the Engineering Industries in India is idle. In a circular issued in 1963 on 'Procedure for Expressing Industrial Capacity on a Uniform Basis', the Union Ministry of Industry had said that the capacity for purpose of maximum utilisation should normally be assessed on the basis of double-shift operation. So, the extent of latent idleness of installed capacity is really larger."

The article shows that a large percentage of this idle capacity is due to shortage of raw materials.

The Relay Industry has suffered from the general shortage of raw materials, but the additional problem of obtaining materials of the right composition and components to the required close tolerances proved to be greater. Certain raw materials, i.e. high purity aluminium for induction discs, must necessarily be obtained from overseas, since these are not available in India. However, most of the other materials are locally available or could be made available with some effort.

(b) Local Supplies of Components

One of the main difficulties that a relay manufacturer must constantly face is in persuading an outside supplier to make components for him, because the quantities required tend to be limited. It becomes all the more unattractive when the supplier has to conform to very close tolerances and in the earlier stages he must be prepared for a high rate of rejections. Relay manufacturers must realise the sub-contractors' problems and be prepared to enter into contract arrangements extending over a period of sufficient length to guarantee a reasonable return to the sub-contractors.

(c) Quality Control

A protective relay will operate probably a dozen or so times during its life time. The customer therefore invests money in a piece of

apparatus which normally does no work. This apparatus must operate when called upon to do so and to ensure this feature, the control of quality of product must be of the highest possible standard. Broadly speaking, this control of quality is assured at the following stages—

- Control of materials with regard to specification.
- Control of tolerances of components.
- Inspection of sub-assemblies at each stage of manufacture and inspection on completion of final assembly.
- Rigid routine and calibration tests conducted on each relay.
- Final inspection on completion of testing prior to packing.
- Inspection at pre-packing and final packing stages.

(d) Diversification of Products

It is difficult to find suppliers prepared to assure proper supplies of components owing to the limited quantities that can be ordered from time to time. This makes diversification desirable from the user's point of view. For example, 11 kV switchgear manufacturers and control panel manufacturers (for single circuit control panels) like to have triple pole vertical arrangement. However, for double circuit panels, it is frequently essential to have triple pole vertical arrangement, since the alternative with three single pole relays increase the cost of mounting the equipment. As can be seen from the Fourth Plan non-directional induction disc relay figures, approximately 9,000 triple pole relays will be required per year. To an outside supplier of case components, even one type of arrangement, i.e. either horizontal or vertical pattern, will not amount to a very attractive business, as over one year he has to supply 9,000 sets only. If, now, we split these cases as 50% horizontal

and 50% vertical, the quantity requirement under each head becomes 4,500 Nos. per year. The cost becomes very high, if not prohibitive. Diversification becomes more difficult when we realise that 30% of these relay units would probably be required in single pole arrangement.

Another important aspect of diversification is the provision of flexibility in setting ranges and voltage and current ratings for various types of relays. This can be tackled by deciding on a limited number of basic setting ranges and voltage and current rating and planning for local supplies of materials accordingly. The items required to provide the flexibility in range can be imported if it is difficult to modify what can be obtained locally in the manufacturer's own feeder shops. This leads to a complicated exercise, which must be reviewed periodically and proves to be costly.

STANDARDISATION

The need for standardisation has long been recognised and standards like BSS, VDE, etc. are already in existence, which are followed all over the world. The Indian Standards Institute have been quick to recognise the need for an Indian standard for relays and work has already progressed to an advanced stage. It is expected that the standard for relays will be finalised at the meeting of the Relay Sectional Committee of the I. S. I., now being held in Bombay. This standard is being given priority to ensure that future manufacturers in this country will benefit from the provision of a uniform standard.

An important contribution that the I. S. I. contemplates is the provision of standards for relay case sizes. I. S. I. are also drafting an Application Guide for various relays. The Guide will indicate preferred settings for various types of applications and will provide a basis for uniform thinking throughout the

country. It is important that enforcement of I. S. I. Standards be extended to raw material.

COORDINATION AMONGST MANUFACTURERS

While the I. S. I. is there to assist both the manufacturer and the user in laying down standards, it would be desirable to set up an Advisory Committee, consisting of representatives from each manufacturing organisation, to study common problems of manufacture such as *availability of materials*, simplification and diversification of product lines, manufacturing standards, economics of production and allied matters. The manufacturers would be able to adopt rational and uniform approaches to common problems to the common good. Furthermore, by pooling their experience they could give valuable guidance to the I. S. I. and the Government of India.

CUSTOMER'S SERVICE

After-sale service must be provided by relay manufacturers. However, it is important to remember that application of relays requires special knowledge and often the user is neither acquainted with this, nor has sufficient staff capacity to deal with such problems. The manufacturer must, therefore, give this additional service to the user to ensure that appropriate protective equipment is given to him for this various requirements.

In addition, the manufacturer must give the user assistance in commissioning the equipment and in training the user's staff.

EXPORT POTENTIAL

Tenders have been submitted for the export of relays made in India. However, these have been few and at the moment, of little significance. There is potential market worth exploring. However, the problem now seems to be to meet the demand of the country and thus reduce the spending of foreign exchange by importing the balance requirement that

cannot be met indigenously. The export issue must, therefore, remain a matter of academic interest until the manufacturing capacity of the country shows an appreciable surplus. This State of affairs can be reached when all those

now licenced to manufacture relays achieve their licenced production. It is evident that sufficient companies have already been licenced and it is recommended that no further licences be issued.

PAPER NO. 4

ELECTRICAL MEASURING INSTRUMENTS INDUSTRY IN INDIA

INTRODUCTION

The Industry has only now gained recognition and is being treated as an industry having separate marketing and production problems. This move is to be applauded because at present the industry is lamentably small.

Because it has only recently been recognised as a separate industry there are no statistics available for requirements or production over the last few years.

Upto 1962, eighteen major companies were producing instruments, unfortunately only one in South India and none in Madras; although in Madras State there are four small scale industry companies producing a limited range. With the dramatic increase in demand to be expected during the next few years, it is evident that opportunity exists for entrepreneurs to establish instrument manufacture.

POTENTIAL

In the Forth Five Year Plan it has been estimated that the demand for instruments will be approximately Rs. 120 crores—these instruments will include switchboard type process control, material testing, electrical measuring types. It must be remembered that there is an international move towards electrical instrumentation rather than direct

measuring, and this category must include flow measuring instruments, pressure measuring instruments, etc.

MANUFACTURING PROBLEMS

Vital components such as drill bearings, magnets and special metals still have to be imported but the recent moves taken by the Government to initiate production of these types of components in India is to be welcomed. It is expected that within 2 years all drill bearings, magnet and hair-spring requirements will be met by Indian industry.

STANDARDISATION

I.S.I. have made creditable progress as far as instruments are concerned and the Indian Specification is acknowledged to be the most modern one by the International Electrotechnical Commission.

EMPLOYMENT POTENTIAL

This industry is a precision industry and is labour intensive. It is likely that one employee will be required for each instrument produced per day.

PROFITABILITY

It is considered that adequate profits can be earned in this Industry which will be sufficiently attractive to entrepreneurs.

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HOUSE SERVICE METERS

There is one unit today, Simco Meters Limited, Tiruchirapalli, manufacturing house service meters in Madras State. This unit has been licensed to manufacture 60,000 single phase meters and 20,000 Polyphase meters per annum. The factory has been set up in collaboration with Denis Ferranti Meters Limited, United Kingdom. It started producing single phase meters in June '63 and polyphase meters in July '64. One more unit in Ambattur will go shortly into production.

The Government of India have so far issued 33 licences (approx. $4\frac{1}{2}$ million meters per year output) for production of single phase and poly phase meters. 13 units only have started production and a few are about to start production. The total estimated demand at the end of the Third Five Year Plan was 2.1 million single phase house service meters. The 13 units now functioning are, in all, producing 1.5 million meters. The actual demand is only 1.1 million, leaving 0.4 million meters with the various manufacturers as unsold stock. There

is a tendency that the manufacturers off load this unsold stock at any price. This is the reason that the price of the meters has come down from Rs. 45 in 1963 to Rs. 25 in 1965. This should not have happened with the planned economy obtaining in our country. Even the only meter factory in the State had to resort to a distress sale at Rs. 75 per meter, including S. T., delivered at the customers stores thereby losing Rs. 13 per meter. If depreciation is ignored, the loss is about Rs. 7 per meter. This is more or less the sorry state of all the new meter manufacturing units.

The following are the suggested remedies for this state of affairs in this industry :

- (a) For the future, the Government must be more realistic in issuing manufacturing licences related to actual requirements.
- (b) Manufacturing licences for products akin to meters should be granted to meter manufacturers in preference to new entrepreneurs.

GROUP III

APPLICATION AND UTILISATION

Group Chairman : Sri S. K. MALLICK, B. Sc. (Engg.), M.I.E. (Ind.)

INTRODUCTION

This group generally covers the Light Electrical Industries excluding house service meters, instruments, radios and electronic equipment. Electric motors and lifts, which are classified under Heavy Electricals are covered under the purview of this group. Similarly, automatic electric equipment and welding electrode industries are also reviewed under this group.

The figures relating to the Generation and Utilisation of Electric Powers and registration of factories indicate the future opportunities for the development of light electrical industries.

Year	Installed Capacity (Megawatts)	Industrial purpose power consumed (Millions of KWH.)	No. of factories registered
1951	...	320	4,618
1956	...	540	5,803
1961	570	1,425	6,457
1963	...	1,800	6,572
1965 (anticipated)	1,160	2,300	6,900

At the end of 1965, the installed generating capacity of Madras State will be roughly 15% of the all-India capacity of 7,750 Megawatts. This ratio is expected to be maintained during

the end of Fourth Plan period. If this installed capacity is taken as a barometer, we should be making in this State about 15% of the all-India production of light electrical equipment and be able to export.

In a preliminary paper presented to the group, the position of light equipment manufacture as on date was presented, based on which the subject was discussed at the Seminar to assess the demand of the products, the future opportunities and how this could be achieved ; also find out the problems in respect of increased production and development of the industry.

MOTORS

At the time of the formulation of the Second Five Year Plan, it was envisaged that the annual demand for Electric Motors of 200 H.P. and below would be of the order of 0.6 million H.P. per annum by 1960-61. These targets were later on revised by the Development Council for Heavy Electrical Industries and placed at 1.0 million H.P. and 1.25 million H.P. for production and for capacity respectively by 1960-61. The revised targets were accepted by the Planning Commission.

At the beginning of the Second Five Year Plan, there were 12 units in the country engaged in the manufacture of Electric Motors with an annual capacity of 263,000 H.P. At the end of the Second Five Year Plan, there were 27 organised units engaged in the manu-

facture of Electric Motors with annual capacity, of 1,129,040 H.P. of which 15 were located in Madras State. The present annual capacity of the organised industry is 1,390,000 H.P. These figures relate to the production of motors of the units borne on the books of the Development Wing, and in addition, there are a large number of small scale units making mostly F.H.P. motors and Industrial motors upto 20 H.P. and their total capacity is estimated at 200,000 H.P.

The production of Electric Motor in the organised sector in 1963-64 has been 1,180,000 H.P. Madras State, which has a licensed capacity of 53,380 small motors plus 93,000 H.P. totalling approximately 250,000 H.P., produced in 1963 about 102,000 H.P.

There has also been considerable diversification in the production of Electric Motors. Manufacture of special motors, such as variable speed motors, heavy duty motors, flame-proof motors and other types of special motors was taken up and in addition, a fairly large capacity was established for the manufacture of high horse power motors.

The pattern of production of this industry during the recent past has revealed that motors upto 20 H.P. account for about 60% of the total production. While there are 45 units manufacturing Electric Motors, among which 30 are in small scale sector, a good bulk of the motors made by these units are those used on the agricultural and domestic pumpsets in the range of 1 to 7.5 H. P. Only 5 or 6 of these units have taken up manufacture of fractional horse power motors in small scale. Good scope, therefore, exists for the manufacture of fractional horse power motors in large scale, as also flame-proof and special purpose motors, variable speed and geared motors.

Estimated requirements: The demand for electric motors depends upon a number of

factors like the industrial development which takes place in the country, availability of cheap electric power, development under agriculture etc. The volume and pattern of demand will, however, depend upon the pattern of development of the various industries, including those pertaining to manufacture of capital equipment and machine tools, which require motors to be incorporated with them. The Development Council for Heavy Electrical Industries has estimated the demand for Electric Motors in the country upto 30 H.P. will increase to 2.5 million H. P. per annum by 1985-86. In view of the accelerated tempo of industrialisation and increased power availability envisaged during the coming years, the demand for electric motors will also grow rapidly.

Among the requirements for this industry, pig iron and ferrous castings, mild steel rods, bars and sheets, and ball and roller bearings are generally available indigenously. Some items like insulating materials, paints and varnishes, copper wires and strips are partly imported, and it is expected that the requirements of almost all the raw materials will shortly be available indigenously except, perhaps, of copper. However, available supplies of winding wires and non-ferrous metals are not adequate to meet the demand of the industry and a substantial portion of the production capacity is idle owing to lack of raw materials.

The principal material for this industry, viz, stampings, was until recent years supplied by a single manufacturer having plants at Bombay and Bangalore. Another indigenous factory has come into service at Bombay, but all these have not been able to meet the full demand. One unit for the manufacture of standard lamination and punchings required for the motor industry has a good scope and could come up near Madras or Coimbatore.

A recommendation is made for establishing a factory for the manufacture of Silicon Steel

sheets both hot rolled and cold rolled. It has been found that it is feasible to establish a plant for the production of about 10,000 tons of Silicon Steel Sheets, which is considered to be the optimum size for such a manufacture, to cover requirements for the manufacture of Transformers and motors and other Electrical Rotating Machinery.

The requirements of accessories for the single phase and lower horse power motors, like centrifugal switches, capacitors, terminal boards, etc. are all partly imported and quite recently, some units have come up in Bombay. Scope exists for setting one or two units especially at Coimbatore, which is the hub of activity for this industry, for the manufacture of these accessories.

Having regard to the avoidable strain on the foreign exchange and the wasteful use of scarce raw materials, particularly copper, manufacturers should take steps ensuring the most economical and fullest possible utilisation of raw materials with the adoption of class 'E' insulation for all approved uses and lay down a phased but definite programme for the industry for the change-over in the shortest possible time. By the adoption of class 'E' materials, it is hoped to take advantage of the higher thermal stability of class 'E' materials compared with class 'A', and the high space factor obtainable resulting in a considerable improvement in the power/weight ratio of the machines.

The need for establishing proper testing facilities was stressed during the Seminar and it was noted that the Electro Chemical Research Institute, Karaikudi and the Indian Institute of Technology, Madras, would be able to provide development and research facilities at reasonable charges. It was also noted that the Small Scale Service Institute will shortly provide comprehensive testing facilities and development facilities. However,

there is the definite need to establish a Central Testing and Research Institute for testing motors and other rotating machinery, to be set up under the auspices of the Council of Scientific and Industrial Research, in co-operation with the local association and with a recognition from Indian Standards Institution. This Institute can also evolve standards and design quality marking for all motors made in this State, which will enable the manufacturers to utilise fully the export possibilities.

The need for compounding the facilities available with the existing motor manufacturers was taken note of at the Seminar, as also the necessity to standardise the designs so that it should be possible to change the motor of one manufacture to another. Consequent on the difficulty in obtaining adequate raw materials, the group felt it advisable to recommend to the Government to ensure that there is an equitable distribution of stampings, winding wires and other essential materials to the various States, depending on the available production capacity in the organised large scale and small scale units.

ELECTRIC LIFTS

There are now 4 manufacturing units for Lifts in India, with a licensed capacity of 470 units per annum. One of these units with a capacity of 50 units is set up in Madras. There are 7 other small scale units in the country about whom no production figures are available.

Lift manufacture is a specialised field and the manufacturer should also provide installation and servicing facilities. The manufacturing unit should be of sufficiently large size, capable of making a larger number of units at economical prices, give specialised field service and be able to keep abreast of latest technology in the field.

At the moment, the indigenous lift industry is unable to keep pace with the rapid advance of building industry. There is a sudden spurt

of taller and larger buildings some of whose requirements of lifts are beyond the range of Indian manufacturers and for these buildings, complete lift units are being imported. The manufacturers have also the difficulty in obtaining special section steels, two speed motors, Ward Leonard controls etc. but this is being slowly got over.

In Madras City and other principal towns of the State tall commercial and residential buildings are being put up and the building programme is bound to increase year after year. The present demand for lifts is of the order of 100 units per annum and this is rising at the rate of 25 per cent per year. There is, therefore, very good opportunity for accelerated lift production in this State and immediate steps should be taken to develop this industry.

It was observed that the one lift manufacturing unit at Madras is making good progress, and if this unit is allowed to have its natural expansion, it would be able to meet the demand of Madras State and other States, besides being able to export to overseas countries.

The need for standardisation on specification of lifts to fall in line with modern practice was stressed and it was proposed that the P.W.D. and other Government Departments be requested to ask their Architects and Engineers to consult the local lift manufacturers at the time of the initial planning regarding the type and specification of the lifts to be installed in the building. It was also recommended that the I.S.I. may be moved to bring out a standard specification in order to cover design features in addition to enlarging the existing code of practice to standardise on dimensions, capacities and speeds.

WELDING RODS

Two units have been licensed in Madras State for the production of welding rods and

one of these has already gone into production. It is noted that the two plants with their natural expansion would be able to take care of the requirements of the State during the Fourth Plan period.

The manufacturers are facing acute shortage of ferro-manganese and other raw materials and it is necessary to ensure that adequate supplies of the raw materials are made available to keep the factory in full production. The development of cryolite and iron powder for use in the welding rods as recommended by the Central Electro-Chemical Research Institute, Karaikudi, will have to be investigated as a commercial proposition by the manufacturers.

LIGHT ELECTRICAL INDUSTRIES

(a) Lamps & Lighting Fittings

With the rising rate of availability of Electric Power for domestic and commercial purposes, the demand for electric lamps is also on the increase. The overall industrial development of the country as well as the village up lift community development schemes and above all the increasing 'light consciousness among the people' will result in a more accelerated demand for electric lamps.

It is expected that the internal demand for G.L.S. and other similar lamps would increase by about 10 per cent per annum during the Third Plan period to about 62 million lamps during 1955-66. An export of about 6 million lamps is also envisaged during the last year of the Third Plan. Thus the total requirements of G.L.S. and other similar lamps is expected to rise to 68 million lamps at the end of the Third Plan period. At the end of the Fourth Plan period G.L.S. lamps are expected to go upto 175 millions and fluorescent tubes to 15 millions.

Because of longer life and better lighting, fluorescent tubes are fast replacing G.L.S. lamp and their use is increasing in factories,

mills, offices, show rooms etc. In view of these factors, it is envisaged that the demand for fluorescent tubes would rise to 6 million tubes which would include about 0.5 million tubes for export at the end of the Third Plan period.

As regards miniature lamps, it has to be noted that with the progress in rural electrification during the Third Plan period, the demand for torch bulbs may not go up. But this trend is likely to be offset by the growth of population and increase in demand for other varieties, viz. auto car, cycle dynamo and radio panel lamps. The estimated internal demand for miniature bulbs is about 45 million bulbs in 1965-66. An export of about 5 million bulbs is also envisaged during the last year of the Third Plan. Thus, the total requirements of miniature bulbs would rise to 50.0 million numbers at the end of the Third Plan.

For meeting from the indigenous sources the estimated requirements envisaged by 1965-66, an output of 68 million numbers of G.L.S. and other similar lamps, 6 million numbers of fluorescent tubes and 50 million numbers of miniature bulbs, is necessary. To achieve this production level of various types of lamps, capacity targets of 76 million for G. L. S. and other similar lamps, 7 million for fluorescent tubes and 55 million for miniature bulbs per annum on double shift basis, are envisaged.

Until recently, there were 12 factories manufacturing general lighting service and similar lamps, 3 of these also manufacturing fluorescent tubes and miniature lamps. There are 7 other factories in the organised sector manufacturing automobile and miniature service lamps. Two of the factories also manufacture mercury vapour lamps. The lamp caps are made by two units.

It has been considered that the demand of the country can be met with by the existing and newly licensed factory units with two

shifts working, until the end of the Third Five Year Plan period. The need has now come to plan for the almost doubled up demand for the Fourth Plan, by allowing a further expansion to the existing facilities, three shift working, modernisation of G. L. S. lamp production facilities in existing units and perhaps by licensing new factory units.

As far as Madras State is concerned, there are only two units, one large unit at Madras to make G. L. S. lamps and fluorescent tubes and the other set up in a moderate scale in the Industrial Estate, Madurai. Both these concerns set up under foreign collaboration, the former with Hungarian and the latter with Japanese, have gone into regular production. With the two factories in full operation in Madras, we may still have to obtain from other States a substantial portion of our requirements. It is, therefore, essential that under the Fourth Plan period in Madras State, substantial expansion will have to be carried out in the existing units. It is also felt that lamp manufacture cannot be satisfactorily tackled by small scale units, as they will have to depend on larger units for tubes, bulbs and caps.

Increased production and demand of lamps—general service and fluorescent—brings up the need for manufacture of lighting fittings and accessories such as starters, chokes and condensers.

In Madras, we have at present two medium lighting fitting manufacturing units, and a few small scale units, but over 90% of the demand is being met by import from other States. Certain amount of standardisation has already been achieved in respect of the design of industrial type fittings in G. L. S. and fluorescent ranges. Increased manufacture of these fittings depends on availability of suitable sheet steel, stove enamelling and vitreous enamelling facilities and availability of component electrical accessories.

The manufacture of industrial lighting fitting seems to be at present concentrated in Bombay and Calcutta in four organised units. There is the definite need to assist the existing manufacturing units by assuring regular supplies of raw materials, such as sheet steel, to have natural expansion and meet the full demands of the State. The existing manufacturing units can also handle manufacture of chokes for fluorescent fittings, if regular supplies of stampings and winding wires are assured.

(b) Batteries

The storage batteries are manufactured for (a) road transportation industry, i.e. for cars, trucks, tractors, motor cycles, etc. (b) train lighting, (c) standby power in power stations, emergency lighting in factories, estates, etc.

The demands for batteries in road transport industry is increasing every year, to meet original fitments and for replacements. The car/truck/tractor/motor cycle manufacture, which was at 17,000 in 1950, grew upto 60,000 in 1960, and at the end of 1966 is expected at about 1,80,000. An assesment made in 1961 revealed that with the 460,000 cars, taxis, trucks, buses, motor cycles and other transport vehicles on the road, about 6 lakh batteries will be required per annum. The present demand is of the order of 8 lakh batteries per year and is rising at the rate of 12½% per annum.

In the train lighting batteries, the demand has gone up by over 40% during the last 5 years, and with the rapid expansion in track mileage, coaching facilities, etc., this healthy trend will be maintained. The railway electrification programme in the main trunk routes may alter the pattern of the requirements but the overall bulk requirements will not be affected.

In the field of emergency batteries for power closing of switchgear, emergency

lighting and other demands, the demand is going up each year by 20%.

While there are a number of battery manufacturing units in the country, it may be said bulk production is restricted to 4 large manufacturing units—one each at Bombay, Calcutta Bangalore and Madras. Of these, the unit at Calcutta is the largest and accounts for about 50% of the country's production.

Madras State is having two large automobile manufacturing units—one for cars and the other for heavy trucks and a large tractor manufacturing and a motor cycle manufacturing unit. The major demand of batteries for the original fitment to these units are now being obtained from other States. Madras State is having the largest network of roads and an efficient road transportation system and the demand for replacement batteries is heavy; and are again mainly obtained from other States. There is, therefore, the immediate need to set up additional battery manufacturing units in Madras.

The main raw material for batteries is lead of which a major portion of the country's requirements is being imported. This is an internationally scarce raw material with fluctuation in prices from time to time. Small scale manufacturers who cannot afford to buy this commodity in bulk and hold large stocks are victims to the price fluctuations, to a greater extent than large scale manufacturers. For lead casting, antimonial lead or reclaimed lead from battery scrap and other sources are used and only the large manufacturers can equip themselves with the recovery plant. Red lead and litharge, the oxides for making pastes are controlled by one or two manufacturers and small scale industries suffer from inadequate supplies. The lead oxide is also used in the paint, emulsions, and varnish industry. Another main requirement is the battery cases, but this can be conveniently secured from the rubber and plastic moulders.

Madras State offers a good field for the establishment of one or two more units for storage batteries. The plant should have capacity to recover lead to the tune of about 9 to 10 tons. The unit should have a litharge production capacity of approximately 800 lbs. per hour. The same plant can be utilised to manufacture red lead and litharge. Since, as per statistics available, India is importing annually to the tune of about Rs. 2.4 crores worth of lead, oxides and other compounds of lead excluding pigments, the above plant which would recover about 80% of the lead from scrap batteries would help us to have considerable amount of foreign exchange by indigenous production of lead oxides and recovery of lead. It was also felt by the Seminar that if the available supplies of lead are equitably distributed to the battery manufacturers in accordance with production capacity, Madras State can make more batteries and utilise existing capacities.

(c) Electric Appliances and Accessories

A wide range of equipment is covered in this field—domestic appliances, water heaters, washing machines, cooking ranges electric irons, toasters, hot plates, food mixers grinders, etc, appliances for medical profession like sterilizers, hot pads, appliances for cinematographic industry like projectors, carbons, etc. and general wiring accessories.

The market for electrical appliances industry depends on the standard of living of the people in the area and the ability of the manufacturer to achieve 'high volume production' with low unit prices so that the appliances may reach the middle and average class homes.

To achieve 'high volume production' components and raw materials shall be made available at favourable price according to requirements. It may not be a practical proposition for the appliance manufacturers to make all the components parts in their own

plant and they may have to rely on other ancillary industries, who may cater not only for the electrical industry but for other trades also.

A prime part in appliances will be the miniature and fractional horse power motors. This manufacture, by itself, is a specialised field, and only recently a firm in North India has commenced large scale commercial production of miniature motors. There are several established motor manufacturing units in other States, making fractional horse power motors. It should be possible to establish a plant in Madras State to manufacture miniature motors and when this is done, there will be considerable fillip for the manufacture of electrical appliances with moving parts. Investigations should be made to find out whether the Government Small Scale Motor Manufacturing Unit can be developed to make miniature motors on mass scale.

Another component which goes into domestic heating equipment is the heating element. Nichrome wires and strips are still being imported, but the shells, formers and coils can be made locally. The price of heating appliances depend on the cost of the elements. It was also noted that National Metallurgical Laboratory, Jamshedpur has developed a new alloy which may not require nickel, and this can satisfactorily meet the heating element requirements.

Most domestic appliances require quality switching and control units, thermostats plated metal ware, moulded or cast resin handles and bases, glass-ware etc.; and while attempts have been made to make these in various centres, the quality of the products is much below international standards. The Sheet Metal Industry is fairly well organised in Madras State as also the electro-plating industry and there should be no problem on this account.

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Along with the establishment of these units, we should have to educate our people in the large scale use of electrical appliances in the home. This will have to be attempted in several fronts. Our way of living, method of cooking and performance of other domestic chores are not yet fully adapted to the usage of electric appliances. In homes, where they can conveniently afford electrical appliances, people should be educated about the proper usage of the equipment with particular emphasis on safety. It has also to be demonstrated that with the proper selection and usage of electric appliances, the average house-wife should be able to handle the domestic chores comfortably and quickly and thereby, be able to minimise the services of domestic servants, which is becoming more and more difficult to obtain in metropolitan cities.

It was brought out at the Seminar that consumers are hesitant to go in for large scale use of electrical appliances for the simple reason that electric energy costs are very heavy in the State. The need for giving greater incentive for domestic consumers to use electricity was stressed and this could be achieved by a more attractive tariff for domestic bulk supply than is ruling at present.

In respect of equipment to cinematographic industry, there are two manufacturing units in Madras making projectors, one specialising in 16 mm. projectors. However, these units are not maintaining full production for want of adequate supply of raw materials, especially the components like lenses, special sprocket wheels etc. which have to be imported. Given proper encouragement, these plants can develop satisfactorily.

Accessories for Electrical Installations: Apart from the appliances briefly dealt with above, the immediate need is for the establishment of manufacturing units for making electrical accessories like switches, lamp holders, plug sockets, junction boxes, link clips,

connectors etc. The main requirement for this field is automatic mass producing precision machine tools, moulding powders and plastic moulding machinery and, there will be no particular difficulty to have these organised in Madras State, though the raw materials may have to come from other States.

Emphasis was laid at the Seminar on quality control, which is of utmost importance in the manufacture of electrical appliances and accessories. There has been sporadic growth of this industry in this country without any control, with the result that we have now in the market a source of equipment designed without elementary safety precautions, such as earthing knobs, loose fitting shockers, lack of clearances, poor finish and with poor quality connecting leads. These are extremely dangerous for use in the comparatively ill-equipped homes and inexperienced people utilising such equipment. The immediate need is to set up a Central Testing Laboratory to approve all gadgets and accessories made and prohibit sale of equipment not approved by this organisation. This Laboratory can be set up in co-ordination with Indian Standards Institution and can be set up by the Electric Development Association.

(d) Fans

It seems strange that ceiling fans are not being made in Madras State, while we are the largest consumer State in fans, and use the fans almost throughout the year. During the last 10 years, the all-India Production of ceiling fans has gone up from 150,000 to over 10 lakhs per annum, and the demand will be progressively going up. The need for establishing a fan factory at Madras State was analysed and it was felt that the difficulty will be with regard to stampings and winding wires. It is recommended that Government may be requested to licence a ceiling fan manufacturing unit, and in the meantime, the fan manufacture may be

taken up on a small scale in one of the Industrial Estates.

(e) Portable Tools

In the field of portable tools, Madras State has not made much headway. There seems to be one manufacturing unit specialising in this field in Bombay. The demand for portable tools is phenomenal and remains largely untapped. Madras is having a number of light steel, aluminium and alloy casting units and die casting units, and there would be no particular difficulty to organise this unit along with fractional and miniature motors, if the Government can license the establishment of a manufacturing unit.

(f) Automobile Electrical Equipment

This field covers a wide range of electrical equipment, viz., dynamos, starters, ignition equipment, flashers, electrical pumps, etc. These equipments are required for use as original fitments and for replacements, which at the moment are quit appreciable,

The performance of the automobile engine and vehicle manufacturing industry in India, has not kept pace with the ambitious targets laid down in Government plants, and a correct assessment of the prospects for the immediate or near future would be to assume the average production over the past two years.

Shortage of foreign exchange has been advanced as the main reason for the shortfall in production against Plan targets. For the purpose of assessment of demand, the estimated production for 1964 should be taken as a guide line. The production of vehicles of all categories including commercial and passenger types was around 60,000 units. All other types of vehicles such as scooters, 3 wheelers and motor cycles would account for a further 35,000 units.

There are at present four major manufacturing units in the country making automobile electrical equipment, and of these, two

are located in Madras. The licensed capacity of the major manufacturers far exceeds, and is, in fact, nearly double the present requirements and the only reason why there is still a shortfall in electrical components, is that the existing units have recorded lower production levels due to shortage of foreign exchange and raw materials including special steels, enamelled copper wire, electrical sheet steel stampings etc.

The manufacturers are also faced with a variety of equipment required for different makes of vehicles, and a system of standardisation is debatable. Because of the high reliability required for automobile electric requirements, stringent specification have to be maintained, and it is encouraging to note that the two manufacturing units at Madras maintain high standards, and they are equipped to meet the demand, if they are assured supply of raw materials.

General

RECOMMENDATIONS AND SUGGESTIONS

(1) Vast scope exists for developing industries which fall under this group. As far as possible, the existing industries should be enabled to (a) substantially expand their production and range of products, (b) establish facilities for quality control, (c) develop new designs, (d) provide testing facilities either of their own or by arrangement with technical institutes in the State.

(2) There is sufficient scope for new factories like a fan manufacturing unit of about 10,000 fans per annum capacity, and also for various electrical appliances and wiring accessories units in Madras State.

(3) The experts focussed the attention to (a) the development of product designs, (b) encouragement of the artistic abilities of local craftsmen, (c) improvements in the designs of the existing products, (d) co-operation between small scale industries and others for

free exchange of ideas, (e) standardisation of products to reduce tooling costs, production costs etc., and (f) make such products as would appeal to consumer tastes.

(4) Emphasis was laid on establishing proper testing facilities and it was noted that Indian Institute of Technology, Madras and the Electro-Chemical Research Institute, Karai-kudi, would be prepared to provide development and research facilities at reasonable charges. It was also noted that Small Scale Service Institute can give routing testing facilities and technical advice.

(5) Stress was also laid on the manufacturers producing proper catalogues and literature, giving full details and illustrations of their products. Literature should be printed neatly on good quality paper.

(6) The group further recommends that it is essential to set up an Electrical Development Association in Madras State to advise the local industries in starting and developing of indus-

tries, provide technical advice and assistance in the preparation of designs, maintenance of good quality raw materials and assist the industries in testing the finished products. This Association may be formed by the Electrical Manufacturers of Madras State with the financial and technical assistance of the Madras Government and Central Government.

(7) It was felt that the main difficulty in respect of industries is non-availability of raw materials, such as steel for stampings, winding wires and copper strips, insulation materials, sheet steel and non-ferrous metals and unless adequate supplies of these are available further development may not be possible.

(8) The group also felt it will be worthwhile to set up Industrial Estate complex to manufacture electrical products and to serve as an ancillary estate for large manufacturing unit. This can be of the pattern of Guindy Estate and should be provided with modern testing facilities.

GROUP IV

ELECTRONICS AND MODERN DEVELOPMENT : RADIOS, CONTROLS, ETC.

Chairman: Sri K. NAGESWARAN

I

PROGRAMME FOR INITIATING AND STEPPING UP PRODUCTION

The Group considered at first the programme of initiating and stepping up of production of radio components and electronic equipments. After a study of the statistics presented in the different Papers, the Group felt that there would be enormous demand for electronic equipment of all types including radio receivers in the coming decade. Not only would there be a demand for about two million radio receivers annually by 1975, but a variety of electronic control and processing equipment would be called for by the expansion of other industries. There would also be a big and continuing demand of electronic equipment for Defence.

It was recommended therefore, that units should be allowed to be set up without any hindrance to produce components of the different types. It was particularly emphasised that in addition to the conventional radio components, units should also be set up for producing miniaturised components suitable for transistor appliances.

In order to allow of specialisation and setting up of suitable machinery and equipment for improved quality and design, it was recommended that only a few units should be allowed to take up each type of component.

It was realised that manufacturers of electronic instruments and industrial appliances needed high precision and high stability components which are not made in the country. It was recommended that the requirements of such components in the country even now is significant and is likely to rise to large dimensions in the coming years. It was recommended that units should straightway be set up to go into production of these components as well. The list of components in this connection are detailed as under:—

- (1) High stability cracked Carbon Resistors,
- (2) Polyester and polystyrene capacitors,
- (3) Ceramic wafered band switches,
- (4) Good quality toggle switches,
- (5) Wire wound potentiometers,
- (6) Ceramic valve bases,
- (7) Insulators, Spacers, Connectors, binding posts and metal hardware items with improved specification.

The Group also accepted the estimates of the Dr. Bhabha Committee, that a production capacity of Rs. 900 crores worth of electronic equipment must be built up by 1975. This would require a production capacity for electronic components of about Rs. 100 crores

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The Group also accepted the estimates of the Dr. Bhabha Committee, that a production capacity of Rs. 300 crores worth of electronic equipment must be built up by 1975. This would require a production capacity for electronic components of about Rs. 100 crores

by the same year. It was strongly felt by the Group that the Madras State has been backward in this respect and the present number of units engaged in this field and the production of electronic components and equipments is a minute fraction of what should be achieved in this State, considering the facilities available in the matter of electricity, transport and trained personnel.

It was recommended that a target of production capacity of Radio Components of Rs. 15 crores, Electronic equipment of 50 crores should be envisaged to be reached

by 1975 by the entrepreneurs in this State against the background of the All-India figures mentioned above.

Therefore, units should be freely licensed or permitted both in the large-scale and small-scale sector in this State and a flow of investment in machinery and equipment of about Rs. 6 to 8 crores over the coming decade is called for. A consistent drive should be made to reach this target in the coming years both by the State Government and industrialists by both expansion of the present units and entry of new ones.

II

IMPROVEMENT OF QUALITY

The Group discussed the need for improvement in quality of the appliances and the components. In this connection, it was felt that the raw materials such as brass strips, free cutting rods, steel sheets, laminated sheets ceramic insulators etc., which the component manufacturers as well as equipment manufacturers had to draw on, were often not of the requisite quality. It was therefore recommended that the suppliers of raw materials to the manufacturers of Radio Components and the like, should strictly adhere to the relevant Indian Standards or other standards in the field. Secondly, it was also considered that manufacturers should be given all facilities such as import licence, etc., for modernisation of their machinery and equipment with a view to improve the quality of their products.

The Group also discussed the facilities to be provided for testing the radio components and equipments produced by manufacturers. It was felt that testing facilities with several

of the manufacturers were very inadequate and many of them are small-scale manufacturers and could not afford such equipment. It was considered essential that a Radio Component and Electronic Equipment Testing Laboratory should be set up immediately by the State Government. This laboratory would, in the initial stage, carry out testing of broadcast radio receivers, amplifiers and radio components only. Later on it would be expanded so as to be capable of testing V.H.F. and specialised equipment that would be taken up for production to meet the requirements of Defence. A Committee of the Group was set up to consider the details of the laboratory and draw up a blue-print for the same.

It was also recommended that all manufacturers producing radio components and receivers and other equipments should produce goods conforming to the Indian Standards or other relevant standards.

III

PRODUCTION FOR DEFENCE

The Group had the opportunity of discussing the manufacture and development of electronic equipment that the industry could take up to meet the needs of the Defence. In particular

it was pointed out that the L.R.D.E. have several projects for developmental collaboration with different units for many electronic items. The procedures in connection with this

collaboration were explained to the Group by the representative from L.R.D.E. The Group unanimously felt that industrialists should take this opportunity of entering this field and contributing to production of such equipment.

The Group also felt that equipment of a similar nature required by the Chief Police Radio Officer, Madras, for the State could well be made by the manufacturers.

IV

UTILISATION OF RESOURCES OF NATIONAL LABORATORIES AND TECHNICAL INSTITUTIONS

The Group also considered the assistance that can be received from National Laboratories and Technical Institutions. It was recognised that national laboratories were already doing project work towards production of various Radio Components utilising indigenous materials and the industry should exploit the know-how techniques already developed and offered by the different national laboratories in the country.

With regard to educational institutions, the observers from these institutions were good enough to offer to the industries that they could undertake developmental work on the following lines:

- (1) Literature survey in component development and in the development of electronic equipment indicating the stage of development reached in other countries and indicating the possible lines of approach to the production of these components.
- (2) They are also agreeable to take up for test, the products of the industry in

order to supplement the work of the laboratory that is proposed to be set up and also till such laboratories go into full functioning.

It was also realised that technical institutions and industries had a complementary part to play in the training of technicians. The technical institutions could provide refresher courses for technicians already in the industry and on the other hand the industry could give practical training to the students in the institutions. It was also suggested that industrial units could sponsor by way of scholarship students in the technical institutions who would thereby become industry-oriented even during their study and could return to the industrial units to serve them after graduation. There could be exchange of lectures and talks both by the technicians in industry to the students and by the Professors to the technical men in industry. It was also suggested that Professors in technical institutions could supervise the workers in industry engaged in development on a part-time and payment basis.

V

PROBLEMS OF SMALL-SCALE INDUSTRIES

A special discussion took place detailing the various existing difficulties and obstacles which have to be encountered in either expanding the existing units or in venturing into new lines for which great scope definitely exists. These difficulties were particularly handicap-

ping the small-scale industries as it was present in a harsher degree in their case than in the case of the large-scale units. In this connection, it was felt that the procedure for starting the units and securing the necessary licences and sanctions both at State and Central level

should greatly be simplified to encourage new units to come in and for existing industries to expand. A strong suggestion has also come forward that a very Senior Official of the Central Government should be sanctioned in the State itself with enhanced powers to sanction and guide processing of most of the applications. The delays in the past experienced by the existing entrepreneurs is threatening and terrifying. Unless this is removed, a fear complex that enthusiasm will fade out, seems to exist.

To obtain technical know-how, in particular it was made out that technical collaboration with foreign manufacturers should be allowed both by permitting Indian Technicians to go abroad to be trained in the foreign country and foreign technicians should be allowed to go over here and train the local unit to go into efficient production.

Along with the machinery that is allowed to be imported, a first set of tools and jigs and fixtures must also be permitted. In fixing the production capacity of a unit coming into a new venture, the quantity should be at such a level as to be economically viable and this quantity should be allowed to be progressively increased.

In addition, the entrepreneurs felt that the gap in time between the actual import of the machinery and its full utilisation should be allowed to be used for pre-production training and interim licences for the product in CKD or other condition should be allowed to be imported to support such pre-production duration.

Small Scale Industries face many production difficulties due to lack of good tools, jigs and fixtures. These are needed from time to time. The various Tool Rooms and Service Centres set up by the Government to solve these difficulties had not carried out the objectives with which they were started. The industrialists had often to run to private sources

for such assistance and surprisingly found the qualities and deliveries from these private sources very much more satisfactory. Further, the Government centres were not prepared to produce improved and complicated tools needed for the production of new items. This matter needs immediate and serious attention, as it is essential for the benefit of the Small-scale Industries that the costly equipment available at the Government Tool Rooms should be exploited with imagination in the production of fresh tools, etc.

With regard to finance, it was felt that the assistance from the State Bank of India was very helpful. The industrialists also hope that when they expand their units or start new ones, the State Bank of India and other banks would also come forward to support them for finance for their fixed capital requirements.

With regard to State Aid, while the industrialists are very happy, a suggestion was also made that the power of the Director of Industries to sanction loan should be raised from Rupees Fifty Thousand to One Lakh, in order to help speedy disposal of application.

With regard to import licence of raw materials, equipment and machinery, the Group feels that the overall allotment to the Madras State vis-a-vis other states is relatively poor. The units in Madras State have been started only lately but the allotment still follows the pattern of the earlier years when very few units were existing here. It is felt that to take account of the growth that has already taken place, the allotment should be increased multifold straightaway so that the units in this State are not starved of raw material.

Again, there was a strong feeling that for identical material while the State Government fabricating units got liberal allotments for scarce materials, the allotment to Small Scale units was meagre. This is a matter to be rectified immediately.

MISCELLANEOUS

The Group felt that while there was fairly reliable statistics regarding the radio receivers and the conventional radio components, survey had to be made and statistics gathered regarding the requirements of the country with regard to specialised electronic equipment and components under as many heads as possible. The results of the survey should be published widely for attracting more industrialists into the picture in this State.

The Group welcomed the idea of setting up functional Industrial Estates for Electronics and felt that this should be pursued. The Group felt that this would be a great factor for promoting industrial activity in the

electronic field, particularly in Small Scale Industrial sector.

An association drawn from industries and institutions connected with electronics for the benefit of the State should be sponsored under the aegis of the State Government for the following up of the conclusions of the Seminar and ensuring that the goals set for achieving a high target of production in the field of electronics within the next decade, is made practicable. This alone would ensure that gainful employment would be provided to technical and skilled personnel and the standard of living of the people in this region substantially raised.

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GROUP V

LAND, RESOURCES, SKILLED AND TECHNICAL PERSONNEL AND MARKETING

Chairman: Sri S. NARAYANASWAMY

The panel is concerned with making an assessment of the problems and their solution, relating to land for industry, financial resources therefore, the training of skilled personnel for industry and marketing in the field of electrical materials produced by the indigenous units.

Land: Unlike some of the more developed States, Madras has not presented any major problem, relating to land availability on which to situate industries. The modern concept about the land buying is that any industrial entrepreneur must be able to project his mind into expansion and development that may take place in the decade following the establishment of the industry and to assess the space needs of such industry, both in respect of covered space required for housing the machines and covered storage space for raw materials and finished goods. Apart from this, he has to provide for yard space in respect of open storage of certain types of goods. In heavier industries, he has to provide space for railway sidings, for platform building for easy loading and unloading of goods on lorry transport and such like. In the case of chemical or other processing industries, the problem of harmful effluents and need to neutralize them may impose on industry an obligation to have extra land for chemical treatment of effluents before they are discharged.

What has happened today in the context of land buying is that there has been an

abnormal raise in land prices and in particular for industry. Except in the most of the out of the way places, where the infra structure is poorly built, land buying has become a significant item in the capital cost of the undertaking. Where it used to cost a few thousands, it has begun to cost 5 to 6 figures today. The location of an industry in a particular area has become the signal for a rise in the price of neighbouring land, because industrial colonies and annexures to industry call for more land. The tendency is for the neighbouring land owners to hold their land for higher prices and finally hold the industrialists to ransom and to refuse to part with the land in the hope that the industrialist will be compelled to buy. This is one thing that has compelled industrialists to buy large tracks of land even initially. This is good in its way but this can only accentuate land shortage and land hunger. A short term programme of industrialization, as under the Plan, naturally accelerates such a rise in price. It must be distinctly understood that industrialists should, as far as possible, be discouraged from acquiring agricultural land and reducing the quantum of land under agriculture in the process. They must be asked to buy only non-agricultural land for industry. Because of the water needs of industry, there is a tendency to acquire agricultural land, though this is somewhat expensive.

Title: The major problem posed in regard to land has been that industries are compelled to borrow from one or another of the numerous statutory financial corporations. This has resulted in their having to obtain 'clean title', running back to say 30 years. This alone qualifies the land for pledge with these institutions. Such a stipulation by the finance corporations has resulted in the industries approaching Government to acquire land for them. This goes to the extent of their asking Government to acquire land which they have already bought in order to clear up the title. Latter day judicial decisions have complicated the position somewhat. The finance corporations should relax their rules regarding land title in order to meet the industrialists half-way.

In the situation of industrial units, there has been a distinct preference for hydro-electric areas, rather than thermal areas by reason of the high electricity tariff in thermal areas. Nevertheless, there are certain industries which have to be located near harbours, major or minor. The question is frequently raised whether there should be a State-wide grid tariff. Recently, the question has been raised of a Southern grid tariff for industries. In any case, an equated industrial tariff, as between hydel and thermal, within the State, might be discussed so that the influence of tariff on industrial location may be lessened.

Raw material requirements and transport requirements also influence the location of industries. But the time has now come to disperse industries in comparatively under-developed districts. The districts of Ramnad, North Arcot and South Arcot offer possibilities, where land can also be obtained on reasonable terms. Water has been a major problem as processing water has posed some very serious problems to some industries, while colony water can also create major difficulty as copious drinking water supplies

have to be arranged for. Not all places in the State offer good water facilities, nor is the water of right type available when required. The tendency to locate industries on river banks is largely because of water requirements. This need not be discouraged, particularly in the case of engineering industries which do not involve harmful chemical effluents.

Financing of Industries: This problem has latterly assumed major proportions. There has been a tendency on the part of the entrepreneur to reduce the quantum of issued capital and increase borrowed capital. This has led to long term lending institutions as well as Banks, apart from the Reserve Bank, discussing Equity-Debt ratio and there has been a general insistence on a higher base of issued capital. This is understandable as those who lend money want the entrepreneur to have a large stake in industry, in order that they may have the motivation to run them gainfully and with responsibility. There is in any case no escape from an appropriate capital base. In the case of medium scale industries, about two-thirds of the capital cost have been represented by issued capital. This has not been a bad idea as heavy interest and amortization problems are avoided. However, more recently, the difficulty of obtaining capital has compelled the industries to avail of medium term loans. Banks are not going to be able to offer medium term loans in future, with the Reserve Bank's directive having come in to the effect, that Banks should not offer medium term loans but leave these to the medium term lending institutions. The problem of large borrowing on a small capital base has cast upon industry to very heavy debt and redemption obligations, which they are finding difficult to fulfil. It is understood that the small scale sector has also similar difficulties. It is not possible to evolve a rule of thumb, in such matters as an Equity-Debt ratio today, in the particular conditions obtaining in the capital market in

India and also in view of the time-lag between procurement of capital and loans on the one hand and commercial production industry on the other.

The major problem, however, has been provided by the acute shortage of equity capital industry in the last one year. The problem of expansion programmes having to be financed by fresh capital issues has become a major one, particularly in the case of recently established companies that have not been paying dividends. Those which are paying reasonable dividends have been able to obtain capital. Since most of the units of electrical industries are of recent origin, the question of dividend did not arise. The Government of India have also not taken into consideration the need to wait for industry to operate gainfully and to declare dividend before they are given licence to increase installed capacity. While increase in installed capacity is always good, the question of finding the resources to implement expansion programmes is always there. The only remedy is for industrialists to commence early economic working, organize free flow of raw materials, government supplying them early electric power of the requisite kilowatt and a proper projection in regard to inventory requirements and stores and spares, particularly those which are required from abroad. All these involve resource availability. A healthy capital market plus continuous availability of institutional finance are basic needs in this context.

Banks must be asked to liberalize their terms of lending in the matter of cash credit, key loans and open loans. The existing resources of banks are themselves reported to be inadequate for financing new industries in a big way. Here, we are up against a large problem of resources that has to be reckoned with. All expansion programmes must be properly staggered with due reference to the

industrial units' financial capacity to implement them.

There is a tendency following the increase in the bank rate for money rates to increase. It would do grave injury to industry to have to pay burdensome rates of interest on long or medium term loans. There should be some kind of ceiling on industrial borrowing rates particularly in respect of medium term loans. In our opinion, this would not exceed 8%. It is all very well to say that the interest coming as it does out of taxable profits does not weigh heavily on companies but even taxable profits are difficult to make. It would be dangerous to have too much of it being absorbed by interest payment. Borrowing money as part of the cost determinant in the industry has a way of enhancing consumer prices. Having regard to the outcry against high consumer prices today, it is very important that borrowing rates should not figure too prominently in swelling end costs of manufactured products.

PROCEDURAL DELAYS IN SECURING INSTITUTIONAL FUNDS

It has found in actual experience that between the time a loan is applied for with one of the numerous medium term institutions and the time the loan is sanctioned, the time lag can be anything from 6 months to 18 months. It is usually complained by the institutions that the applicant does not provide full information and fails to complete the pro forma in the manner required. It is suggested that the pro forma supplied to entrepreneurs should be simplified and streamlined and made uniform for all institutions without any sacrifice of the information required by the institutions for the purpose of sanctioning loans or ascertaining whether adequate security is available and the entrepreneur is capable of fulfilling his obligations. Procedural delays have resulted in over-runs of capital costs in the past and therefore early disposal of loan applications would go a long way in ensuring

that capital programmes are completed within the original time and financial limits. The present difficult position in the banking world is recognised. Limitations of bank resources are becoming an increasing problem to new industrial ventures that require working capital in the form of secured and unsecured loans. We believe that far too many restrictions on bank loans which now obtain should go and that the Reserve Bank must liberalize the conditions on which bank loans are given to industries, not as medium term loan but as short term working loan.

TRAINING OF SKILLED PERSONNEL

The right type of skilled worker is very difficult to come by in several industries. When a foreign technician or engineer comes to set up an industry and to train the local workers, the local workman take up the job with some zest for two years. When in the neighbourhood a big industry is set up and particularly if it happens to be a Public Sector industry, the workmen leave the smaller industry in search of higher wages in the big industry. This happens despite the worker having had his full training in the smaller unit. In view of the limited number of skilled men available for industry, considerable pirating of personnel occurs between industries. The one that is able to pay a higher wage or at any rate the industry that has not to look at its economics too much, gets the advantage of being able to take away the worker from the smaller unit. This has to be countered by increasing the wages of the workers as they get basic and advanced skills. This is far better than the economic waste involved in the industry having to start all over again, training their men and very often not having the very best men available at the top to train them. This results in loss of skill in training new men. During the training the worker gets knowledge of precision work within two or three years, particularly in

engineering industries and in operating delicate machines. In industries which involve very large manual skills, as for instance in the Electrical Insulator or in the Procelain industry, this becomes all the more important. In-plant training has become very important for technicians, apart from training received in polytechnics. Apart from this, continuous contact with workers, while they are getting training, is necessary. This is where the work of Personnel Officers has become very important. In the modern industry, we have several types of workmen: Craftsmen-cum-industrial trainee; Technician, who is very often a Diploma holder and the Engineering graduate. In all these cases, there has to be intensive basic training for the craftsman trainee, while the technician must be made acquainted with the fast moving changes in techniques in machinery and in the new automats that are coming. The student trainee and Engineering graduate have to obtain training in the wide range of skills and in the ability to adapt himself to changes in patterns and processes. It is only natural that men of lower levels after acquiring experience and proficiency look for promotion to the next higher level and every incentive should be offered for them to get training and to retain them through a reasonable wage system. At the supervisory and managerial levels, the problems are slightly different. It is very necessary that here again, they should get training at all levels. Managerial training involves a detailed knowledge of the particular industry and today in American Schools of Business Administration, an amazing variety of subjects are taught to men, who are taking up managerial positions in industries, including several branches of economics in which intensive study is indicated. A continuous touch with modern trends and administrative and managerial techniques as in industrial processing is necessary and this can be done by their keeping in touch with deve-

lopments through periodicals dealing with industrial techniques and managerial problems. In other words, managerial and administrative skills must be more than a tradition in administration; the emphasis must shift to professionalism in management techniques.

TRAINING OF SKILLED PERSONNEL

We may say that the need for *ad hoc* institutions that will train skilled personnel for the electrical industry in its various branches was expressed and the only solution for this would appear to be that those who have already received some basic engineering training in polytechnics should go through special courses in these institutes for fitment into specialized industries. More sophisticated industries like electronics and other units will need even more special training. For this provision will have to be made in these institutions. It is now found that even engineering graduates who come out with specific degrees in engineering, do not easily fit into electrical industries, unless that have had some special training. It is here that training has to start at the highest level to percolate to the level of technicians and to the semi-skilled workmen. The only manner of keeping personnel from going away to other industries is to keep on increasing their wages, to ensure that their services are available to the industry which have given them training. The question of diverse industries that require personnel, playing specific stipends to students in the training institutes with a view to taking them over to their establishments has also to be considered. This scheme of training should be fitted into the existing scheme of training under the National Apprentices Act, under which training of 1/6th of total skilled personnel in a plant have to be given in-plant training.

Even in technically advanced countries technical training and man power development are engaging the attention of all. Every one has realised that people at all levels should be

made alive to the use of a vast range of new scientific techniques which have become available during the recent years.

In a symposium on technical training in the U.K. the Chairman of the National Coal Board said "there is no use investing money in plant and machinery unless we invest in the training of men who are going to make the machines to produce the goods.

With modern development we want foremen and supervisors with a wider range of skills so that they are more adaptable to technological changes. All this implies that we need teachers with proper training and with adequate teaching aid and equipment.

It is obvious the start and the momentum have to be given by the industry, large and medium size firms should contribute towards training of skilled personnel at all levels.

Here we are considering not only the craft and trade apprentices but also the students and graduate apprentices and technicians and managers who are already employed, whose continuing education is as important.

In this connection a Professor of one of the American Universities in a symposium on continuing education remarked that engineering is not only a learned profession but a learning profession. The learning process to continue throughout the lifetime of a professionally active engineer. There is no use planning in terms of the number of diploma holders and graduates to be produced, what we need is to plan for professional engineers and skilled personnel.

In most of the industrially advanced countries, industrial training begins at the end of the ordinary schooling and there are provisions for further study more than one road to attain a skilled status.

Part time or full time technical colleges where people can attend to qualify themselves

in their profession leading up to any managerial job.

In India craft and trade apprentices are fairly taken care of as far as their basic training course is concerned; though the second phase selective training in selected trades, can only be given in the industry either on the job or by a technical school organized by the industry.

Theoretical knowledge is an essential and integral part of the training of the skilled worker though the standard should be geared only to the required level. Different intellectual levels are needed e.g., Bench Fitters, Millers, Turners, Setters, Grinders, Electricians, Welders etc.

The old trend has to give way to new technique and in this connection top management should be prepared to accept suggestions from subordinates who have a deeper and wider understanding of the tools of modern technique and scientific management.

The continuing education of the existing engineers could be catered for by (a) lectures, seminars etc, sponsored by professional groups (b) part time or full time study in technical colleges and universities; and (c) proper educational programmes arranged by the industries so as to assist the engineers to the high degree of technical competence. The question of training both at the supervisory and student and graduate levels and supervisory personnel need careful thought and planning. As an immediate step apprenticeship should be made compulsory for all students and graduates to get broad experience in workshop and office departments. And then depending on the aptitude they may be employed and given special training in chosen field of activities.

At a seminar like this, it is only possible to express one's views based on experience and on available data on what happens in other

countries so that a further concentrated effort on this subject could be carried out and concrete proposal made for the effective development and use of technical man power. Seminar like this certainly indicates that there is a case for the formation of an electrical development association in which both the Government and the industrialists, small and large can take active interest to promote the growth on all fronts.

MARKETING

We are dealing with a peculiar situation in India in the matter of marketing. Most of the new industries, if not all, have sheltered markets by reason of complete stoppage of imports. In areas of industry where there is domestic competition, we already see the problems cropping up and sales departments being gingered up and quality control being sought to be achieved. In fact, where there has been over-licensing of industrial capacity or over-production, competition has forced several industries to sell their goods at or below cost of production. Today, we see these problems when some companies are obliged to engage in export of their goods as an exercise in export promotion. In the first place, marketing of goods involves certain assumptions, first about consumer preferences and in our own country they also involve consumer's capacity to buy goods at particular prices. Very facile assumptions have been made on the basis of easy saleability of manufactured goods, imports of which have been banned. This can lead to wrong notions about the need for marketing techniques. Marketing has become a major economic science in the United States where competition between rival manufacturers of even sophisticated goods, like Electronic Computers, has become a formidable problem. It is hardly a credit for any economy to thrive on scarcities. It will be equally discreditable for an economy to

introduce a state of chaos by overlicensing of industry, over-production and poor offtake of the consumer market. Assessment of consumer requirements, consumer's tastes and preferences and projection of long and medium term requirements are the immediate problems in the market to be studied by those that organize marketing. It is believed that this problem will assume major proportions in the next few years, when a large number of industrial units produce the same article. It will not be possible to form associations to keep prices up or put a premium on inefficiency. Ramifications of this problem are numerous and should be discussed in detail. Market research in the long run should be a great help in bring up changes in designs and in quality.

Marketing: We may say that there is a tendency to assume that the marketing problem is still far away. The fact is that with the existing industrial licences fully implemented and more new units being commissioned, the chances are, there may be a buyers market for electrical goods. This must be wisely anticipated and early steps must be taken for organising (a) market research for judging consumer preferences in respect of the changing pattern to suit local consumer needs and (b) for upgrading quality in regard to goods.

The most important fact to remember is that rural electrification has gone on at a fairly fast pace in Madras State, so that market for electrical goods would appear to be assured in the long run with an increase in the income of the people. What is necessary

is that marketing techniques in the electrical field should be studied even now, in order to enable the industrialists to take advantage of the market and to enable the manufacturers to realize the consumer needs. If they are going to effectively cater to the needs of rural India in regard to electrical appliances and amenities such as fans, cooking ranges, etc., not only should the appliances be satisfactorily demonstrated alongside of the risks in wrong use of such appliances; but in the manufacture of these, proper care should be taken to make them fool-proof, particularly in respect of insulation of naked wires and such like precautions. Exhaustive information about the article that is marketed and availability of components and other parts should be contained in the literature that is supplied along the article that is sold.

In the course of the Seminar the need to amend the Madras General Sales Tax Act, with a view to make a provision similar to the one that exists in the Bombay State General Sales Tax Act, was made. It would appear that under the Bombay Act, when a manufacturer sends his goods to a distributor for sale they are not taxed if supported by a prescribed form, while only the subsequent sale by the distributor is taxed. In Madras, however, the manufacturer is taxed even on a national sale of his stock to the distributor. The Seminar is interested in seeing that goods manufactured within Madras State are sold at competitive prices outside the State, and towards this end it is considered desirable that such an amendment should be made to the Madras General Sales Tax Act to fall in line with the Bombay Act.

ANNOUNCEMENT

FOR THE ATTENTION OF SMALL SCALE INDUSTRIALISTS

All the Small Scale Industrial Units registered with this Directorate are hereby notified that the Quarterly Production Statements and Annual Financial Statements hitherto used by them, are combined together and a new Proforma has been evolved, to take effect from 1—1—1967, whereby the Small Scale Industrial Units are required to furnish production and Capital particulars, only once in every year before the 31st January, for the preceding year. Copies of the New Proforma can be had from the Assistant Directors of Industries and Commerce of the districts concerned.

Director of Industries and Commerce.

DECEMBER 1966

8. Raw materials required :	Quantity	Value (in Rupees)
1.		
2.		
3.		
4.		
5.		
Etc.		
9. Workers employed	...	...
(i) Supervisory Personnel	...	...
(ii) Other Workers	...	...
10. Whether power is used or not in manufacturing process	...	...
11. Particulars of raw materials consumed during the year	Quantity	Value (in Rupees)
	...	...

RAW MATERIAL

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
- Etc.

12. Stock of raw materials	...	...	At the beginning of the year	At the end of the year
	1.	Quantity	Value	Quantity Value
	2.			
	3.			
	4.			
	5.			
	Etc.		At the beginning of the year	At the end of the year
13. Fixed Capital				
	(a) Land			
	(b) Building			
	(c) Machinery etc.			
14. Working Capital	...	...		

Station :

Signature & Date.

Date :

Name of the Firm.

TO BE SUBMITTED ON OR BEFORE THE 31st OF JANUARY,
EVERY YEAR FOR THE PREVIOUS YEARS

- To
1. The Director of Industries and Commerce, Chepauk, Madras-5.
 2. Copy to the Asst. Director of Industries and Commerce.

NOTIFICATION

Applications for supplementary licences for the import of raw materials, components and spare parts by actual users engaged in the priority industries in small scale sector.

Government of India have released Public Notice No. 156—ITC (PN) / 66 dated 22-12-66 containing instructions to be followed in filing applications for supplementary licences for the import of raw materials, components and spare parts. Applicants in the Small Scale Industries and other industries whose applications were sponsored by the Director of Industries of this State may file the applications for supplementary licences after atleast 70% of the goods covered by the licences granted to them for the period 1966—67 have been shipped. The applications should be superscribed on the top in bold letters as :

**“ APPLICATIONS FOR SUPPLEMENTARY LICENCE FOR
THE IMPORT OF RAW MATERIALS, COMPONENTS AND
SPARE PARTS IN TERMS OF PUBLIC NOTICE No. 156—
ITC (PN)/66—DATED 22—12—66.”**

and filed with the concerned Assistant Directors of Industries and Commerce, Regional Deputy Directors and Administrative Officers.

The application fee will be Rs. 50 on each application irrespective of the value applied for.

The application should also be accompanied by an additional information in the Proforma annexed to the Public Notice and to be furnished in duplicate.

No application will be admitted unless they are complete in all respects.

Director of Industries and Commerce.

ANNUAL INDUSTRIAL PRODUCTION STATISTICS
FOR THE YEAR

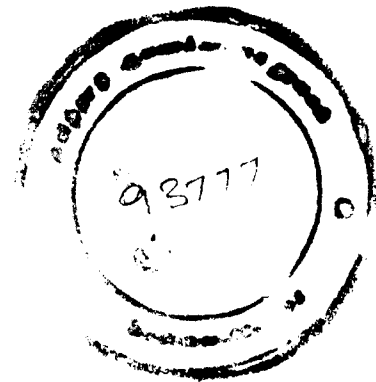
- 1. Small Scale Industries Registration No. ...
- 2. Name of the Firm
- 3. Address of the Firm
- 4. Particulars of products manufactured as approved in the Small Scale Industry Certificate
- 5. Annual installed capacity on one 8 Hour Shift basis (Capacity if 2 or more shifts are worked)
- 6. Unit of Production i.e. Tons or Lbs. or Numbers
- 7. Actual production during the year :

	Name of the Product	Quantity	Value (in Rupees)
1.			
2.			
3.			
4.			
5.			
Etc.			

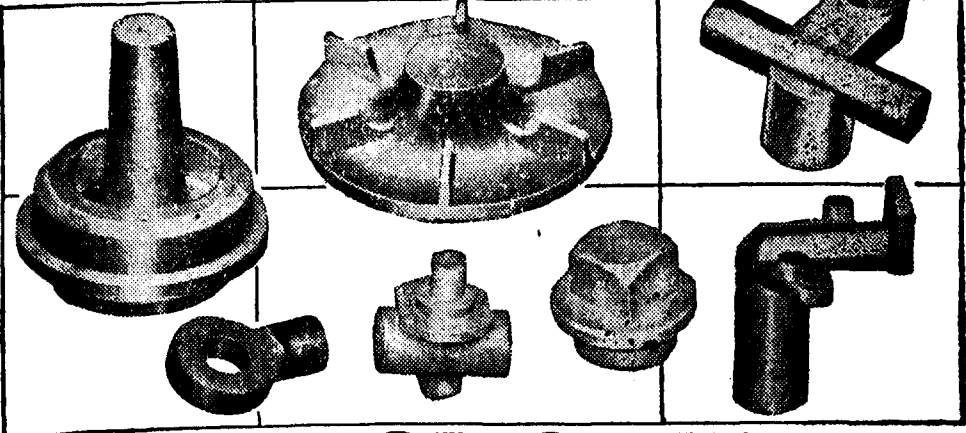
PENALTY

N.B. :—As per the Industrial Undertakings (Collection of information and Statistics) Rules, 1959, published in Part II—Section 3, Sub-section (i) of the Government of India Gazette, dated 1st April, 1960, every small scale industrial unit which has been registered with the Department of Industries and Commerce, Madras, should send to the Director of Industries and Commerce, Madras-5, production statistics in the prescribed form regularly.

The Small Scale Units registered with this Department are, therefore, requested to send the production statistics regularly on the due dates. If any of the registered units do not submit the production statistics regularly to the Director of Industries and Commerce, Madras-5, the defaulters will be liable to have their registration cancelled without notice. The Unit after the cancellation of the registration will not be entitled to any form of assistance.



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