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Report of the Department of Industries Madras

For the year ending 31st March 193

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REPORT OF THE DEPARTMENT OF INDUSTRIES MADRAS

FOR THE

YEAR ENDING 31ST MARCH 1938

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No. 2281-A/38. OFFICE OF THE DIRECTOR OF INDUSTRIES,

MADRAS, *dated the 30th July 1938.*

From

L. B. GREEN, ESQ., M.B.E.,

Director of Industries,

Madras,

TAMIL NADU ARCHIVES LIBRARY
No. 27217

To

THE SECRETARY TO GOVERNMENT,

DEVELOPMENT DEPARTMENT,

Madras.

SIR,

I have the honour to submit the Administration Report of the Department of Industries for the year ended 31st March 1938.

2. In Government Memorandum No. 1083-IV/38-2, Development, dated 7th April 1938, I was requested to submit the Administration Report *in print* by the 15th of August, and I have requested the Superintendent, Government Press, to make a special effort to supply printed copies of the report by that date.

I have the honour to be,

Sir,

Your most obedient servant,

L. B. GREEN,

Director of Industries.

CONTENTS

	PAGE.	PARA-GRAPHS.
1 Direction	1	1
2 Tours	1	2
3 Exhibitions	1–2	3
4 Committees	2	4
5 Conferences	2–3	5
6 Tariff Board Enquiries	3	6
7 Statutory Board of Industries	3–9	7–11
8 General assistance to Trade and Industry	9–20	12–24
9 Statistical Section	20–28	25–41
10 Cottage Industries	28–34	42–46
11 General Review of Commercial and Industrial conditions	34–52	47–81
12 Kerala Soap Institute, Calicut	52–57	82–92
13 Textile Section	57–63	93–107
14 Sericulture	64–72	108–122
15 Engineering Section	72–80	123–140
16 Industrial Education	81–89	141–165
17 Leather Trades Institute, Madras	89–92	166–171
18 School of Arts and Crafts, Madras	92–94	172–178
19 Programme of work for 1938–39	94–96	179
20 Receipts and expenditure	97–98	180
21 Appendix I—Statement showing the receipts and charges of the Department of Industries for the years 1936-37 and 1937–38	99	
22 & 23 Appendices II and III—Statistics relating to Government and recognized Industrial Schools for the year 1937–38	100–111	
24 Appendix IV—Statistics relating to recognized Industrial Schools for the year 1937–38	112–115	

ADMINISTRATION REPORT OF THE DEPARTMENT OF INDUSTRIES, MADRAS, FOR THE YEAR ENDED 31ST MARCH 1938.

Direction.—I was in charge of the department throughout the year under review. Mr. L. S. Pinto continued to act as Deputy Director of Industries until the 24th May 1937, when he was relieved by Mr. W. Fyfe, on the latter's return from leave. Mr. Fyfe continued to act as Deputy Director until the 20th November 1937 when the post was abolished and he was reverted to his substantive appointment of Inspector of Industrial Schools which was revived.

2. *Tours.*—I was on tour for 62 days during the year. I attended the Industries Conference and the meetings of the Imperial Sericultural and Woollen Industry Committees at Lahore in December.

3. *Exhibitions.*—The department participated during the year in a considerable number of agricultural and industrial exhibitions held in various parts of the Province. At most of the exhibitions, a representative range of soaps manufactured at the Kerala Soap Institute, Calicut, was displayed and wherever possible, the working of pumping and boring machinery, of improved textile appliances, and of silk worm rearing and reeling appliances, was demonstrated for the benefit of the agriculturists, handloom weavers and the general public. A successful departmental display was staged at the All-India Khadi and Swadeshi Exhibition which was held at Madras from 19th December 1937 to the 15th January 1938. At this exhibition a representative range of textile appliances, including a small jacquard machine for manufacturing figured saree and angavastram borders, a kora-grass mat weaving loom fitted with an automatic shedding motion, shoe lace manufacturing hand-worked charka, foot-worked automatic rope twisting machine, vertical warping mill with creel for preparing warps, a peg warping board and a hand-driven carding machine for removing short and unripe fibres in cotton, were demonstrated. A cotton opening machine and an improved charka designed by Sri Tirunarayana of Triplicane and also another type of charka operated by a pedal and constructed on the ring spinning principle, as well as a plantain fibre splitting machine, were shown in operation. The printing of textiles by aerograph methods, preparation of stencils, rearing of eri silk and mulberry silk worms, reeling of mulberry silk cocoons, spinning of eri silk yarn, with an improved charka and twisting of silk yarn, were also demonstrated. A select range of printed fabrics from the Textile Institute, and a set of pile carpets manufactured by the Ellore Pile Carpet Weavers Purchase and Sales Society, Limited, were exhibited. Actual demonstrations of enamelling and lacquer work, painting on leather,

pottery, light-metal and casting work, leather goods manufacture and the cold process of soap making were also demonstrated and attracted a considerable number of interested spectators. There can be no doubt that practical demonstrations of this kind at fairs and exhibitions have a considerable educative value and serve a distinctly useful purpose. Exhibitions and fairs held in other parts of India, as well as in countries, overseas, were brought to the notice of manufacturers, and others in the Province.

4. *Committees.*—I continued to serve on a number of committees, including the advisory committees of the Madras and Southern Mahratta Railway Co., Ltd., and the South Indian Railway Co., Ltd., Provincial Research Committee, Provincial Cotton Committee, Provincial Marketing Board, Executive Committee of the Victory Memorial School for the Blind, Poonamallee, Council of the Victoria Technical Institute and Senate of the Andhra University. I served also as a member of the Board of Directors and of the Executive Committee of the Madras-Handloom Weavers Provincial Co-operative Society, Ltd. I was nominated by the Government as a member of the Court of the Indian Institute of Science, Bangalore, for a period of five years with effect from 1st January 1938. The University of Madras set up an Employment Bureau towards the end of the year and I accepted an invitation to serve as a member of the Committee appointed to direct it.

5. *Conferences.*—A Conference of Ministers in charge of Industries and Directors of Industries, which was attended by the Hon'ble Minister for Industries and Labour and myself, was held at Lahore on the 14th and 15th December 1937. At this Conference, the following subjects were discussed :—

(i) progress of the schemes for the development of the handloom weaving industry and the question of allotments for 1938–39,

(ii) grant for the All-India Handweaving Exhibition and competition to be held in conjunction with the All-India Exhibition of Arts and Industries, Punjab at Lahore,

(iii) scheme for financing the establishment of a women's Co-operative Industrial home in Calcutta out of the grant allotted to Bengal,

(iv) competition between mills and handloom weavers,

(v) development of schemes of apprenticeship,

(vi) schemes for helping educated young men in starting small industries, and

(vii) publication of a bulletin containing information regarding industrial and technical institutions in India, including Indian States. I attended also the meetings of the Imperial Sericultural and Woollen Industry Committees which were held at Lahore on the 16th December 1937.

Mr. W. Fyfe, Deputy Director of Industries attended the third meeting of the Advisory Council of Industrial Intelligence and Research which was held at Bombay on the 5th and 6th July 1937 when the following subjects were discussed :—

(i) research on oils and soaps,

(ii) research programme of the Government Test House, Alipur,

(iii) accessories for bangle manufacture,

(iv) improvement of glass furnaces,

(v) improvement of glass products,

(vi) casein products,

(vii) industrial standardization,

(viii) allocation of prizes for papers dealing with subjects of industrial importance,

(ix) publications of the Industrial Research Bureau, and

(x) conduct of industrial surveys.

riff Board Enquiries.—During the year under review Boards were constituted by the Government of India for pose of enquiring into : (i) the question of the extent of on required by the Indian sugar industry during the period 1st March 1938 to 31st March 1946, (ii) whether any and, hat protective measures should be afforded to the magnesium e industry after the 31st March 1939, and (iii) the question protection enjoyed by the paper and pulp industry in India hat protective measures, if any, should be continued after 1st March 1939. I submitted answers to the questionnaire e Board at Madras on the 7th July 1937. I prepared a note e Tariff Board for the sugar industry and was orally examined e Tariff Board in regard to the question of protection for the magnesium chloride industry, but as magnesium chloride is not manufactured in any of the salt factories in the Madras Province, oral evidence in regard to this enquiry was not taken in Madras. Information on certain points was collected for the Tariff Board for the paper and paper pulp industry and I had an informal discussion with the members of the Tariff Board at Madras on the 17th January 1938.

7. *Statutory Board of Industries.*—During the year, the Board of Industries underwent some changes in its personnel. Mr. D. Q. Davidson, who was elected by the Madras Trades Association, vacated his seat on the Board by efflux of time, but was re-elected a member of the Board for a further period of three years. The year was marked by the inauguration of Provincial Autonomy and the consequent introduction of two legislative chambers. The old Legislative Council having been replaced by the Madras

Legislative Assembly, Sri K. Chandramouli Chowdari and P. S. Kumaraswami Raja were elected by the latter chamb members of the Board. The composition of the Board of Indu was, as noted below, at the close of the year under report :—

(i) The Director of Industries. (ii) The Secretary to Govern ment, Finance Department.	Ex officio.
(iii) F. H. Oakley, Esq.	Elected by the Mad Chamber of Comme
(iv) Sri S. Rm. Ct. Pl. Palani-appa Chettiar of Kanadu-kathan.	Elected by the Sout India Chamber Commerce.
(v) D. Q. Davidson, Esq.	Elected by the Trades Associat
(vi) Sri K. Chandramouli Chowdari, M.L.A. (vii) Sri P. S. Kumaraswami Raja, M.L.A.	Elected by the Legislative A
(viii) Diwan Bahadur G. Nara-yanaswami Chettiar, C.I.E. (ix) Sri Chandulal M. Kothari, B.A., LL.B. (x) Rao Bahadur G. V. S. Nara-simha Raju, B.A., B.L. (xi) Sri A. Ranganatha Modali-yar, B.A., B.L. (xii) The Registrar of Co-operative Societies, Madras.	Nominated 3 ment under (2) of the

8. Three meetings of the Board of Industries were he the year on the 5th June 1957, 17th August 1957 a December 1957, respectively, at which the following ap for aid under the Act were considered :—

(i) Application from the Managing Agents of th Madras Growers and Dealers Association, Ltd., C for the subscription of shares by the Government to value of Rs. 50,000 and for the grant of the services of a Government tobacco expert.

(ii) Application from Messrs. A. V. Narayanan and G. Ramakrishnah Nayadu for the Radhakrishna Hosiery and Textiles, Madras, for a loan of Rs. 14,500 for the development of the hosiery industry.

(iii) Application from Mr. F. L. Silva, Proprietor, Bangalore Silk Filature and Throwing Mill, Bangalore City, and Bangalore Silk Filature, Mudkundan, Kollegal, for the subscription by the Government of shares to the value of Rs. 17,850 under section 6 (d) of the State Aid to Industries Act on behalf of the proposed "Kollegal Silk Filatures, Ltd., Kollegal."

(iv) Application from the Tiruppanangadu Button Manufacturers Co-operative Production and Sales Society, Ltd., Tiruppanangadu, North Arcot, for a subsidy of Rs. 234 under section 6 (c) of the State Aid to Industries Act.

(v) Application from Sri K. Subbarayudu, Toy-maker, Kondapalli, Kistna district, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act.

(vi) Application from Sri K. Narasimham and Sri K. Varada-raja Ayyangar, Kaliyanur village, Conjeevaram taluk, Chingleput district, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act.

(vii) Application from Sri T. K. Govindan, Tellicherry, for a subsidy of Rs. 6,000 under section 6 (c) of the State Aid to Industries Act.

(viii) Application from Sri K. K. B. M. Patel Mallappayya Kottur, Bellary district, for a loan of Rs. 20,000 under section 6 (a) of the State Aid to Industries Act.

(ix) Application from Sri K. Lingayya, Apiary Specialist, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act.

(x) Application from Sri M. Raghavana Raju, "Raju Apiary" Courtallam, Tinnevelly district, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act.

(xi) Application from Mr. P. J. Weymouth, Ganesapuram, Adyar, Madras, for a subsidy of Rs. 150 under section 6 (c) of the State Aid to Industries Act.

(xii) Application from Sri Sampangi L. Venkatachalapathi, Gold Thread Manufacturer, Kumbakonam, for a loan of Rs. 5,000 under section 6 (a) of the State Aid to Industries Act.

(xiii) Application from Sri T. T. Ramacharya, Government Pensioner, Gudiyattam, North Arcot district, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act.

(xiv) Application from Sri G. Chuganlal, Proprietor, Bangalar Envelope Manufacturing Company, Madras, for aid under the State Aid to Industries Act.

(xv) Application from Sri V. L. Venugopal, Managing Director, Standard Tile and Clay Works, Ltd., Yelahanka, Mysore, on behalf of a proposed company, "The Madras Stoneware Pipes, Ltd." for the subscription of shares to the value of Rs. 20,000 under section 6 (d) of the State Aid to Industries Act.

(xvi) Application from the Andhra Engineering Co., Ltd., Vizagapatam, on behalf of a proposed company "The East Coast Ceramic Industries, Limited," for the subscription of shares to the value of Rs. 40,000 under section 6 (d) of the State Aid to Industries Act.

Seven applications, namely, numbers (i), (ii), (vi), (vii), (viii), (xi) and (xiii) were rejected unanimously by the Board owing, in some cases, to the inadequacy of the security offered and in others to the applicants failing to supply the information called for by the Director of Industries in regard to certain aspects of their applications, whilst in certain other cases, the promoters were unable to show that they possessed any practical experience of the business in respect of which they had applied for financial assistance. Another applicant, namely, Sri G. Chaganlal, was informed that his application could be considered only when the machinery and equipment offered as security was brought to Madras from Karachi and the Department of Industries was thus enabled to carry out the usual valuation of the assets. The applicant brought and fitted up the machinery in Madras only at the end of March 1938; and arrangements were made for its valuation shortly after the close of the year. The remaining eight applications were unanimously recommended by the Board though in a modified form and submitted to Government. The orders of Government on all but one of the applications were received during the year and particulars in respect of each are given in the following statement :—

	Name of concern.	Amount recommended by the Board.	Amount sanctioned by the Government.	Amount paid during the year under report.	Remarks.
		Rs.	Rs.	Rs.	
1	The Kollegal Silk Filatures, Ltd., Kollegal, Managing Agents Messrs. F. L. Silva and Sons.	17,850 (Subscription of shares.)	17,850	9,100	(Part payment.)
2	The Tiruppanangadu Button Manufacturers Co-operative Production and Sales Society, Ltd.	108 (Subsidy.)	108	108	..
3	M.R.Ry. K. Subbarayudu, Toy-maker, Kondapalli.	350	350	350	This is the first occasion on which the concession granted in G.O. No. 1743, Development, dated 7th December 1931, in regard to encumbrance certificates, was availed of by a cottage industrialist, the department having obtained on his behalf the necessary encumbrance certificate and paid the fee therefor.
4	M.R.Ry. K. Lingiah, Apiary Specialist, Coimbatore.	400	400	..	The applicant has since stated that he does not require the loan.
5	M.R.Ry. M. Raghuramu Raju, "Raju Apiary" Courtallam.	400	400	400	..
6	M.R.Ry. Samponghi L. Venkatachalapathi, Kumbakonam.	7,200	..	..	The application is pending with Government to whom it was submitted shortly after the close of the year.
7	M.R.Ry. V. L. Venugopal on behalf of the "Madras Stone ware Pipes, Ltd."	10,000 (Subscription of shares.)	10,000 (Subscription of shares.)	..	The flotation of the Company was pending at the end of the year.
8	The Andhra Engineering Company on behalf of the East Coast Ceramic Industries, Ltd.	The subscription of shares of varying amounts was recommended by different members of the Board.	20,000 (Subscription of shares.)	..	The flotation of the Company was pending at the end of the year.

9. As the development of cottage and village industries is a matter of vital importance, the scope of the State Aid to Industries Act was still further enlarged during the year by the enactment of Madras Act XIII of 1937, so as to permit of the giving of (a) subsidies for any purpose in the case of cottage industries and (b) such assistance to village industries as may from time to time be found necessary. Accordingly, section 6 (c) of the Act now provides for the payment of a subsidy, in the case of a cottage industry, for any purpose and in the case of any other industry, for the conduct of research or the purchase of machinery. A new clause 20 (e) was introduced under which Government are empowered to assist a village industry in any manner which may be determined by the Provincial Government. The expressions "cottage industry" and "village industry" have also been defined in section 1 (a) of the Act. Cottage industry means any industry carried on by a worker in his own home, while a village industry means any industry which forms the normal occupation, whether whole-time or part-time, of any class of the rural population of the Province.

10. The affairs of the concerns which have received aid under the Act, but have not yet discharged their loans in full, are briefly reviewed below :—

(i) *Salem Dye Works Syndicate, Ltd.*—The arrears of loan amounting to about Rs. 1,500 were recovered during the year and the loan account was closed.

(ii) *Metal Industries Limited, Shoranur.*—The instalment of the loan was paid on the due date and the insurance renewed for another year. The audited balance sheet

of the concern for the year ending 30th June 1937 showed a net profit for the year of Rs. 62 after providing for depreciation and interest charges. The management state that it is necessary to secure additional share capital in order to clear the debts carrying high rates of interest and to provide for working capital and the installation of additional machinery, so as to permit of the development of the concern.

(iii) *Messrs. Bodda Pandanna Sons, Vizianagram.*—The fifth instalment of the loan due on 1st April 1937 was not paid on the due date, but was paid some four months later with penal interest. The supplemental mortgage of the rice mill referred to in the last year's report was executed and registered. According to the audit report for the year ended 31st March 1937, the working of the concern resulted in a net loss of Rs. 20,947–13–9 as compared with a net profit of Rs. 232–15–2 in the previous year. The loss is reported to be due to high manufacturing cost and fall in selling price of the oil produced. The financial position, as revealed by the balance sheet and valuation statement, is not satisfactory, the excess of liabilities over assets being Rs. 56,477–7–3.

(iv) *Sri A. C. Krishnaswami Pillai, Mutkupet.*—The payment of the second instalment of the loan due on 1st August 1937 was delayed and the amount was recovered with penalty. The factory was insured during the year. The accounts of the concern for the year ending 31st March 1938 are awaited.

(v) *Sri Ramakrishna Sugar Mills, Kirlampudi, East Godavari district.*—The management has since submitted a revised audit report of the sugar mill for the three years ended 31st October 1937. According to the revised balance sheet, the concern sustained a net loss of Rs. 1,05,982–11–10 during the period of three years since it was started. There was a change in the management of the concern, Rao Bahadur C. V. S. Narasimha Raju, the managing partner, having handed over charge to the other partner, the Zamindar of Kirlampudi on the 15th November 1937. The insurance of the factory was renewed for another year.

(vi) *Sri Rebala Hanumantha Rao, Nellore.*—Shortly after the disbursement of the loan, this gentleman repaid the entire loan with interest as he obtained an appointment in Bangalore.

(vii) *Andhra Paper Mills, Limited, Rajahmundry.*—A reference was made in the report of the previous year to the grant by the Government of various concessions to the Andhra Paper Mills Co., Ltd., under section 6 (f) of the State Aid to Industries Act. The concessions comprise (a) grant of exclusive rights of cutting and removing bamboos from the Pabsumandi range in the Rekapalle forests for a period of ten years at an annual payment of Rs. 8,000, (b) permission to purchase and remove waste paper and press cuttings from Government offices under the control of the Provincial Government for a period of five years from 1st April 1937, at the rate of Rs. 28 per ton, and (c) permission to take water from the river Godavari at a concessional rate of Rs. 1–8–0 per 1,000 cubic yards for a period of one year from the date of commencing manufacturing operations. If it does not prove feasible for the company to instal a purification plant for the treatment of the effluent and so obtain a rebate on the quantity of water returned to the river after treatment, the question of renewing this concession for another period will be considered. Though the whole factory has been remodelled, the starting of manufacturing operations was delayed by an accident to the main engine and arrangements have been made to replace the engine by a new turbine and boiler sufficient for the generation of the power and steam required for the operation of, and processing in, the mill. The erection of the turbine and boiler is approaching completion and the management are making arrangements to start the mills in the course of the next few months.

11. There was a large increase in the number of applications for aid received during this year, as compared with the previous years, and this may be attributed to the wide advertisement given to the improved facilities afforded under the Act for the development of industries.

General Assistance to Trade and Industry.

12. The work of supplying commercial and industrial information is carried on in the Bureau of Industrial and Commercial Information, the organization and objects of which are now too well known to need repetition. Briefly, the purpose of the bureau is to provide general and statistical information on industrial and commercial subjects and to answer enquiries relating to the commerce, trade and industries of the Madras Province. The number of enquiries received, and the number of periodical and special reports prepared during the year, was very considerable. In addition to enquiries on industrial and commercial questions from the public, a number of references, were, as usual, received from the Director-General of Commercial Intelligence and Statistics in regard to overseas trade in general or with reference to the financial standing and business reputation of firms, and individuals who wished to secure overseas trade introductions. The Director-General of Commercial Intelligence and Statistics continued to be supplied with a monthly review of trade conditions in the Madras Province and this report was reproduced in the *Fort St. George Gazette* and the local newspapers. The scope of the report was

expanded during the year so as to include a review, month by month, of the world economic position. In connexion with the Ottawa preferences, the Government continued to be supplied with quarterly reports in respect of magnesite and cotton manufactures, and half-yearly reports in respect of woollen carpets and rugs, coir yarn and matting and myrobalans. A special periodical report in regard to the senna market was also sent to the Director-General of Commercial Intelligence and Statistics. The Bureau continued to compile statistics relating to industries, including statements of cotton, jute, paper and woollen mills, and mines and minerals, as also the annual review of the working of the Indian Mines Act. The annual return of large industrial establishments in the Madras Province coming under the operations of the Indian Factories Act, 1934, was, as usual, compiled. Summaries on the subjects of manufactures, mines and quarries, were also prepared for inclusion in the administration report of the province. It has not yet been found possible to transfer the compilation of these statistical returns to the statistical section of my office as the work of the statistical staff has increased considerably. A number of important reports were submitted to Government during the year of which, in addition to the reports elsewhere referred to, mention may be made of those in connexion with (i) the revision of the Indian Merchandise Marks Act, 1889, (ii) bill to regulate the import into British India of drugs and medicines, (iii) Indian Patents and Designs (Amendment) Bill, (iv) protection of minor industries against Japanese competition, and (v) levy of protective duties on copra and coconut oil from Ceylon. Now that it is the recognized function of the Director of Industries to collect and present commercial and statistical information in regard to prices and the trade of the province and in view also of the increasing importance of economic questions generally, it is very desirable that the designation of the Director of Industries in Madras should be changed to "Director of Industries and Commerce" so as to correspond more closely to the nature of the duties carried out by him. This change in designation has already been brought into effect in the United Provinces. In Mysore and other Indian States the corresponding department is styled "Industries and Commerce" and in Ceylon "Commerce and Industries."

13. A very large number of enquiries were received and answered during the course of the year and the enquiries continued to cover a wide range and variety of subjects. It is impossible, within the compass of this report, to refer in any detail to the inquiries dealt with or the nature of the assistance rendered, but the following instances of measures taken to assist enquirers may serve to illustrate the ways in which the Bureau is of assistance in supplying information and advice on industrial and commercial subjects :—

(i) A list of exporters of raw wool and goat hair was supplied to a firm in the United States of America through the

Director-General of Commercial Intelligence and Statistics, Calcutta.

(ii) Information in regard to the manufacture of synthetic camphor and importers of camphor, with figures of imports was furnished to an enquirer in Salem.

(iii) An estimate for a soap factory capable of turning out 5 tons of washing and 1 ton of toilet soap was supplied to a toilet manufacturing company in Chittoor.

(iv) Information as to whether the prospects for the season's flue cured tobacco crop in Guntur district were above or below normal and the ruling prices of flue cured tobacco was supplied to an enquirer.

(v) Information in regard to the processes employed in the preparation of tanning extract was supplied to an enquirer in Cocanada.

(vi) A note on the manufacture of thymol and the names of suppliers of ajowan seeds was supplied to an association in Rajahmundry.

(vii) An enquirer in Madras was supplied with information in regard to the process of manufacture of phenyle and camphor.

(viii) A note in regard to wet and dry bulb temperatures in cotton mills was supplied to a company in Madras.

(ix) A note in regard to the curing of ginger with sulphur was supplied to the Imperial Council of Agricultural Research.

(x) An enquirer in Tuticorin was supplied with an estimate for the manufacture of table salt.

(xi) A list of importers of gum benjamin in India was supplied to an enquirer in South Kanara.

(xii) A financial statement for an ærograph printing concern was supplied to an enquirer in Bhavani.

(xiii) A note on the manufacture of extract from senna was sent to a zamindar in Tinnevelly district.

(xiv) Information in regard to the manufacture of chlorate of potash and chlorine gas was supplied to a match factory in Sivakasi.

(xv) The Director-General of Commercial Intelligence and Statistics was supplied with a list of manufacturers of essential oils in this province.

(xvi) An enquirer was supplied with information in regard to the duty levied on shirts imported into, and the names of dealers in shirts in, British East Africa.

(xvii) A specification and quotation for a plant for producing opaque ice was supplied to an enquirer in Conjeevaram.

(xviii) Information in regard to exporters of manganese ore, ruling prices, etc., was supplied to an enquirer in Madras.

(xix) The Special Officer, Wallajah Municipality, was supplied with a financial statement for a cotton spinning mill of 24,000 spindles.

(xx) The Director-General of Commercial Intelligence and Statistics, Calcutta, was supplied with a list of names of manufacturers of coir press mats and coir bags for use in hydraulic oil presses.

(xxi) A note on the preparation of lemon oil was communicated to an enquirer in Amalapur.

(xxii) A list of the names of manufacturers of sandalwood articles was forwarded to the Director-General of Commercial Intelligence and Statistics, Calcutta, for communication to an overseas enquirer.

(xxiii) An enquirer in Madras was supplied with information in regard to the manufacture of citric acid and lime juice.

(xxiv) A note in regard to the establishment of a glass factory was forwarded to enquirers at Bezwada, Tenali and Rajahmundry.

(xxv) Samples of textile fabric produced on handlooms in Madras which have a market outside India were forwarded to the Director-General of Commercial Intelligence and Statistics, Calcutta.

14. *General industrial development.*—A good deal has been heard during the year as to the desirability of drawing up a definite programme or plan for the development of industries of fundamental and basic importance on an All-India basis after conducting enquiries as to what industries of economic importance offer scope for development in the various provinces. The Government of the U.S.S.R. realized at an early stage that the best method of utilizing the vast natural resources of the country was by a process of industrialization, and starting from practically nothing, the Government of the U.S.S.R. succeeded in establishing a number of powerful industries some of which are believed to be second to none in the world. In particular, a noteworthy advance has been made in the development of heavy industries as an essential prerequisite to the building up of other branches of the national economy. Conditions in the U.S.S.R. and India are admittedly not strictly comparable, but the achievements of the U.S.S.R. in the domain of industry and, also incidentally in the sphere of agriculture, in the past twenty years afford at least a striking indication of what can be done by an orderly system of planning. It is inevitable, however, that in the planning of industry on an All-India basis some provinces will fare much better than others and there may be a tendency for industrial development to be concentrated in a few provinces which command superior resources in raw materials and command the largest markets. There are four main sources of raw materials for the development of industries in a country, namely, (i) agricultural products, (ii) animal products, (iii) forest products, and (iv) mineral products. It was formerly believed that the development of industries in Madras was likely to be chiefly in the direction of converting and working up into manufactured or semi-manufactured form the agricultural and forest products of the province, but as stated in my

report of the previous year, the possibility of establishing several new industries has been opened up by the advent of electric power. It is the case, however, that our knowledge of the resources of the province in raw materials is inadequate and that without more accurate and fuller knowledge of such resources, it will be somewhat difficult to draw up and implement an effective programme of industrial development. In particular our knowledge of the raw materials of mineral origin is very meagre and in considering the possibilities of developing industries one is constantly faced with the difficulty presented by this lack of accurate knowledge of the geological and mineral resources of the province. Up to the present, exploitation has been largely confined to mica, magnesite and manganese, but there are possibilities of further development in regard to magnetite iron, hæmatite iron, copper, pyrites, gysum, asbestos, bauxite, etc., so that it is conceivable that this province although looked upon as somewhat barren of mineral wealth may yet repay detailed examination by a scientific mining geologist, for as there is a good deal of hilly country in the province, it is by no means improbable that a lot of mineral wealth remains untapped. As the problem of broadening the economic basis of the province postulates the discovery of new economic assets, if the position is to be improved by the introduction of new industries, and the development of mineral resources must necessarily play an important part in the industrial development of the province, there seems to be a case for attaching a mining geologist to the Department of Industries.

15. *Industrial development at Mettur.*—The formation of the Mettur Chemical and Industrial Corporation, Limited, for the purpose of setting up at Mettur an alkali industry and manufacturing caustic soda, liquid chlorine, bleaching powder, hydrogen and other chemicals was referred to in last year's report. The factory of the Corporation is now under construction and it is anticipated that manufacturing operations will be commenced early in 1939. The construction of the cotton spinning, weaving, bleaching and finishing mill of Mettur Industries, Limited, was also in progress during the year, and it is expected that manufacture will commence in July 1938. There is considerable scope for the spinning of, and weaving with, finer counts of yarn, and having regard to the quantity of cotton available in the province and the market for yarn and piecegoods in it, for the setting up of additional mills in some areas. Apart from the alkali industry, the manufacture of finer quality textiles, and the sugar industry, considerable scope for the development of which exists since Madras produces only about one-third of the sugar which it consumes, the following large scale industries offer in greater or lesser degree possibilities of development, although very careful enquiry will be necessary in some instances before schemes for their development can be launched upon: (i) manufacture of

ammonium sulphate, (ii) manufacture of high grade steel products from Salem iron ores, (iii) production of power alcohol from molasses, (iv) manufacture of calcium carbide, (v) paper and pulp manufacture, (vi) staple fibre manufacture and (vii) aluminium manufacture. The manufacture of ammonium sulphate, of high grade steel products from the Salem iron ores, and of the production of power alcohol from molasses will be referred to in separate paragraphs. There is no tangible progress to record during the year in the development of the *calcium carbide* industry although the chemical engineer of a company interested in the possibilities of the industry, is at present in Germany collecting information and data on the subject. When the chemical engineer's enquiries are complete and he returns to India, the question of drawing up of a definite scheme for the manufacture of calcium carbide will be further considered. A difficulty attending the development of the industry is the comparatively limited market in South India for the several products produced. Cyanamide, a valuable fertiliser, can be prepared by passing nitrogen over calcium carbide. As regards the *paper* industry, there are considerable imports of paper into India, but they include many varieties and descriptions of papers, and any one paper factory could only manufacture a limited range of qualities. The question of the price at which bamboo could be made available for a paper and pulp mill at Mettur was under re-examination by the Forest department during the year and their final conclusions are awaited. There are large quantities of eeta grass in the Tinnevelly district which are suitable for paper manufacture and the possibility of establishing a paper industry will be closely examined in connexion with the Papanasam Hydro-Electric Project. Already one company in Madras has shown an interest in the question. It was stated in the report of the previous year that two companies of standing had evinced an interest in the development of the *staple fibre* industry as a result of which arrangements were made for two separate consignments of bamboo to be sent to Europe for test with a view to ascertaining *inter alia* the yield of alpha cellulose from bamboo and whether it could be extracted at an economic price. These two companies, however, have decided not to pursue the matter further. It is understood that the Indian Central Cotton Committee is carrying on experiments in the first stage of artificial silk production by the acetate process with a view to determining the cost of producing chemical cotton, i.e., purified cellulose made from cotton linters and that experiments are being carried on separately in order to ascertain the cost of production of acetic acid from molasses. When the experiments are completed and the cost of these basic materials are known, it will be possible for industrialists to calculate more definitely the cost at which staple fibre or rayon could be manufactured in this country. The possibility of manufacturing *aluminium* which is essentially a large scale industry turns on (i) the availability and cost of bauxite, and (ii) the rate at which electric energy could be

supplied as the industry could not afford to pay more than one-tenth of an anna per unit. It is probable that bauxite could be supplied to Vizagapatam from the Central Provinces at a rate which would render commercial manufacture feasible, provided that the Jeypore Hydro-Electric Project was developed and supply could be obtained from this source at a sufficiently low rate.

16. *Salem iron ores.*—With the rapid march of civilization and industrial progress, iron and steel have become an indispensable part and parcel of modern life. The rapidity of the economic development of any country may in fact ordinarily be gauged by the iron and steel consumption per head of the population and by the magnitude of its iron and steel industry. The question of the development of the Salem iron ores has been subjected to close examination during the last three years and, as stated in the report of the previous year, arrangements were made for a field study of the Kanjamalai hill to be undertaken by Dr. V. S. Dubey of the Benares Hindu University with a view to determining the quality and quantity of the ore. Dr. Dubey's investigation has revealed that a very large amount of magnetite ore exists in the Kanjamalai hill which should be sufficient to satisfy the requirements of a 100-ton steel plant for centuries. This was more or less a foregone conclusion as the quantity of ore available does not seem to have been questioned at any time. The iron ore of Kanjamalai is composed of a mixture of silica and magnitite in about equal amounts and the small scale experiments conducted at the Benares Hindu University have shown that no special difficulty need be apprehended in concentrating the ore, and that after powdering the rock and passing it through the separator, almost pure magnetite is obtained, it being possible to carry the concentration of magnetite up to 90 per cent. The character of the ore is such that it cannot be used directly in the electric furnace as it contains a considerable amount of silica, but the proposal is to concentrate the ore by electro-magnetic concentration so as to increase the percentage of magnetite to at least 90 per cent and possibly to as much as 95 per cent, and to reduce the silica to 8 or 9 per cent. Ore of this composition, it is understood, is utilized in Norway and Sweden for the manufacture of iron and steel. Pig iron would first be manufactured and then refined into steel in a Thomas converter. For a smelting capacity of 110 tons of pig iron per day, the cost of the crushing, concentrating and separating plant, furnaces and steel-making plant, is estimated at about Rs. 25 lakhs. On the preliminary data, it would appear to be profitable even to manufacture ordinary steel if a market could not be found for a sufficient quantity of alloy steels. The further steps to be taken in regard to the exploitation of these ores are (i) the several iron ore deposits around Salem, other than the Kanjamalai hill should be examined with a view to fixing the most suitable site for the steel works, (ii) the apatite (phosphorous salt) deposits in Trichinopoly should be investigated

as it will be essential to add this material in the process of steel-manufacture at Salem if Swedish practice is to be followed, (iii) about one ton of magnetite ore should be sent to each of the manufacturers of electro-magnetic separators with a view to getting it concentrated, arriving at large scale concentration costs and obtaining quotations for suitable units of crushing and separation plant after actual trials, and (iv) the concentrated ore should be sent to steel plant manufacturers in Norway and Sweden to enable smelting tests to be carried out with a view to arriving at the actual manufacturing cost per ton. A final report on the subject was submitted to Government after the close of the year.

17. *Manufacture of fertilisers.*—Madras is mostly an agricultural province and its prosperity depends largely upon its agricultural production. The two essentials for intensive cultivation are water and fertilisers. A great deal has been done in Madras to extend the benefits of irrigation, but as regards the production of fertilisers very little has been attempted with the result that the Province has to rely upon foreign imports. This is not a satisfactory position from an economic point of view, and further, in the event of international complications arising, there is always the possibility of an interruption in the supply of fertilisers which have become essential to the agricultural population and in such an eventuality the yield of crops and the return to the cultivator would fall off. It is very desirable therefore that a real effort should be made to establish the fertiliser industry in India and since, as will be seen later, Madras accounts for about half the imports of ammonium sulphate it would only be in the fitness of things for the industry to be developed in this Province. It will be observed from another section of the report that the total value of the manures imported into Madras during the year under review amounted to Rs. 44·29 lakhs. The consumption of ammonium sulphate itself in the Madras Province, Mysore, Travancore and Cochin during the year may be taken at about 35,000 tons of which 32,000 tons went into consumption as ammonium sulphate and the remaining 3,000 tons were used for mixed fertilisers. India imports about 60,000 tons of ammonium sulphate worth about Rs. 60 lakhs per year and about half this quantity appear to be consumed in South India. Imports into India have increased by nearly 24,000 tons during the last five years. The manufacture of ammonia either from byproduct hydrogen or from hydrogen derived from the electrolysis of water seems destined to become a very important industry in India as once the industry is started it should expand considerably as the demand for the fertiliser increases. The chief raw materials required for the manufacture of synthetic ammonia are nitrogen and hydrogen which are combined under certain conditions to give rise to ammonia. As far as nitrogen is concerned, there is no difficulty in its manufacture as it can readily be obtained by the liquifaction of air. All that is required for manufacturing

nitrogen is power which is utilized to liquify the air from which pure nitrogen is derived by fractional distillation. The other raw material, namely, hydrogen is more difficult and costlier to obtain than nitrogen. In fact the cost at which hydrogen can be manufactured determines the cost of manufacture of ammonium sulphate. The only method by which hydrogen could be prepared at Mettur would be by the electrolysis of water though if a steel industry is developed in the Salem district an appreciable quantity of hydrogen will be produced from the furnace gases. The possibilities of establishing a plant at Mettur for the manufacture of ammonium sulphate have been examined on the assumption that at least 12,500 K.W. of electric energy will be available at Rs. 40 per K.W. of demand for a year of eight months. For manufacturing ammonium sulphate, there are two essentials (i) ammonia and (ii) sulphuric acid or gypsum. For manufacturing synthetic ammonia, power, water and air are required, and these are available, but for supplying the sulphate radical, sulphuric acid is essential and this is at present manufactured out of imported sulphur and is therefore expensive. The alternative is to utilize gypsum which is known to occur along with the sedimentary rocks in the Trichinopoly district. On the basis of a production of 20,000 tons of ammonium sulphate per annum, the capital cost of a plant for manufacturing hydrogen by water electrolysis would be about Rs. 42 lakhs. It is estimated that it should be possible to produce ammonium sulphate at Mettur at about Rs. 75 per ton, against a ruling price of imported ammonium sulphate of about Rs. 115 per ton, so that, if the industry could be established under strong technical auspices, it should be a profitable one. A report in regard to the possibilities of manufacturing fertilisers was under preparation at the end of the year.

18. *Production of power alcohol.*—An important investigation was conducted during the year in regard to the possibilities of producing power alcohol and a report was submitted to Government on the subject in March. The two questions which require careful consideration are (i) the quantity of molasses that could be made available for the manufacture of power alcohol, and (ii) the cost at which absolute alcohol could be produced. The optimum production of molasses of the existing factories in Madras is about 19,000 tons per annum. It may be taken that 2 to 2·2 gallons of alcohol can be made from one maund of molasses or on an average 57·1 gallons per ton. On this basis, a little over 1,000,000 gallons of power or absolute alcohol could be produced in the Province if all the available molasses were worked up in the factories operating under optimum conditions, or on the basis of the recent output, say 760,000 gallons. Not all this quantity would, however, be immediately available for power alcohol production. The present production in Madras of about 13,410 tons of molasses compares with a total production of factory molasses in India during the season 1936-37 of 425,000 tons. The consumption of petrol within the Madras Province itself may be

estimated at about 15,000,000 gallons. This would enable about three million gallons of absolute alcohol to be utilized for the purpose of mixing with petrol against an available supply, under optimum sugar factory working conditions, of about one million gallons. An analysis of the available data points to the conclusion that in areas not too close to ports, owing to the low cost of molasses and the high price of petrol, including freight charges, obtaining in several important areas remote therefrom, there should be a fair margin of profit on alcohol production if only a small excise duty were imposed.

19. *Asbestos cement products.*—A question which came under examination during the year was the manufacture of asbestos cement products, the development of which could be taken up by a cement manufacturing concern in a factory adjacent to its cement works or as a separate industry. The raw materials required are, asbestos, cement, and water, and most factories in Europe obtain their supplies of asbestos from Canada and Russia and to a lesser extent from South Africa, Czechoslovakia and Cyprus. So far as information is available, Cuddapah asbestos has not been used for the purpose. There is one factory in India, near Calcutta, but the possibility of establishing a factory in this Province for the requirements of South India and with a view to developing an export trade with Ceylon, Burma and the Federated Malay States seems worthy of consideration. During the year, five small samples of asbestos from the Cuddapah district were sent to an asbestos cement manufacturing concern in Germany and their report is to the effect that one of the samples is not suitable but that two of the samples are of a quality similar to Russian asbestos of third and fourth qualities, that the strength of the fibre is good and that it would be possible, by a right preparation of the mixture to manufacture, asbestos cement sheets of good quality. Before any definite steps could be taken by Government or private enterprise to develop the industry it would be necessary to examine further the asbestos deposits in Cuddapah district in order to determine how far the asbestos, or such of it as may prove suitable, could be made available as a raw material for a local industry. A bulletin embodying the information so far collected with details of the process involved and plant required was under preparation at the end of the year.

20. *Glass paper.*—The question of the manufacture of abrasive paper—glass or emery—commonly known as sand paper received attention during the year. Garnet or corundum powder is used as an abrasive material in the manufacture of sand paper and as these stones are found in a natural state in certain parts of the Presidency, the preparation of sand-paper from this raw material should be feasible. After examining the question, it was concluded that the manufacture of abrasive paper could be taken up as a cottage industry though uniformity and evenness of the paper has to be ensured postulating an even application of the glue and

sprinkling of the powder with the aid of hand worked rollers. A certain amount of preliminary experimental work will have to be undertaken with a view to evolving suitable machines and proposals for manufacturing these in the departmental workshops were submitted to Government shortly after the close of the year.

21. *Fruit canning and preservation industry.*—The question of the development of the fruit canning and preservation industry came under review during the year, and as a result of discussions on the subject with a specialist who had undergone training in England, tentative proposals were drawn up by him for the setting up of a central experimental and research laboratory, preferably at Coimbatore. A central organization of this kind was considered necessary not only in order to evolve and standardize recipes as a result of experimental work, but also to train the workers who would be required under the scheme to organize and run the central co-operative societies in the districts to which the primary societies, consisting of fruit-growers and home-canners, would be affiliated, and also in order to train persons who proposed to set up small fruit preservation and canning establishments, or even factories of their own. It was contemplated that the members of the primary societies of fruit-growers and canners in the districts would use up-to-date steam pressure cookers such as are used in thousands of American homes for domestic canning. In the districts where primary societies were started there would be central societies which would maintain and operate the can-making equipment, consisting of reforming, flanging, and double seaming machinery. The cans after being reformed in the central district organization would be supplied to the cottage workers who would undertake the preservation of the fruits and vegetables in pressure cookers and seal the tins with the aid of small hand sealing machines. The Government did not see the need for a central experimental laboratory, but stated that they would have no objection to giving state-aid to a private concern. Since the close of the year an application for the subscription of shares by Government has been received from a new company which has been formed at Bezwada for canning mangoes and pine apples.

22. *Miscellaneous industries.*—Information was collected during the year in regard to the processes involved in, and the equipment required for, the manufacture of a number of articles including electric bulbs, advertising tape, pins and safety pins, wire nails, expanded metal, metal buttons, buckets and porcelain goods, but owing to pressure of work, it was not possible to assemble the information in bulletin form and publish it before the end of the year.

23. *Import duty on cashewnuts.*—A copy of a memorial addressed to the Government of India by a cashewnut merchants association in regard to the position of the cashewnut industry and advocating the levy of a duty on the nuts imported from Portuguese East Africa was received during the year and a special

inquiry into the position of, and the conditions obtaining in the industry was carried out by Sri A. K. Menon, Superintendent, Kerala Soap Institute, during the course of his tours in his capacity as Superintendent of the Kerala Soap Institute. It will be recalled that as a result of a representation received from the cashewnut manufacturers, which was strongly supported by the department and recommended by the Provincial Government, the Government of India, in August 1932, issued a notification exempting raw cashewnuts from the whole of the customs duty leviable thereon. This concession, which enabled the deficiency in the quantity of raw nuts locally available to be made good by the importation of African nuts, has been of great benefit to the industry which has since expanded to a marked extent. The results of the enquiry have confirmed the view previously held that the imposition of an import duty on East African cashewnuts would adversely affect the cashew kernal industry of British India, since, owing largely to the difference in crop seasons, the importation of East African nuts is complementary to the Indian production. If East African cashewnuts were not imported the cashew kernal industry in Madras would be a seasonal one and the probabilities are that the working up of East African nuts in India would be diverted to Portuguese territory, whilst the production of cashew kernals in East Africa might be stimulated at the expense of the industry in this country.

24. *Damping of groundnuts.*—The principal buyers of Indian oil seeds notified Indian shippers during the year of their intention to buy in future Indian groundnuts only on the guarantee that deliveries would contain a maximum of only 2½ per cent of free fatty acid, any excess over this being subjected to a proportionate rebate or allowance. As the free fatty acid content of Coromandel groundnuts often exceeds this, the exporters decided to compensate themselves for the allowances they would be called upon to make in future on account of the excessive free fatty acid content of the seed by increasing the scale of recoveries for damaged seed. In effect, this meant that the ryot would get a lower price for his produce if the free fatty acid content could not be reduced. The comparatively high free fatty acid content of Coromandel groundnuts is largely due to the injurious practice of damping the nuts. The matter was brought to the notice of Government and the Director of Agriculture was instructed to prepare a leaflet in English and the vernaculars on the evils of damping groundnut. The leaflet was published during the year.

STATISTICAL SECTION.

25. *Staff.*—Sri N. K. Adyanthaya continued as Statistical Officer throughout the year. The Statistical Officer was placed on special duty for a fortnight for the purpose of compiling statistics of provincial average prices of paddy, cholam and ragi for the period 1875–76 to 1935–36 and the preparation of graphs of these prices required in connexion with the report of the Marjoribanks Committee.

26. *Improvement of statistics.*—Statistical work in Madras is not only increasing in volume and importance, but is becoming increasingly specialized. During the year under review, Government called for a report as to how best the statistics now collected could be improved upon and interpreted not only for the information of Government departments, but also for the information of the public generally, and as to the extent to which the suggestions made in "A Scheme for an Economic Census of India" by Dr. A. L. Bowley and Mr. D. H. Robertson could be adopted in this province. As a result proposals were submitted to Government for (i) construction of indices of industrial production, (ii) computation of a wholesale price index for Madras City and index numbers of import and export prices, (iii) computation of a cost of living index for Madras City and (iv) compilation of a statistical abstract for the Presidency. All these items of work when undertaken are likely to prove of use to, and be appreciated by, the public whilst they will add greatly to the existing statistical knowledge. In particular, the statistical abstract prepared in co-operation with the heads of other departments and with non-official bodies will bring together all the essential statistical information in one volume and may be expected to prove of great value to the public who are at present not fully aware of what statistics are being issued and how to trace them. Government ordered that of the items of work mentioned above, items (ii) and (iii) should be taken up in 1938–39 and that item (iv) should be taken up quinquennially, the first abstract being prepared in 1939–40, and sanctioned the appointment of (i) an assistant to the Statistical Officer for a period of ten months in the first instance, (ii) a lower division clerk to deal with items (ii) and (iii) and (iii) a lower division clerk and one upper division clerk for a period of six months to deal with item (iv).

27. *Crop forecasts.*—Forty-three reports in all were issued in the course of the year, forecasting the area and yield of paddy, cholam, cumbu, ragi, korra, varagu, samai, horsegram, greengram, redgram, blackgram, sugarcane, groundnut, gingelly, castor, cotton, pepper, ginger and senna during the growing period. Fifteen intermediate crop reports were also issued on the condition of paddy, sugarcane, groundnut, gingelly, cotton, senna and tobacco. The areas estimated in 1936–37 differed from the actuals in the season and crop report by 0·9 per cent in the case of paddy, 1·6 per cent in the case of sugarcane, 2 per cent in the case of groundnut, 2·4 per cent in the case of gingelly, 2·6 per cent in the case of cotton and 9 per cent in the case of castor. Tahsildars have been instructed to send separate forecast reports for sugarcane, planted and sugarcane, ratoon. At the instance of the Secretary, Imperial Council of Agricultural Research, proposals were submitted to Government in regard to the institution of three forecasts of area and yield in respect of each variety of tobacco to be issued in December, February and April, each year. Government have approved of these proposals and forwarded them

to the Secretary, Imperial Council of Agricultural Research. Government sanctioned the appointment of a lower division clerk for a period of six months from 1st November each year to attend to the work connected with the forecast reports on millets and pulses.

28. *Crop-cutting experiments.*—There is only one satisfactory method of testing the reliability of the normal yield of crops, namely, to subject the estimates of yield in the season and crop report which have been based on these standards to a post-mortem examination or in other words to test the accuracy of the yields in the light of trade and consumption figures. With the revival of rail-borne trade statistics in 1933–34 there is no difficulty at present in calculating the trade movements in the case of a good number of crops. The only difficulty is to arrive at a satisfactory estimate of consumption, and in view of this difficulty the range of application of the post-mortem examination method is reduced considerably. It can, in fact, now be applied in the case of only a few crops as instances of which may be mentioned (i) cotton, where the greatest single source of consumption is the consumption in the factories which is a known factor, (ii) cereals and pulses in which case the existing empirical estimates of per capita consumption have been verified to be approximately correct on the basis of such evidence as is available in the Jail Manual or the Famine Code and (iii) pepper in which case the quantity consumed in the producing centres (the districts of Malabar and South Kanara) is insignificantly small compared with the total production so that the outside movements will approximate closely to the total production. A post-mortem examination in the above cases show that the yields published in the season and crop report may, on the whole, be said to represent the facts pretty closely. It is not possible under the existing circumstances to extend the scope of the post-mortem examination to other crops. Crop-cutting experiments on the main foodgrains and on sugarcane have been conducted during the year and experiments are likely to be continued for a period of two more years. As the experiments have been planned carefully with due regard to the random selection of the plots in which they are conducted and the sufficiency of the number of plots in each district, there is every reason to anticipate that the resulting standards will prove to be an improvement on the old standards last revised in 1919 which are at present being used in estimating the yields of crops in the season and crop report. Government sanctioned the appointment of a lower division clerk in the office of the Director of Agriculture for two months for work connected with the tabulation of the results of crop-cutting experiments and directed that the clerk should work under the guidance of the Statistical Officer. The tabulation of the results of the crop-cutting experiments for the 1936–37 season has brought to light certain defects in the conduct of the experiments. The Agricultural Statistics Committee reviewed these defects and communicated them to the Deputy

Directors of Agriculture, Assistant Directors of Agriculture and Tahsildars. Government have now called for proposals for conducting the experiments in 1938–39 and 1939–40.

29. *Normal yield.*—The Director of Agriculture has suggested figures of normal yield per acre for the different districts in respect of the following crops, (i) greengram, (ii) redgram, (iii) blackgram, (iv) irrigated tobacco and (v) unirrigated tobacco. The figures of normal yield suggested for tobacco have been given separately for each variety. The figures suggested are in each case purely tentative and have been based on the local knowledge of the agricultural conditions possessed by the subordinates of the Director of Agriculture and the results obtained at Government Agricultural stations. As the taluk and district statistical returns do not at present classify the area under tobacco separately under irrigated and unirrigated, it is not possible at present to calculate the total yield of tobacco in a taluk or district on the basis of separate standards for irrigated and unirrigated tobacco. The Board of Revenue has therefore been requested to issue suitable amendments to the Manual of Taluk Accounts, General, for the recording of the area separately under irrigated and unirrigated tobacco in the taluk and district statistical returns. In connexion with the quinquennial revision of the normal yield per acre of pepper in 1942 and 1947 which Government have ordered, arrangements have been made for the collection of the figures of exports of pepper both by sea and rail. The normal yield per acre of ginger was reduced from 2,000 lb. to 800 lb. in 1932 on the basis of the yields attained in the non-experimental areas of the Taliparamba Agricultural Research station. As even this reduced figure is considered too high by the Calicut Chamber of Commerce, arrangements have recently been made to collect figures of exports of ginger by sea and rail from Malabar for 1936–37 and 1937–38 as a preliminary to revising the existing yield per acre. The yield so revised will also be subjected to further revision periodically in the light of export figures for future years.

30. *Prices.*—During the year under review Government prescribed the following two reports on prices, (i) a half-yearly report on prices required in connexion with the report of the Provincial Government to the Government of India on the prevailing agricultural situation and the measures adopted to relieve agricultural distress and (ii) a monthly report on the wholesale prices of rice at Cocanada, Nellore, Madras and Shiyali. Reports on the prices of foodgrains and commercial crops in the province, (i) for the quarter ending 30th June 1937 and (ii) for the nine months ending December 1937 were submitted to Government. Arrangements were made for copies of the monthly statement of retail prices to be supplied to all price recording stations in the province for the purpose of posting on the notice boards for the information of ryots, instead of only to those stations which are the headquarters of taluks. The prices publication scheme has now been

working for more than a year and a half. The question whether it can be improved upon in any respects so as to enhance its usefulness to the public and whether any stations and commodities can conveniently be added to or any omitted from the present list of stations and commodities was under consideration at the end of the year.

31. *Consumption of various commodities.*—The following figures of annual per capita consumption of certain commodities were supplied to the Collector of Salt Revenue. The figures were in some cases calculated in my office and in others taken from the relevant reports of the marketing staff.

Article.	Average annual per capita consumption.
Rice	2·21 cwt.
Millets	1·54 cwt.
Potatoes	1·6 lb.
Sugar	4·5 lb.
Jaggery (gur)	12·4 lb.
Ghee	1·4 lb.
Pepper	0·6 oz.
Milk	36·5 lb.
Coffee	0·24 lb.
Piece goods	11·7 yards.

32. *Inland trade statistics.*—The Director-General of Commercial Intelligence and Statistics called for proposals from the Provincial Government in regard to the amplification of the accounts relating to the inland trade of India. A revised list of articles was accordingly prepared and submitted to Government for inclusion in the inland trade statistics after an examination of the old list which was in vogue prior to 1921, the present list, and the requirements of the Departments of Agriculture and Industries and suitable territorial blocks were suggested with reference to certain well defined groups of districts in the place of the present classification which comprises the two blocks, Madras Ports and the rest of the province inclusive of Madras City.

33. *Season and crop report.*—The normal areas of crops for the different districts were revised on the basis of the areas in the last three non-famine years and entered in the season and crop report for 1936–37. The Board of Revenue ordered that, for statistical purposes, military lands (Government of India) should be included under column 4 " not available for cultivation " in Appendix II (classification of area under forests, etc.), in the season and crop report.

34. *Imports of rice.*—One of the major questions examined in the year under review was in regard to the import of rice into this province and its effect on prices. Early in the year, Government pointed out that in spite of a considerable diminution in the imports of rice in 1936 as compared with 1935 and in spite of the fact that the rice crop in this province for 1936–37 was estimated to be slightly less than in the previous year, there was no sign of

a recovery in the price of rice which was actually declining from July 1936. I was asked to explain the apparently enigmatic situation of decreasing imports synchronizing with falling prices. Accordingly a comprehensive report was drawn up after a careful and systematic examination of the statistical position. The following conclusions were arrived at: An analysis of the statistics of production and of imports and exports over a period of three years revealed that in this Province the total quantity of rice available for consumption has been increasing from year to year owing to a progressive increase in the 'carry over.' The 'carry over' has in fact been estimated at nearly 477,000 tons at the end of 1934, 664,000 tons at the end of 1935 and 691,000 tons at the end of 1936 on the assumption that the 'carry over' at the beginning of 1934 was nil. A progressive increase in the 'carry over' has been responsible for creating a glut in the Madras markets and for bringing down the price level. It has also had the effect of weakening the resistance of the Madras prices to prices of imported rice, notably prices of Rangoon rice which when analysed over a period of three years were found to have a high degree of correlation with the prices of Cocanada rice. Further the trend of prices in Madras in 1936 was found to follow closely the downward trend observed in Rangoon in the same year which resulted from the coincidence of a good crop in Burma in 1935–36 with a decrease in the external demand in 1936 which fell by 21·6 per cent as compared with the previous year. With an accumulation of stocks in Burma prices in 1936 naturally fell, and prices in Madras followed suit. One significant fact which has emerged from a study of the statistics of imports is the increasing share taken by Burma in the imports of rice into this Province. Since Burma accounts for such a large part of the imports of paddy and rice into this Province and the imports come in freely and tend to create a glut in the Madras markets, it is not surprising that the prices of rice in this Province should follow the trend of prices in Burma notwithstanding the fact that the percentage of Burmese imports to the estimated total consumption of rice in this Province has never exceeded 10·7 per cent during the three years 1934, 1935 and 1936.

35. *Agricultural marketing.*—A report was submitted to Government on the proposals of the Provincial Marketing Officer in regard to intensive development work in agricultural marketing in this Province. One of the proposals related to the control of weights and measures. It is understood that the question of a Central Act standardizing the cardinal weights, viz., the tola, seer and maund is under consideration in order that provinces might bring these standard weights into use and might prescribe multiples and fractions of the cardinal weights to meet local conditions. When central legislation is passed, the Provincial Government may enact legislation for stamping weights and measures. Such legislation will not only enable the producers to realize better prices for their produce since it will prevent malpractices on the also prepared. Government considered the desirability of trans-

part of dealers, but will also assist to increase the accuracy of the prices reported to my office, particularly the retail prices of foodgrains reported by Collectors. In the absence of a system of regular inspection of the units of transaction, an unscrupulous dealer can easily deceive an ignorant buyer by using a smaller measure of volume in the transaction. In such a case, the buyer will actually get less of the grain for his money than he is entitled to when the right measure is used, and therefore the retail price of the grain per imperial maund, actually realized by the dealer, may be more than what it appears to be on the surface, and to that extent, the retail prices of foodgrains reported by Collectors may not be representative of the prices actually paid by consumers.

36. *Plantation crops.*—Much difficulty has been experienced in sending the annual returns on tea, coffee and rubber on the due dates on account of the late receipt of returns from some districts. To obviate this difficulty, the Board of Revenue has ordered that the area and outturn in respect of estates which do not report figures in time should be estimated in the first instance by the revenue subordinates on the basis of figures for the reporting estates and that in such cases, a supplemental return should be sent by Collectors as soon as information has been received from the owners of estates who have failed to send their returns in time.

37. *Slump in cotton prices.*—Notes embodying all the available information on the several points raised in a questionnaire formulated by the Cotton Sub-Committee of the All-India Congress Committee in connexion with the consideration of the question of the distress of the cotton cultivators from the slump in cotton prices were submitted to Government. A note was also separately prepared on the subsequent report of the Cotton Sub-Committee. One of the major points discussed in the note related to the price of cotton. So far as this Province is concerned, the price situation in respect of this commodity has not been more discouraging than in the case of other crops, notably foodgrains, the prices of which have in general fallen more during the depression years, than the price of cotton. Indirect evidence of this phenomenon is also available in the statistics of areas under crops in this Province. If the cotton crop had shown itself to be more unremunerative to the cultivator on account of falling prices than other crops, there would have been a gradual replacement of cotton by other crops, and this would have been reflected in a general decline in the proportion of the area under cotton to the total cultivated area. The statistics of areas under crops do not point to this tendency; in fact the relative importance of cotton in 1936–37 was higher than in 1928–29 the pre-depression year. On the other hand, the proportion of the area under paddy to the total cultivated area has been gradually decreasing since 1933–34. Another major point discussed in the

note was in regard to the practicability of curtailing the area under cotton cultivation in India with the object of improving the position of the Indian cultivator by assisting him to realize better price for cotton, and the conclusion arrived at was that this would not be attended with satisfactory results.

38. *Census of the educated unemployed.*—One of the most marked developments of the last few years has been the collection and publication by Governments throughout the world, of statistics which aim at revealing more and more about the basic facts of the economic system. The question of unemployment has come to the fore and the Government of Madras made three attempts in the course of 1936 and 1937 to obtain statistics of unemployment among the educated classes. In the first and second attempts, the educated unemployed themselves were asked to furnish certain particulars to the Commissioner of Labour. The result in both the cases was disappointing as the unemployed people did not care to report their plight to the authorities, especially when there was no promise from the latter of employment or unemployment benefit of any kind. The third attempt made during the year under review was confined to the districts of Vizagapatam, Anantapur, Chittoor, North Arcot, Tinnevelly and Malabar and a census was taken in every village and town by arranging for the village headman or the village karnam to personally get into touch with all the educated unemployed in his village and to get each of them to fill in the particulars in a form devised for the purpose. The census was taken during the period 1st October 1937 to 20th October 1937. A staff of three lower division clerks was sanctioned by Government for a period of six weeks for tabulating the statistics of unemployment. In all, 9,733 forms were received in my office. Of these 1,562 forms had to be rejected as they pertained to individuals who did not satisfy the definition of 'educated' laid down by Government, 8,171 forms were finally tabulated of which 8,065 related to males and 106 to females. Although the census cannot be regarded as having afforded a true index of the intensity of unemployment in the districts in which it was taken, yet the number of forms received from each district has been sufficiently large to enable certain inferences to be drawn in regard to the form of distribution of such factors as the age and qualifications of the unemployed, the duration of unemployment, etc., and in this sense, the census has afforded valuable material. A report embodying the results of the census was submitted to Government and has been published since the close of the year.

39. *Wages statistics.*—The figures of the quinquennial wages census, 1936, were examined and interpreted statistically during the year. A scheme of wages census based on the method of random sampling which, it is expected, will ensure a reasonably high order of accuracy in the compilation of district and provincial averages of rates of wages for the several occupations was

ferring the work of quinquennial wages census from the Commissioner of Labour to the Statistical Officer, and decided that the Commissioner of Labour should continue to be the authority for the collection of wages statistics, but that he should consult the Statistical Officer through the Director of Industries both as regards the form and preparation of these statistics.

40. *Family budgets.*—The Statistical Officer was engaged during the year on the conduct of an investigation into the family budgets of Industrial workers in Madras city, the results of which will form the basis for the construction of a cost of living index for this city. The report was submitted to Government shortly after the close of the year and will shortly be published for general information.

41. *Miscellaneous*—(i) *Cotton Forecast Improvement Sub-Committee.*—The Statistical Officer attended the meeting of the Cotton Forecast Improvement Sub-Committee of the Indian Central Cotton Committee held in Bombay on 24th January 1938, when he raised the question of a varietal post-mortem examination of cotton forecasts and pointed out that it was possible to conduct such an examination in respect of Madras forecasts of cotton in view of the fact that statistics of cotton pressed in presses and loose cotton received in mills were available separately for each variety in Madras. After some discussion it was agreed that a varietal post-mortem examination should be attempted in respect of the Madras forecasts of cotton and the Statistical Officer was accordingly asked to submit a note on the subject for the consideration of the Sub-Committee at its next meeting.

(ii) *Imports of paddy and rice.*—Government prescribed a quarterly report on the imports of paddy and rice into this Province.

(iii) *Talukwar areas under crops.*—Figures of area in each taluk in 1936–37 in respect of barley, maize, bengal-gram, cashew-nut, mangoes, fruits of citrus variety, rape and mustard, coconut and jute were obtained from Collectors and supplied to the Provincial Marketing Officer.

(iv) *Table VI (occupations) of the Handbook of Information on the Administration of the Province of Madras* and Table VIII thereof (Industrial occupations) were revised on the basis of the census figures for 1931 and submitted to Government.

(v) The available information in regard to the normal yield per acre of crops in the newly constituted districts of Ganjam and Koraput and the seasonal factor for the different crops for ten years ending 1934–35 was supplied to the Director of Development, Orissa.

Cottage Industries.

42. It is a truism that India dwells in the village and in the Madras Province, 86·44 per cent of the population live in villages.

The cities are important politically and economically; but the real problem is how to improve the condition of the millions of people in the villages. Among the methods of encouraging and developing cottage and small-scale industries in Madras may be mentioned, the provision of instruction in Government and aided industrial schools and classes, the actual demonstration of new and improved methods, the issue of bulletins or leaflets descriptive of new industries or new methods and processes, and the grant of financial assistance under the provisions of the State Aid to Industries Act. One of the main difficulties under which the cottage industrialists labour is in regard to the marketing of their finished products, owing to the fact that the market is often limited to their immediate neighbourhood. The view has been expressed that an internal market exists for non-artistic goods, but that it is necessary to bring the petty manufacturers into touch with that market. It is the case that the cottage worker is often at a considerable disadvantage in not having an adequate knowledge of market conditions or facilities for the proper distribution of his products. In many cases, he goes on making the same product in the same way as his forbears did, and he experiences great difficulty in changing his designs, patterns and execution in consonance with the needs of modern fashion or in manufacturing new articles to meet fresh demands. The middlemen through whom the work is disposed of have often little experience of other than local markets and have themselves to do business through other distribution agents, and so it is difficult for the cottage workers to keep up to date, introduce new designs and new varieties of their products, or retain in their own hands a fair share of the selling price of their goods. It seems to be generally recognized that an industrial museum would be of benefit to cottage industrialists by bringing them into touch with buyers who might otherwise be unaware of their existence. The question received consideration during the period under review and proposals have since been submitted to Government either for the establishment of a Government museum or alternatively aiding with a grant the setting up of a museum under the auspices of the Southern India Chamber of Commerce. Another difficulty with which cottage industrialists are faced is that their designs are in many cases out of date and their methods obsolete. In many cottage industries, there is great scope for the introduction of improved apparatus and appliances; for example, there is a need for the evolution of an improved hand paddy husker, village lamp to burn vegetable oils, appliances for the manufacture of components of dry batteries, radio parts and metal toys, hand pulping machine and hand calendering roller for hand-made paper, appliances for coir working, hand presses for the village manufacture of nibs, clips, tags and other pressed articles, etc. With a view to assist the existing cottage industries and to stimulate the development of new ones, proposals have been formulated for the addition of an experimental section in the Industrial Engineering workshop for conducting experiments in connexion with the

devising of improved appliances for cottage industries. One of the ways of providing avenues of work for the unemployed is to select a limited number of youths and provide for them intensive training for comparatively short periods in such small scale industries as they might be able to establish and develop in or around their own homes. The first step in this direction has been taken in providing intensive courses of training in certain small scale industries, namely, leather goods manufacture, casting and metal working, pottery and coir working, in addition to the usual courses of instruction in the Government and aided industrial schools. The leather goods manufacturing section has been started in the first instance in the Leather Trades Institute, Madras, the casting and metal working class in the Government School of Technology, Madras, and the pottery class in the School of Arts and Crafts, and further reference to these classes will be found in the appropriate sections of the report. Government have sanctioned the starting of a second casting and metal working class at the Calicut Industrial school with effect from 1st April 1938, and in this class instruction will be given, among other things, in the manufacture of drawer handles, brass hinges and locks. In these two metal working classes, the aim is to teach youths how to prepare metal casting and light metal articles in iron, brass, aluminium, etc., which are imported into India from foreign countries and it is hoped that on the completion of their training, the students of these short courses will be able to set up small establishments of their own. The manufacture of such articles as locks, hinges, bolts, nails and drawer handles could each be developed into a separate cottage industry. With a view to developing the introduction of more specialised courses of training in the industrial schools for the manufacture of particular articles, proposals were submitted to Government during the year for the deputation of an officer of the department to study the development of industrial education in the Punjab and United Provinces in this direction and these proposals were approved shortly before the end of the year. Sri V. R. Chitra of the School of Arts and Crafts has been selected to carry out the investigation and he will proceed to Northern India for the purpose in August 1938. The Government of India grants-in-aid for the improvement and development of the handloom industry on co-operative lines, and for the benefit of the sericulture, and cottage and small scale woollen industries will be referred to elsewhere in this report. It has been suggested on several occasions that the methods, technique and organization of the cottage and small-scale industries of Japan would repay careful study, and in view of the importance of the question, it was tentatively proposed that an officer of the department should be deputed to Japan for the purpose. Subsequently, it was ascertained by a Director of Industries of another province that the Indian Trade Commissioner in Japan would be prepared to undertake the enquiry with a view to collecting the desired information provided that the cost of certain establishment was defrayed by the Provincial Governments. It should be well worthwhile for the various Provincial Governments to co-operate in the matter and share the expenditure involved. The question was under discussion at the end of the year.

43. *Handspinning and khadi manufacture.*—A provision of Rs. 2,00,000 was made in the budget for the development of the hand spinning and khadi industry. The All-India Spinners' Association submitted a scheme for the utilization of this provision and Government sanctioned an amount of Rs. 60,341 to be utilized by the branches of the All-India Spinners' Association for the Tamil Nadu (Tiruppur), Kerala (Payyanur), and Andhra (Masulipatam), to finance the designing, manufacturing, and supplying of gins, bows with guts, and spindles with thin pulleys, speed wheels, vertical and horizontal charkas, fly shuttle looms and fittings, and also for the conduct of research work in carding, spinning, printing, dyeing and weaving, and for the training of 86 workers and the employment of these workers as instructors in the villages with a view to increasing the efficiency of the artisans and the implements used. The All-India Spinners' Association considered it essential that in addition to this grant, a subsidy should be provided to cover possible losses caused by inexperienced workers in the initial stage and also to enable it to give adequate wages to the spinners and other artisans and suggested that it should be based on the actual increase in the production effected during the official year. Government therefore granted a subsidy up to a maximum of Rs. 1,25,000 on the actual increase of production of khadi during the year calculated at the rate of one-anna per square yard of increase. The grant of Rs. 60,341 was drawn and disbursed to the All-India Spinners' Association in advance and of this, an amount of Rs. 42,592-10-6 was actually spent by the association during the year for the purpose for which the grant was sanctioned. The production of khadi was far less than the quantity estimated, for, although the association estimated the increase in production during the year over that of the previous year at 2,000,000 square yards, the actual increase in production was only 695,910 square yards. The association was thus eligible for a subsidy of Rs. 43,494-6-0 on this production, but as the audit of the accounts of the association could not be completed before the close of the year, a subsidy of Rs. 29,375, based on the estimated increase of khadi production at the time was disbursed in March. A provision of Rs. 2,00,000 has been made in the budget for 1938-39 for the development of the hand-spinning and khadi manufacture movement.

44. *Coir demonstration party.*—The constitution of a coir working party in Malabar with a view to introducing the spinning of finer and more evenly twisted yarns for which better prices are forthcoming was referred to in the previous report. The first demonstration class was started in July in the Kerala Soap Institute, Calicut, with ten stipendiary students most of whom were

sent for training by the local coir working establishments. Some of the students left after a few months and fresh ones were admitted in their stead, the total number admitted during the year being 16. The students were given training in (1) winnowing fibre, (ii) spinning coir yarn on the spinning wheel, (iii) bleaching and dyeing of coir fibre and yarn and stenciling, (iv) manufacturing brushes, ropes, mats, etc., and (v) mat weaving, plain and coloured, in various designs and patterns. The quantity of coir fibre handled during the year was 7,400 lb. out of which 6,000 lb. of superior coir yarn of various grades and some coir goods were produced. The yarns realized prices varying from Rs. 43-12-0 to Rs. 65 per candy of 654 lb., that is from one anna to As. 1-8 per lb., and the value of the sales amounted to Rs. 272. The students took part in the All-India Khadi and Swadeshi Exhibition held at Calicut and secured certificates of proficiency, whilst a gold medal was awarded for the excellence of the coir carpets. It will necessarily take some time and require a good deal of organization to introduce into the world markets, new grades of coir yarn, since the trade has become accustomed by long usage to the present grades. It is hoped, however, that apart from the question of developing an export trade in the improved qualities of yarn, it will be possible to produce finer and more evenly twisted yarn which will be suitable for weaving and so render possible the development of a coir mat and matting industry in the Malabar district. The alternative would be to improve the spinning of the present qualities of yarn which often leave a good deal to be desired. There would seem to be considerable scope for introducing in the Laccadive Islands, the spinning of more marketable coir yarns, as although the quantity of yarn produced in the islands is considerable the quality is quite unsuitable for the overseas markets. If the islanders could be instructed to spin a better yarn, possibly one of the grades already produced in Malabar, a ready market could be found for their production.

45. *Manufacture of improved jaggery from coconut juice.*—It was considered that the problem of finding employment for the former fermented toddy tappers of the Salem district could best be solved by arranging for them to tap the trees for sweet toddy for the manufacture of jaggery for sugar refining purposes, and arrangements were made during the year to carry out an experimental demonstration of the manufacture of jaggery from coconut juice with a view to ascertaining whether the keeping qualities of coconut jaggery could be improved to an extent which would enable it to be transported over a distance and used for refining purposes and, if so, at what cost it could be prepared and supplied. Subsequently arrangements were made with Madras Sugars, Limited, Mailpatti, to carry out a practical refining test. The demonstration carried out by the department has shown that a superior class of jaggery can be prepared from coconut sweet toddy and that the jaggery is suitable for refining into sugar. It is evident that inversion in coconut jaggery does not set in so

rapidly as was formerly supposed, for the jaggery was found to be quite hard at the time of refining, so that, there does not seem to be any reason to doubt that the jaggery will stand storage until a refinery is able to cope with it. The refining tests at Mailpatti indicate that for refining purposes, coconut jaggery is as good as palmyra jaggery and that in continuous process, not less than 55 per cent of sugar on jaggery can be obtained. The advantage of coconut jaggery over palmyra jaggery is that it enables a refinery to be worked practically throughout the year instead of only for a comparatively short period if it relied exclusively on palmyra jaggery. Whilst there is a limited local demand for the coconut jaggery for domestic purposes, it seems to be the case that if a steady demand is to be created for the jaggery, it will be necessary to develop an outlet for the jaggery for sugar refining purposes, especially in view of the fact that the province is already self-sufficient in regard to jaggery production and that any considerably increased production of jaggery, not intended for refining purposes, would tend to create a glut in the market. The question of finding employment for the tappers is an important one for as prohibition is extended to more districts, more and more tappers will be thrown out of work. The prospects of the commercial refining of coconut jaggery turn on the cost at which the jaggery can be produced and this had not been definitely determined by the end of the year. The Madras Sugars, Limited, have since submitted an application for the subscription by Government of shares of the value of Rs. 30,000 in the company to enable the company to increase the capacity of their plant in order to handle a considerable quantity of prohibition jaggery from the Salem district. A demonstration of improved methods of manufacture of palmyra jaggery was also carried out. An experiment was conducted in order to ascertain the yield of oil from copra obtained from the coconuts available in the Salem district and the cost at which the oil could be supplied, since although an appreciable quantity of coconut oil is imported into the district, little or no coconut oil is at present extracted. The economics of the experiment were, however, disappointing.

46. *Agent in London for the sale of Madras industrial products.*—The fourth annual grant of Rs. 3,000 sanctioned by Government to the authorities of the Victoria Technical Institute to enable them to arrange for the sale of Madras industrial products in European markets through an agent in London was disbursed in the year under review. Articles to the value of Rs. 2,747-5-3 were sold by the agent during the eleven months ended 31st May 1938, but goods returned at cost price as not saleable amounted to Rs. 632-3-0 in value. The institute contributed a sum of £36 for organizing a separate stand at the British Industries Fair and the orders received at the Fair amounted to Rs. 490-10-8. The articles sent to the London Agent consisted mostly of palm leaf baskets, horn paddy birds, ivory goods, small Madura tables, and joss-sticks. There was a good demand for palm leaf baskets dyed

in the improved fast colours introduced by the department in the previous year. The Ikkadu Village Industries having started their own agency in London during the year all their goods held in stock by the institute's agent, valued at Rs. 576, were handed over to their agency and the Victoria Technical Institute were given credit for the amount in Madras. The progress of the agency during the year was disappointing.

GENERAL REVIEW OF COMMERCIAL AND INDUSTRIAL CONDITIONS.

47. *World conditions.*—At the end of the previous year expectations of trade expansion were reinforced by the spread of rearmament, and especially in view of the great excess holdings of gold in Great Britain and America, expectations of a marked rise in prices and of a possible inflationary boom, were widespread. The result of these expectations was seen in heavy purchases of raw materials, both spot and forward, by consumers and speculators. The demand for primary commodities rose far more quickly than production and this caused prices to rise rapidly, so that, by March 1937, they averaged some 30 per cent higher than a year earlier. The price rise was not warranted by underlying long-period conditions in the field of primary production for ample supplies could have been made available given time. As it was, the rise in prices stimulated production to the point required to precipitate a fall, and while the genuine consumer was tending to restrict purchases, a big speculative position was becoming increasingly exposed. Liquidation began in the first quarter of the period under review and successive shocks to business confidence in the international political and economic spheres prevented any really effective counter-movement from setting in. In fact, the feature of the year was the number and rapidity of the changes, both economic and political, which arose or threatened. In the result, experience during the year under review did not fulfil the earlier expectation for, prices of commodities far from rising further, receded, and a definite turning point in world movements of wholesale prices was seen, there being hardly a country which was not adversely affected by the unfavourable trend of commodity prices. The general trend of business activity remained upwards until August, but in October the business curve took a downward trend. The deterioration in world trade during the year was reflected in the several indices of wholesale prices. The Board of Trade general index continued to rise steadily until July when it was 10 per cent higher than in December 1936 and then fell away to be 3½ per cent lower in December than in July. The 'Statist' index of the general price level of wholesale commodities which was 107·3 in March 1937 fell to 94·2 in March 1938 or by 12·21 per cent. The Calcutta index number of wholesale prices (July 1914=100) which was 100 in March 1937 declined to 96 in March 1938, representing a fall of 4 per cent. The Karachi index number declined by 4·59 per cent from 109 to 104. The Bombay index number also fell from 110 to 100 or by 9·09

per cent. The general level of wholesale prices moved in an essentially similar manner in all countries, and outside France, where the depreciation of the franc complicated matters, all the major countries showed kindred swings, although they varied in timing and amplitude. In the world as a whole, industrial production reached its peak in April-May 1937 when it was 6·8 per cent above the level of 1929; from the third quarter of the year it fell sharply and the figure for March 1938 was 11·2 per cent below the 1929 level. In other words, it had fallen 17 per cent below the peak, production in North America falling by as much as 31·9 per cent largely owing to drastic curtailment of expenditure by industry and the general business hesitancy in the country. The fall in production in the United States was the really fundamental fact of the economic situation during the year, for, from that followed more or less automatically the fall in commodity prices and the consequent fall in the volume of world trade. The United States of America is the greatest producer and consumer country in the world, normally absorbing about 50 per cent of the world's supplies of raw materials and so it generally rules the prices of commodities. The world producers of primary products cannot be assured of satisfactory markets unless conditions improve in the United States, for economic activity has attained such dimensions that only if the major consuming markets are attuned to absorb their full share of the commodities and goods produced can the world maintain its economic health. The bright side of the American position at the end of the year under review was the absence of large accumulated stocks and the non-existence of a mass of debt waiting to be liquidated by business interests and private individuals. These were among the worst features of the last depression and many circumstances essential to recovery appeared to be present though the imponderable factors in the situation were many.

48. *Economic conditions in Madras.*—The Bank rate remained unchanged at 3 per cent throughout the year. The value of the cheques passing through the Madras Clearing House increased from Rs. 91,93,87,277 in the year ended 31st March 1937 to Rs. 1,09,89,54,282 in the year under review. The earnings of the railways were also higher. The total receipts of the Madras and Southern Mahratta Railway Company, Limited, increased from Rs. 747·37 lakhs in 1936–37 to Rs. 749·33 lakhs in 1937–38, the improvement being attributable to increased passenger traffic. The total earnings of the South Indian Railway Company, Limited, also improved from Rs. 537·62 lakhs in 1936–37 to Rs. 559·85 lakhs in 1937–38 owing mainly to an increase in coaching earnings resulting from the reductions in fares introduced on several sections of the railway which diverted a considerable number of passengers from road to rail and also to the larger number of festivals which occurred during the year. There was also an increase in goods earnings consequent on heavy despatches of coal, cotton manufactured, iron and steel, other grains and pulses, salt sugar and timber, as also in steamer earnings owing to an increase

in the number of passengers and coolies and to heavy movemen of rice. The total value of the sea-borne trade of the Madra Province (both foreign and coastwise), including trade with Burm (as also Government transactions) increased by Rs. 569 lakhs o by about 6·87 per cent, to Rs. 8,849·06 lakhs. The foreign trad (excluding Government transactions) and excluding Burma, in creased in value from Rs. 5,215·15 lakhs to Rs. 5,428·17 lakhs Burma accounting for another Rs. 1,338·44 lakhs. On the othe hand, the coasting trade declined in value from Rs. 3,042·41 lakh to Rs. 2,037·45 lakhs (excluding Burma). If Burma figure were included the total coasting trade would have amounted i value to Rs. 3,375·89 lakhs. In the case of private merchandise imports from foreign countries (excluding Burma) advanced fro Rs. 1,526·58 lakhs to Rs. 1,798·74 lakhs or by 17·83 per cent, import from Burma taken separately amounting to Rs. 1,086·35 lakhs Imports of machinery and mill work, oils, metals and ores, vehi cles, cotton twist and yarn, paper and paste board, instruments apparatus and appliances, dyeing and tanning substances, chemi cals, provisions and oilman stores, artificial silk, hardware, manures spices, drugs and medicines, silk (raw and manufactured), liquors glass and glassware, tea-chests, stationery (excluding paper) postal articles (not specified), building and engineering materials and 'other articles' not listed, registered increases, whilst import of cotton manufactures, rubber, tobacco, soap, grain, pulse an flour, and sugar, showed decreases. Exports of Indian produc to foreign countries (excluding Burma) declined by 48·76 lakh from Rs. 3,613·76 lakhs to Rs. 3,565·00 lakhs or by 1·35 per cen Tea, cotton manufactures, fruits and vegetables, metals and ores grain, pulse and flour, coir raw and manufactured, tobacco rav and manufactured, rubber, oil cakes, spices, postal articles, hide and skins raw, fish and 'other articles' not listed increase whilst exports of seeds, leather, cotton raw, coffee, fibre for brushe and brooms and oils declined. The relative movement o imports and exports during the year was what one would hav expected at this stage in the trade cycle. Exports tend to la behind imports when trade is falling just as recovery in import precedes recovery in exports when trade is improving. A glanc at the table of prices of commodities which faces this page wil show that the average of the monthly average values of cotton paddy and rice, coir yarn, jute, tobacco, myrobalans, castor oil castor seed, tanned goat skins and tanned sheep skins (common) were higher during the year under review than in the previou year, but groundnuts, pepper, copra, coconut oil, sugar, tanne hides (Bangalores and up-countries only, coasts being level) an tanned sheep skins (good and fair) exhibited lower average values Values of cotton, groundnut, pepper, copra, coconut oil, jute castor oil, castor seed, tanned hides, tanned goat skins, and tanne sheep skins were lower in March 1938 than in the correspondin month of the previous year, and amongst the listed commodities only paddy and rice, tobacco, myrobalans and sugar were standin at higher levels.

29

Average monthly wholesale prices of some of the principal Madras commodities during the year 1937–38.

Commodities.	April.			May.			June.			July.			August.			September.			October.		
(1)	(2)			(3)			(4)			(5)			(6)			(7)			(8)		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Cotton (Cambodia), per candy of 520 lb.	203	0	0	200	0	0	196	4	0	189	0	0	175	0	0	175	0	0	167	8	0
Cotton (Karungannl), per candy of 520 lb.	190	8	0	187	8	0	185	0	0	177	8	0	167	8	0	167	8	0	157	0	0
Groundnuts (Nandyal), per candy of 531 lb.	33	4	5	31	2	9	31	10	6	32	11	7	29	7	0	25	11	0	26	11	0
Groundnuts (Coimbatore), per candy of 531 lb.	..			..			..			..			..			27	10	8	26	11	0
Pepper, per cwt.	20	12	5	19	7	0	18	0	3	17	10	10	17	12	6	18	10	8	18	4	0
Paddy, per bag of 164 lb. ..	4	8	3	4	7	0	4	12	8	5	0	0	4	15	0	4	10	0	4	8	10
Rice do. ..	6	8	10	7	0	0	6	14	6	6	14	0	6	14	0	6	14	0	6	11	6
Coir yarn, per candy of 672 lb.	70	0	0	70	0	0	70	0	0	70	0	0	70	0	0	70	0	0	70	0	0
Copra, per candy of 655 lb. ..	86	6	5	75	12	0	68	9	0	71	9	7	60	4	0	60	1	7	59	12	10
Coconut oil, per candy of 655 lb.	116	12	0	105	14	0	97	1	0	102	0	10	96	15	0	91	14	0	90	4	0
Jute, per candy of 506 lb. ..	40	6	5	42	4	0	41	2	0	38	3	2	38	10	0	38	8	0	38	0	0
Tobacco, per maund of 28 lb.	5	0	0	5	1	0	5	3	0	5	3	0	5	8	0	5	8	0	5	8	0
Myrobalans, per bag of 164 lb.	2	8	0	..			..			..			4	0	0	5	0	0	4	9	0
Castor oil, per candy of 500 lb.	72	2	0	71	14	0	69	10	0	73	2	0	73	7	4	76	2	0	74	2	0
Castor seed, per bag of 164 lb.	10	10	5	10	12	0	10	5	0	10	12	0	10	12	4	11	0	0	10	8	0
Nellikuppam sugar, per cwt.	10	4	10	9	14	0	9	9	6	9	11	2	9	14	0	..			10	8	1
Chanpatia Sugar, per cwt. ..	9	13	7	9	6	0	9	5	9	9	10	0	..			..			..		
Tanned cow hides—																					
Bangalores 8–8½ lb., per lb.	0	10	11	0	10	7	0	9	11	0	9	11	0	10	11	0	10	9	0	10	5
Up-countries 8–8½ lb., per lb.	0	10	9	0	10	5	0	9	7	0	9	7	0	10	5	0	10	5	0	13	1
Coasts 7–7½ lb. per lb. ..	0	11	8	0	11	4	0	10	7	0	10	7	0	11	4	0	11	4	0	11	2
Tanned goat skins—																					
Good, per lb.	2	1	1	2	1	1	2	0	6	2	0	8	2	1	5	2	1	11	2	1	5
Fair "	1	15	6	1	15	10	1	15	2	1	15	4	2	0	4	2	0	6	2	0	4
Common "	1	14	3	1	14	11	1	13	7	1	13	9	1	14	11	1	15	8	1	15	4
Tanned sheep skins—																					
Good, per lb.	2	9	9	2	9	3	2	8	8	2	8	8	2	9	7	2	9	9	2	9	0
Fair "	2	7	6	2	7	2	2	6	5	2	6	3	2	4	4	2	3	4	2	2	9
Common "	1	7	8	1	7	8	1	7	6	1	7	6	1	7	6	1	7	6	1	7	3

Commodities.	November.			December.			January.			February.			March.			Average of the monthly prices for 1936–37.			Average of the monthly prices for 1937–38.		
	(9)			(10)			(11)			(12)			(13)			(14)			(15)		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Cotton (Cambodia), per candy of 520 lb.	155	10	0	150	0	0	155	10	0	161	4	0	161	4	0	165	6	2	174	2	0
Cotton (Karungannl), per candy of 520 lb.	149	6	0	145	0	0	152	8	0	155	0	0	155	0	0	154	4	2	165	12	6
Groundnuts (Nandyal), per candy of 531 lb.	24	3	6	23	3	0	21	9	0	20	11	6	20	15	9	33	6	0	26	12	5
Groundnuts (Coimbatore), per candy of 531 lb.	24	4	0	23	12	0	23	2	8	21	7	0	21	12	0	32	8	6	24	1	7
Pepper, per cwt.	17	15	0	17	7	0	17	0	0	17	6	0	18	4	0	20	6	0	18	3	5
Paddy, per bag of 164 lb. ..	4	8	0	4	3	10	4	3	1	4	5	6	4	7	0	4	4	10	4	8	9
Rice do. ..	6	14	0	6	14	0	6	14	8	6	13	8	7	0	0	6	2	7	6	14	9
Coir yarn, per candy of 672 lb.	70	0	0	70	0	0	70	0	0	70	0	0	70	0	0	59	1	0	70	0	0
Copra per candy of 655 lb ..	54	12	0	50	14	0	45	10	0	43	0	0	42	0	0	77	5	0	60	3	6
Coconut oil, per candy of 655 lb.	83	10	0	76	13	0	70	4	0	66	0	0	64	11	0	107	10	0	88	8	3
Jute, per candy of 506 lb.	38	4	0	38	6	0	35	14	0	35	12	0	35	0	0	35	14	11	38	5	10
Tobacco, per maund of 28 lb.	5	8	0	5	8	0	5	8	0	5	8	0	5	2	0	4	11	3	5	6	1
Myrobalans, per bag of 164 lb.	5	1	0	2	10	0	2	13	6	..			3	8	0	2	4	10	3	12	2
Castor oil, per candy of 500 lb.	73	2	0	72	10	0	71	2	0	64	2	0	62	2	0	70	13	8	71	2	1
Castor seed, per bag of 164 lb.	10	8	0	10	10	0	10	1	0	9	5	6	9	4	6	10	3	8	10	6	1
Nellikuppam sugar, per cwt.	..			..			10	7	6	10	12	9	11	3	8	11	5	10	10	8	7
Chanpatia sugar, per cwt. ..	..			10	4	0	10	6	4	10	11	8	..			11	6	1	9	15	2
Tanned cow hides—																					
Bangalores 8–8½ lb., per lb.	0	9	1	0	8	4	0	9	1	0	8	8	0	8	8	0	9	11	0	9	9
Up-countries, 8–8½ lb., per lb.	0	8	10	0	7	10	0	8	10	0	8	4	0	8	2	0	9	7	0	9	8
Coasts, 7–7½ lb., per lb. ..	0	9	9	0	8	8	0	9	5	0	8	10	0	9	0	0	10	4	0	10	4
Tanned goat skins—																					
Good, per lb.	1	14	7	1	10	9	1	10	7	1	11	3	1	11	4	1	14	7	1	14	11
Fair "	1	13	5	1	9	5	1	9	5	1	10	3	1	10	3	1	12	7	1	13	8
Common "	1	11	6	1	8	6	1	8	6	1	9	1	1	9	0	1	11	2	1	13	5
Tanned sheep skins—																					
Good, per lb.	2	4	6	1	13	11	1	12	2	1	10	5	1	9	5	2	4	7	2	5	3
Fair "	1	15	0	1	10	9	1	10	7	1	9	4	1	7	8	2	1	10	2	0	10
Common " ..	1	6	8	1	9	9	1	7	10	1	7	0	1	6	9	1	8	2	1	7	4

49. *Inter-Empire and foreign trade.*—The trade with the British Empire (excluding Burma) advanced during the year by 8 per cent and represented 55·79 per cent of the total foreign trade of the Province compared with 59·22 per cent, 57·66 per cent, and 53·92 per cent in the years 1934–35, 1935–36, and 1936–37, respectively. Imports increased by Rs. 73·79 lakhs to Rupees 908·87 lakhs or by 8·84 per cent, whilst exports advanced by Rs. 149·35 lakhs to Rs. 2,091·75 lakhs or by 7·69 per cent. Imports from the United Kingdom advanced by Rs. 73·37 lakhs to Rs. 734·29 lakhs whilst exports to that country advanced by Rs. 48·86 lakhs to Rs. 1,501·45 lakhs. The percentage of the trade with the United Kingdom to the total foreign trade of the Province advanced slightly from 41·03 per cent to 41·57 per cent. In regard to imports from the United Kingdom, increases were noticeable chiefly in the case of machinery and mill work, iron and steel, chemicals and chemical preparations, manures, paper and paste board and cotton piecegoods, whilst the main decrease was under rubber manufactures. Under exports, there were noticeable increases in the case of tea, tobacco unmanufactured, rubber raw, coir manufactures, and manganese, whilst decreases were registered under cotton raw, goat skins, and groundnuts. The trade with Burma is of considerable importance to the Province, imports from that country during the year amounting to Rs. 1,086·35 lakhs and exports to Rs. 252·09 lakhs. It will be seen that the trade balance is heavily in favour of Burma, owing of course to the large imports of rice, petroleum, kerosene, and teakwood. Matches were imported from Burma during the year to the value of Rs. 10·58 lakhs and these could be dispensed with in view of the development of the match manufacturing industry in the Province. The trade with countries outside the British Empire declined from 46·08 per cent to 44·21 per cent of the total foreign trade of the Province (excluding Burma). Imports advanced by Rs. 198·37 lakhs to Rs. 889·87 lakhs, but exports decreased by Rs. 193·81 lakhs to Rs. 1,488·15 lakhs. Imports from European countries advanced from Rs. 285·19 lakhs to Rs. 368·82 lakhs, but exports to these countries declined from Rs. 1,147·38 lakhs to Rs. 949·20 lakhs. The percentage of the total trade with European countries to the total foreign trade of the Province declined from 27·81 to 24·51. As regards Asiatic countries, imports advanced from Rs. 285·44 lakhs to Rs. 343·19 lakhs, but exports to them declined from Rs. 257·81 lakhs to Rs. 212·85 lakhs, Japan's takings falling off from Rs. 235·32 lakhs to Rs. 184·59 lakhs. The percentage of the trade with Asiatic countries to the total foreign trade declined slightly from 10·55 to 10·34. Both imports from and exports to America and Africa advanced slightly, the percentage of the trade with them increasing from 4·67 to 5·65 and from 3·05 to 3·71, respectively.

50. *New industrial undertakings.*—Two hundred and twenty-two companies were registered during the year of which five were without share capital. The authorized capital of the 217 companies registered with capital amounted to Rs. 545·61 lakhs, the

22

subscribed capital to Rs. 29·87 lakhs and the paid up capital to Rs. 64,615. Of the new registrations with share capital, 112 were trading and manufacturing concerns, 46 hotels, theatres and other entertainment enterprises, 23 banking, loan and insurance companies, 13 mills and presses, seven tea and other planting companies, seven tourist and transport companies, two mining and quarrying concerns, two estates, land and building companies and five others. The companies floated with the largest authorized capital were: Walter Hugh and Company, Limited, Coonoor, (Rs. 50 lakhs); Himalayan Investment Trust, Limited, Madras, and Indian Colonial Bank, Limited, Madras (Rs. 25 lakhs each); House Property Investment, Limited, Madras, and United India Fire and General Insurance Company, Limited, Madras (Rs. 20 lakhs each); Tirumagal Mills, Limited, Gudiyatham (Rs. 11 lakhs); Guntur Tobaccos, Limited, Madras, Managing Agency Company, Limited, Madras, Balanur Tea and Rubber Company, Limited, Madras, Mysore Golden Murugar Films, Limited, Madras, Kothari Textiles, Limited, Madras, Indian Timber and Plywood Corporation, Limited, Madras, Jawahar Mills, Limited, Madras, Indian Gold Prospecting and Mining Syndicate, Limited, Madras, Madras Agricultural Bank, Limited, Madras, Rubber and Mining Trust of India, Limited, Madras, Associated Planters, Limited, Madras, United India Theatres, Limited, Madras, South India Tobacco Company, Limited, Guntur, Sri Maruti Mutual Benefit Banking Company, Limited, Guntur and East Coast Ceramic Industries, Limited, Vizagapatam (Rs. 10 lakhs each); Soundararaja Mills, Limited, Dindigul, and Kasturi Mills, Limited, Coimbatore (Rs. 9 lakhs each); Dwaraka Mills, Limited, Coimbatore, and Forest Products, Limited, Madras (Rs. 6 lakhs each); Andhra Scientific Company, Limited, Madras, Kochikar Products, Limited, Udipi, Commodities Investments, Limited, Madras, Electricity and Public Utility Trust, Limited, Madras, Tobacco Company, Limited, Madras, Motion Picture Producers Combine, Limited, Madras, Sundaram Sound Studios, Limited, Coimbatore, West Coast Plantations, Limited, Calicut, Malabar National Bank of India, Limited, Calicut, Andhra Lamp Works, Limited, Bezwada, India Studios, Limited, Madras, Indo-Ceylon Pictures, Limited, Madras, and Universal Investment Trust, Limited, Coimbatore (Rs. 5 lakhs each); Kerala Plantations, Limited, Madras (Rs. 4 lakhs); Kollegal Silk Filatures, Limited, Madras (Rs. 3¼ lakhs); India Canning Industries, Limited, Madras (Rs. 3 lakhs): Minerals, Limited, Madras (Rs. 2½ lakhs): Andhra Textiles Company, Limited, Nellore, and India Fruits, Limited, Tadpatri, Anantapur (Rs. 2 lakhs each).

51. *Mining operations.*—The following prospecting licences and mining leases were granted during the calendar year 1937:—

	ACS.
Twenty-two prospecting licences for prospecting for barytes over an area of	693·63
Five prospecting licences for prospecting for asbestos over an area of	899·01

	ACS.
Four prospecting licences for prospecting for mica over an area of	85·73
Three prospecting licences for prospecting for manganese over an area of	1,164·88
Two prospecting licences for prospecting for diamonds over an area of	4,006·20
Two prospecting licences for prospecting for galena over an area of	643·50
Two prospecting licences for prospecting for iron ore over an area of	78·50
Two prospecting licences for prospecting for steatite over an area of	53·16
Two prospecting licences for prospecting for magnesite and chromite over an area of	54·32
Two prospecting licences for prospecting for lead, silver, antimony, copper and zinc over an area of	506·97
One prospecting licence for prospecting for corundum over an area of	520·74
One prospecting licence for prospecting for copper ore over an area of	63·44
One prospecting licence for prospecting for gold and silver over an area of	54·36
One prospecting licence for prospecting for iron and copper pyrites over an area of	200·20
One prospecting licence for prospecting for asbestos, chromite and diamonds over an area of	35·08
One prospecting licence for prospecting for lead, silver, antimony and zinc over an area of	238·00
One prospecting licence for prospecting for magnesite, chromite, garnet and iron over an area of	150·00
One prospecting licence for prospecting for black sand, ilmenite, monazite, zircon, rutile and garnet over an area of	283·97
Five mining leases for working mica over an area of ..	802·97
Two mining leases for working barytes over an area of ..	325·08
One mining lease for working aluminium silicate over an area of	13·00

Mining was carried on in the districts of Anantapur, Bellary, Chingleput, Coimbatore, Cuddapah, Kistna, Kurnool, Nellore, the Nilgiris, Salem, Trichinopoly and Vizagapatam.

52. *Manganese.*—The mining of manganese was carried on in Bellary, Kurnool and Vizagapatam, the three districts reporting a production of 450, 200 and 20,509 tons respectively, the total production showing an increase of over 6,000 tons over the previous year. Exports of manganese ore increased from 324,960 tons valued at Rs. 64·23 lakhs in 1936–37 to 631,404 tons valued at Rs. 128·22 lakhs during the year under review.

53. *Magnesite.*—The output of magnesite increased appreciably from 12,966 tons to 23,782 tons or by 10,816 tons. Exports of magnesite advanced from 98,914 cwt. valued at Rs. 4·91 lakhs to 171,610 cwt. valued at Rs. 8·33 lakhs. Of this quantity the United Kingdom took 137,201 cwt. valued at Rs. 6·57 lakhs and the United States of America 17,860 cwt. valued at Rs. 0·79 lakh. Sales of magnesite within India were maintained.

54. *Mica.*—The production of mica increased from 579 tons to 684 tons, of which the Nellore district accounted for 663 tons. The output of waste mica rose also from 802 tons to 1,984 tons. Exports of mica advanced from 16,479 cwt. valued at Rs. 11·23 lakhs

to 32,166 cwt. valued at Rs. 20·24 lakhs of which the United Kingdom took 28,210 cwt. valued at Rs. 18·91 lakhs.

55. *Other minerals.*—The production of barytes increased from 2,375 tons to 9,056 tons, Cuddapah contributing 7,461 tons, Anantapur 1,465 tons and Kurnool the balance. The production of steatite rose from 74 tons to 150 tons, of phosphatic nodules from 1,506 tons to 1,597 tons and of gypsum from 128 to 166 tons.

56. *Cotton.*—The area under cotton in the Province in 1937–38 is estimated at 2,556,100 acres as against 2,578,400 acres for the corresponding period of the previous year representing an increase of 1·75 per cent as compared with the finally recorded area of 2,512,194 acres in 1936–37. The yield is estimated at 505,200 bales of 400 lb. lint against 497,120 in the previous year representing an increase of 1·63 per cent. Exports of raw cotton declined from 44,810 tons valued at Rs. 296·55 lakhs to 28,901 tons valued at Rs. 207·37 lakhs, representing a decrease of 35·51 per cent in quantity and of 30·07 per cent in value. Of the quantity of cotton exported from the Province, Japan took 15,024 tons valued at Rs. 110·79 lakhs, Belgium 5,807 tons valued at Rs. 36·85 lakhs, the United Kingdom 2,412 tons valued at Rs. 15·81 lakhs, and Germany 1,190 tons valued at Rs. 10·60 lakhs. In the first few months of the year under review cotton prices advanced considerably owing to the policy of the American Government in regard to crop control and the unsettled political conditions, but subsequently prices declined steadily and the year closed with prices much below the level at which they were standing at the end of the previous year.

57. *Cotton spinning and weaving mills.*—There were 49 cotton mills at work in the Madras Province with 1,229,396 spindles and 5,915 looms. The mill production of yarn during the year amounted to 136·40 million lb. against 129·80 million lb. in the previous year. The mill production of cotton piecegoods during the year increased in yardage from 76·89 million to 86·12 million yards and in weight from 20·85 to 23·15 million lb. The production of higher count yarns, i.e., 40s and above, increased from 26·93 to 32·96 million lb. Exports of cotton piecegoods from the Province to foreign countries by sea advanced during the year from 30·09 million yards valued at Rs. 112·54 lakhs to 38·78 million yards valued at Rs. 136·77 lakhs. In sympathy with the higher prices of raw cotton and owing partly to the reduction in imports from Japan, yarn prices improved early in the year, but the improvement was not maintained. The preoccupation of Japan with the war in China afforded an opportunity during the year for some mills to establish new overseas connexions. The turnover of the weaving mills up to the end of February was a little higher than in the corresponding period of the previous year, whilst the average level of prices was probably a little higher. Prices were lower during the second-half of the year in sympathy

with the decline in cotton and owing to heavier arrivals of Japanese goods which restricted business though not to the extent of affecting an appreciable reduction in sales.

58. *Hosiery.*—There were eight organized factories coming under the Indian Factories Act at work. The production during the year increased from 1,117,527 lb. to 1,269,425 lb. There was a good demand for the established qualities, apart from net work vests, sales of which declined as a result of overbooking by merchants in the previous year with a resultant carry forward.

59. *Madras handkerchiefs and lungis.*—Exports of Madras handkerchiefs increased in value from Rs. 44·76 lakhs to Rs. 51·31 lakhs. Orders from West Africa were plentiful and weavers were fully occupied at remunerative rates for the first nine months of the year. Subsequently, the position deteriorated owing to the growers on the Gold Coast withholding their cocoa crop as a result of which money was scarce. The demand for Madras handkerchiefs fell off and prices declined by as much as 16 per cent. At the end of the year Madras handkerchief suppliers had heavy stocks on hand and until the stocks on the Gold Coast find their way into consumption a dull period must be looked for. Exports of lungis and sarees increased in value from Rs. 61·26 lakhs to Rs. 68·51 lakhs, excluding exports to Burma.

60. *Jute mills.*—There were four jute mills in existence, i.e., at Nellimarla, Chitivalsa, Ellore and Guntur, but only two of them were in operation during the year. The number of looms and spindles in the mills at work was 805 and 21,664 as against 971 and 22,640 respectively in the previous year. Trading conditions were unfavourable during the year and the prices realized for finished gunnies and hessians were unremunerative. Stocks in the consuming markets were more or less normal, but owing to over-production and economic recession in America, stocks at most of the jute mills in India steadily increased and later in the year fresh business was only obtainable at prices which showed a serious loss to the manufacturer.

61. *Tanning industry—General.*—Exports of tanned hides declined in quantity from 17,318 tons to 16,534 tons, but increased in value from Rs. 307·13 lakhs to Rs. 313·34 lakhs. Exports of tanned skins declined from 6,996 tons valued at Rs. 336·07 lakhs to 6,326 tons valued at Rs. 307·22 lakhs. Almost the entire quantity of tanned hides, tanned cow-calf skins, tanned goat skins, and by far the greater portion of the tanned buffalo hides, tanned buff-calf skins, and tanned sheep skins exported, went as usual to the United Kingdom, shipments to that country comprising, cow hides 13,401 tons valued at Rs. 247·55 lakhs, buff hides 866 tons valued at Rs. 14·01 lakhs, cow-calf skins 1,110 tons valued at Rs. 28·37 lakhs, buff-calf skins 595 tons valued at Rs. 12·98 lakhs, tanned goat skins 3,028 tons valued at Rs. 146·54 lakhs, tanned sheep skins 2,616 tons valued at Rs. 130·70 lakhs, and other skins 14 tons valued at Rs. 0·39 lakh.

62. *Tanned cow hides.*—Early in the period under review a sharp reaction occurred owing partly to over-production, but mainly to the withdrawal of America from the market in May. Prices declined by about 10 per cent and in June fell further. The market rallied in August, but thereafter until the end of November the fall in prices was steep and uninterrupted with demand on a very restricted scale, prices ruling about 25 per cent below those in May. At the beginning of December, demand improved and prices advanced about 10 per cent on average. But the demand fell off again and the year closed with the market ruling dull. The violent fluctuations recorded during the year caused it to be a most unsatisfactory one for tanners and exporters.

63. *Tanned goat skins.*—The year was one of uncertainty. Prices began to weaken in June, London buyers offering little support, though prices did not decline very much in Madras as there were quite a number of forward orders still to be executed. Conditions ruled steady during the next few months, but in September and October, the demand for goat skins began to decline and became very restricted and irregular owing to the political situation in Europe and an accumulation of stocks in the United Kingdom. Tanners, however, restricted their output and no very heavy decline in Madras prices was seen. Prices declined further in November, whilst December was a very quiet month. Conditions improved somewhat about the end of January, but the promise of this month was not maintained in the last two months of the year when the volume of business transacted was very restricted and tanners began sending their skins to the United Kingdom on consignment basis.

64. *Tanned sheep skins.*—Prices declined in June by three to four annas per lb. owing to considerable accumulations of stock. In July, a rather improved trade was transacted in the better classes of tanned sheep skins than in commoner tannages and lower grades. Consequently, there was a further accumulation of low grade inferior qualities and in a few cases suppliers, in order to liquidate stocks, made sacrifices in prices. In August trade was steady although not large in volume. In September, there was uncertainty in regard to prices, a smaller volume of business was transacted in the better classes of skins, and there was practically no demand for the inferior qualities. Demand was extremely restricted in October, November and December, whilst in December prime tannages declined heavily by about a shilling to a shilling and six pence per lb. whereas commoner grades, which had already experienced considerable depreciation in value, showed a further decline of about six pence per lb. A fair business was done in January in the commoner tannages at the lower level of prices, but business was again patchy in February. In March, only very few forward orders were placed and stocks were sent to London on a consignment basis. The further decline at the public

auctions held in London in March made business even more difficult.

65. *Finished leather.*—The leather manufacturing industry had a very varied experience during the year. For the first three months, business was good although raw prices were high as compared with finished leather prices. From then onwards, however, raw prices were too high and it became impossible for manufacturers to make a profit. About July, signs of weakness began to appear in the finished leather market and from then until the end of March, prices declined steadily. So Steep and rapid was the fall that no large scale upper leather manufacturer, of finished cow hide leather could possibly have run his business at a profit.

66. *Sugar.*—The area planted with sugarcane up to 25th December 1937 is estimated at 97,510 acres, as compared with 121,530 acres, estimated for the corresponding period of the previous year, representing a decrease of 19·76 per cent. The estimate of the previous year was in excess of the final area of 119,650 acres by 1·57 per cent. The yield is estimated at 266,630 tons of jaggery as against 338,790 tons of jaggery estimated in January 1937, a decrease of 21·30 per cent. The final estimate for 1936–37 was 338,460 tons. Imports of sugar from overseas declined from 773 tons valued at Rs. 0·87 lakh to 121 tons valued at Rs. 0·25 lakh. Coastwise imports of sugar also decreased from 19,428 tons valued at Rs. 42·06 lakhs to 7,525 tons valued at Rs. 1,453 lakhs. Sugar selling prices ruled low during the first six months of the year, but began to improve slightly in July on the formation of a private selling syndicate among North Indian manufacturers. From October to December, there was a gradual improvement in prices and this increased considerably in January on the passing of the Sugar Control Act by the Governments of the United Provinces and Bihar under which factories in those provinces were compelled, as a condition of licence, to become members of the Indian Sugar Syndicate, Limited, on 1st April 1937. In April 1937, selling prices in Madras were from Rs. 194 to Rs. 210 per ton whilst in March 1938 the corresponding figures were from Rs. 221–4–0 to Rs. 223–12–0. At the end of December a selling organization under the name of the Indian Southern Provinces Sugar Marketing Board was formed by six of the leading sugar manufacturers in the province and the Mysore Sugar Company, Limited. The position of the smaller factories underwent little, if any, improvement during the year. In Madras, the main difficulty attending the further development of the industry is the comparative absence of areas under sugarcane sufficient in extent to support sugar factories of a size generally regarded as representing an economic unit, and this explains why some sugar factories of small capacity have come into existence. These small sugar factories were planned and set up before even the original excise duty was thought of, and unless there is a substantial improvement in the price level of sugar, it will always be difficult

for these small factories to earn a profit after paying the excise duty, allowing for depreciation and paying a reasonable price to the growers. It would be of great assistance to the small factories with a crushing capacity of say, not more than 125 tons a day, if they could be placed on the same basis as khandsari and open pan factories and called upon to pay only the lower excise duty applicable to such units. In general, the situation of the sugar industry in Madras calls for the better organization of the factories on the agricultural side and the introduction of early and late ripening varieties of canes which would enable the crushing season to be prolonged and permit of the factories obtaining a higher average recovery on the season. The position of the palmyra industry in relation to the excise duty did not come up again directly during the year, but a separate memorandum in regard to this was submitted to the Tariff Board.

67. Twelve sugar factories, worked during the whole or part of the season, but of these, three refined jaggery only. The Samalkot factory of the Deccan Sugar and Abkari Company, Limited, worked only for a few weeks owing to a strike of tappers. A new cane factory in the Trichinopoly district was under construction during the year. The factory of the Vuyyuru Co-operative Industrial and Credit Society, Limited, Vuyyuru, worked only for 58 days. The restricted period of crushing was due to the shortage of cane, the factory crushing only 29,137 tons of cane from which 2,320 tons of sugar were obtained representing a recovery of 7·97 per cent. The result of the season's working was a loss. It is expected that a considerably larger quantity of cane will be available for crushing next season. The factory of the Indian Sugars and Refineries, Limited, worked for 92 days and crushed 40,146 tons of cane from which 3,829 tons of sugar were produced, the percentage of sugar recovery on cane being 9·54. Information as to the financial results of the season's working is not available. The Sri Rama Sugar Mills, Bobbili, worked for 145 days and crushed 21,613 tons of cane from which 2,135 tons of sugar were produced, the percentage of sugar recovery on cane being 9·88. It is believed that a fair profit was earned. The Coimbatore Lakshmi Sugar Mills, Limited, did not crush cane during the year but was engaged for 250 days in the year on the melting of 4,459 candies of palmyra jaggery. The factory worked at a loss. The Sri Ramakrishna Sugar Mills, Kirlampudi, worked for 100 days and crushed 9,259 tons of cane from which 749·5 tons of sugar were produced, the yield of sugar on cane being 8·09 per cent. The factory of the Etikoppaka Co-operative Industrial and Credit Society, Limited, crushed 4,949 tons of cane from which 432 tons of sugar were obtained, the yield of sugar on cane working out to 8·73 per cent. Information in regard to the working of the Vizagapatam Sugars and Refineries, Limited, Thummapala, Vizagapatam district, is not available. The factory of the Madras Sugars, Limited, Mailpatti, did not crush cane during the 1937–38 season as they were

not prepared to pay the price for cane required by the ryots. The factory confined its activities to melting jaggery from the Palghat area and it worked for 161 days. The factory of the Kalyanpur Sugar Mills, Limited, Kalyanpur, South Kanara district, worked for 37 days and crushed 1,318·5 tons of cane from which 87·7 tons of sugar were produced, the percentage of sugar-recovery on cane being 6·65.

68. *Oilseeds—Groundnuts.*—The area and yield of groundnuts are estimated at 4,564,800 acres and 1,902,300 tons of unshelled nuts as against 3,426,500 acres and 1,657,280 tons in the previous year, an increase of 33·22 and 14·78 per cent respectively. Exports of groundnuts to foreign countries declined from 638,577 tons valued at Rs. 1,060·52 lakhs to 559,441 tons valued at Rs. 793·64 lakhs. Of the quantity exported, Italy took 120,814 tons valued at Rs. 170·11 lakhs, Germany 96,962 tons valued at Rs. 134·42 lakhs, Egypt (for orders) 83,111 tons valued at Rs. 127·00 lakhs, France 72,347 tons valued at Rs. 101·44 lakhs, United Kingdom 65,082 tons valued at Rs. 87·92 lakhs, Netherlands 53,593 tons valued at Rs. 80·60 lakhs, and Belgium 42,453 tons valued at Rs. 59·39 lakhs. The opening price of groundnut kernels during the period under review was £13–7–6 per ton f.o.b. Coromandal Coast ports. Europe showed only very little buying interest from April to June and prices consequently dropped to £11–15–0. The market revived slightly in July, but buyers in Europe withdrew after having paid £13–1–3 per ton f.o.b. and only insignificant quantities were purchased by exporters during the last part of the second quarter, the market became very depressed in consequence of which there were sellers at one time even at £9–15–0 per ton. The prospects for the new crop were reported to be exceedingly good and these reports affected the market, prices for forward shipments declining continuously. The political developments in Europe and the outbreak of war in China caused a nervousness in the groundnut market and consumers in Europe did not show any material interest in buying during the beginning of the quarter October-December, and prices eventually dropped to £9–5–0 per ton, closing at about £9–11–3 per ton at the end of December. The market during the last quarter of the year did not show any great improvement as the ryots were very keen sellers at practically any price and rates dropped gradually from £9–10–0 to about £8–6–3 per ton f.o.b. At the end of the year under review, it was estimated that about 35 per cent of the total crop was still available for export.

69. *Castor.*—The area sown with castor up to the 25th November 1937 is estimated at 240,800 acres, i.e., practically the same as the area of 240,100 acres estimated for the corresponding period of the previous year. The yield is estimated at 24,000 tons as against 23,600 tons estimated for the corresponding period of the preceding year. Exports of castor seed by sea to foreign countries declined from 23,625 tons valued at Rs. 33·77 lakhs to

16,962 tons valued at Rs. 25·40 lakhs. The United Kingdom took 8,886 tons valued at Rs. 13·50 lakhs and France 1,000 tons valued at Rs. 1·25 lakhs.

70. *Oil milling.*—Imports of copra declined from 14,855 tons valued at Rs. 27·49 lakhs to 5,704 tons valued at Rs. 10·32 lakhs, almost the whole quantity of which was supplied by Ceylon. Imports of coconut oil also declined from 695,367 gallons valued at Rs. 8·74 lakhs to 303,655 gallons valued at Rs. 3·90 lakhs, Ceylon supplying 272,953 gallons valued at Rs. 3·48 lakhs. Exports of groundnut cake advanced from 61,550 tons valued at Rs. 42·59 lakhs to 81,974 tons valued at Rs. 52·52 lakhs, the United Kingdom taking 39,158 tons valued at Rs. 27·10 lakhs and Germany 17,156 tons valued at Rs. 10·30 lakhs. The volume of export trade in coconut oil mainly to coastal ports increased. The price of coconut oil declined steadily to Rs. 65 per candy in March representing a decline of about 40 per cent as compared with the price of the previous year. There was an increase in the crops of Malabar by about 30 per cent. The oil mill in Madras, which is operated by a company with world-wide connexions, continued to export groundnut oil to Rangoon and Strait Settlements. Attempts to export groundnut oil to Europe have not so far resulted in success, owing largely to the lack of facilities for shipping oil in bulk and the scarcity of containers used at present for the export of oil, i.e., steel drums, which are only available in limited quantities and at comparatively high cost. The average prices obtainable for groundnut oil in Madras during the year fluctuated between Rs. 72 in April 1937 and Rs. 46 per candy of 500 lb. in March 1938. The average price for groundnut cake varied from Rs. 68 per ton in April 1937 to Rs. 55 in March 1938. On the whole, the oil-milling industry appears to have experienced a fair year owing partly to the increase in demand for groundnut cake from the United Kingdom and Germany. A number of new oil mills were started in different parts of the Province and the total capacity of the oil mills appears to be in excess of the demand with the result that the crushing capacity of the mills is not fully utilized.

71. *Soap industry.*—Imports of all classes of soaps declined further from 427 tons valued at Rs. 5·25 lakhs to 331 tons valued at Rs. 4·72 lakhs. The value of imports of household and laundry soaps declined from Rs. 0·13 lakh to Rs. 0·06 lakh and of toilet soaps from Rs. 5·01 lakhs to Rs. 4·59 lakhs. The steady fall in the price of coconut oil and other oils used in soap making stimulated the production of cheap bar soaps by the cottage soap makers, as a result of which prices of these soaps declined. On the whole, the soap factories in the Province appear to have fared well during the year notwithstanding the intense competition.

72. *Cashewnuts.*—Exports of cashewnut kernels advanced from 8,799 tons valued at Rs. 99·72 lakhs to 11,892 tons valued at Rs. 120·63 lakhs. Of the quantity exported, the United States of America took 10,029 tons valued at Rs. 103·58 lakhs and the

United Kingdom 584 tons valued at Rs. 5·54 lakhs. It may be taken that at least 75 per cent of the cashewnut kernel industry of India is situated in Madras and Travancore. At the opening of the year, the price of raw cashewnuts in Mangalore was Rs. 3–12–0 per moora of 65 lb. and business was transacted in cashewnut kernels, c.i.f. New York at standard wholes 81*s.* per cwt. and standard pieces 68*s.* per cwt. Prices of raw cashewnuts and cashew kernels were maintained until the end of the Indian crop season in June, but the demand for cashew kernels was not equal to the supply and the majority of shippers were left with the large quantities of Indian and African raw nuts uncovered by sales of kernels. The c.i.f. New York prices of cashew kernels declined steadily and business was eventually done in January-February at standard wholes—60*s.* and standard pieces—45*s.* c.i.f. New York. Subsequently prices improved until at the end of March, when Indian raw cashewnut were finding buyers at Rs. 3–4–0 per moora, New York was paying for standard wholes 72*s.* and standard pieces 50*s.* c.i.f. New York. Since the end of March prices have improved further. Although the total exports to the United States were appreciably larger than those of the previous year, the increased demand was not sufficient to cope with the increased supply as a result of the large African crop of raw nuts. The year was one of considerable difficulty for exporters and the financial position of the industry as a whole cannot have improved during the year.

73. *Coir.*—The total exports of coir manufactures advanced from 545,611 cwt. valued at Rs. 70·07 lakhs to 678,243 cwt. valued at Rs. 96·84 lakhs. Coir yarn accounted for 592,766 cwt. valued at Rs. 60·97 lakhs, mats and mattings for 61,498 cwt. valued at Rs. 25·69 lakhs and 'other sorts' for 23,979 cwt. valued at Rs. 10·19 lakhs. Exports of coir yarn advanced by 118,257 cwt. in quantity and by Rs. 14·92 lakhs in value, of mats and mattings by 11,997 cwt. in quantity and by Rs. 9·98 lakhs in value and of other sorts by 2,378 cwt. in quantity and by Rs. 1·86 lakhs in value. The trade in coir yarn was steady and followed a normal course. Export of Quilandy and Beypore yarns were well maintained and prices improved owing to the sustained demand from Indian, Burmah and Persian Gulf ports. On the other hand, unbaked yarns declined in price and as a result, spinning in some areas has almost ceased, the return to both the owners of husks and spinners being inadequate. Conditions in the coir mat and matting industry showed no improvement owing to over production and price cutting among the manufacturers.

74. *Manures.*—Imports of manures (excluding oil cakes) increased in value from Rs. 36·25 lakhs to Rs. 44·29 lakhs. The steady increase in fertiliser sales to ryots experienced during the last few years continued despite the fact that in some parts of the province the north-east monsoon was a failure and heavy damage to crops was experienced in several districts. Conditions remained practically unchanged from the previous year in respect of fertilisers for coffee and tea estates. Except by one large plantation

company, no interest was shown in fertilisers for rubber. If the improvement shown last year in prices had continued, the offtake of fertilisers would probably have increased as rubber planters were just beginning to show an interest in fertilisers. The demand for coconut manure fell off considerably owing to the low prices ruling throughout the year for nuts.

75. *Chemicals.*—Imports under the head 'Chemicals and chemical preparations' advanced from Rs. 38·89 lakhs to Rs. 52·99 lakhs. Imports of dyeing and tanning substances increased in value from Rs. 51·23 lakhs to Rs. 64·77 lakhs of which barks for tanning (wattle bark) accounted for Rs. 20·76 lakhs. The consumption of dye stuffs both by the cotton mills and the cottage industries increased during the year. There was a slight improvement in the demand for locally manufactured chemicals, but active competition from Japan in the first half of the year had an adverse effect on prices which were generally lower. Japanese and continental imports diminished in the last quarter of the year and prices improved slightly.

76. *Match industry.*—The production within the Province and arrivals from outside, chiefly from Burma, increased by about 21 per cent as compared with the previous year. The production of the cottage industry products increased by about 25 per cent and arrivals from Burma by about 20 per cent. As a result of over-production, prices continued to decline and many factories are said to have worked at a loss during the year.

77. *Pepper.*—Exports of pepper to foreign countries declined further from 23,326 cwt. valued at Rs. 5·64 lakhs to 9,238 cwt. valued at Rs. 2·12 lakhs. Practically all the pepper produced in British India is known as Tellicherry pepper. Exports to Europe and America have shown a progressive decline during recent years. Indian consumption on the other hand appears to be on the increase. The Tellicherry crop was again a short one. Prices remained at a very low level during the year, the surplus stocks of other varieties of pepper such as Lampong grown in the Far East, brought about by bumper crops in recent years, continuing to influence the market.

78. *Tea.*—Exports of tea advanced from 45·96 million lb. valued at Rs. 406·54 lakhs to 51·41 million lb. valued at Rs. 453·26 lakhs. The United Kingdom took 47·34 million lb. valued at Rs. 423·27 lakhs and Ceylon 3·37 million lb. valued at Rs. 23·03 lakhs. The year under review was the fifth and last year of the five years' scheme for the regulation of exports. The scheme has since been renewed for a further term of five years up to 1943. Stocks of tea in the United Kingdom increased slightly, but the statistical position of the industry continued to be satisfactory. The year witnessed a further increase in the average price of South Indian teas on the London market, the price on 31st March 1938 being 1*s.* 4·11*d.* per lb. as compared with 1*s.* 3·81*d.* per lb.

on the corresponding date of the previous year. The voluntary restriction scheme which expired on the 31st March 1938 was responsible for maintaining the price of tea sold in India at a fairly satisfactory level.

79. *Coffee.*—Exports of coffee declined further from 205,842 cwt. valued at Rs. 82·02 lakhs to 129,297 cwt. valued at Rs. 51·90 lakhs. Of the quantity exported, France took 41,460 cwt. valued at Rs. 15·35 lakhs, the United Kingdom 27,609 cwt. valued at Rs. 13·85 lakhs, Norway 27,526 cwt. valued at Rs. 10·69 lakhs, Iraq 8,900 cwt. valued at Rs. 3·63 lakhs, and Belgium 6,787 cwt. valued at Rs. 2·45 lakhs.

80. *Rubber.*—Exports of rubber raw advanced from 14·65 millions lb. valued at Rs. 52·58 lakhs to 17·75 million lb. valued at Rs. 83·83 lakhs. Of the quantity exported, the United Kingdom took 8·25 million lb. valued at Rs. 39·05 lakhs, and the United States 2·90 million lb. valued at Rs. 13·95 lakhs, whilst smaller quantities were consigned to other countries, principally Czechoslovakia, Ceylon, Germany and France. The price of rubber declined steadily during the year. In March 1937, the London prices of rubber rose to 1*s.* ½*d.* and the International quota release was 80 per cent. From July to December 1937, the quota release was 90 per cent, but by the end of December the price had fallen to 7–11/32*d.* For the quarter from January-March, the quota release was reduced to 70 per cent, but towards the end of March the price had fallen to 6-13/16*d.* The price of rubber in India was affected in much the same way. All estates in Southern India were in full tapping during 1937–38 and South India appear to have reached about its maximum output.

81. *Miscellaneous.*—Exports of sandalwood oil declined from 6,410 gallons valued at Rs. 5·02 lakhs to 2,650 gallons valued at Rs. 2·64 lakhs. Exports of lemon grass oil increased slightly from 87,213 gallons valued at Rs. 7·18 lakhs to 90·112 gallons, valued at Rs. 7·23 lakhs; but the price declined from last year's level of 1*s.* 6*d.* to 1*s.* 4*d.* The export of ginger increased by 60 per cent during the year, but the prices declined to the low level of Rs. 18 per cwt. mainly as the result of a bumper crop. Shoals of sardines appeared in West Coast waters, but they rapidly disappeared. Fish oil and guano were prepared on a small scale and prices ruled high. The quantity of fish guano manufactured was probably not more than 500 tons and was largely sold locally. The tile industry in Malabar was active during the year and exports to Straits Settlements, Burma and Ceylon were fully maintained. The future prospects as regards Ceylon, however, are not bright with the formation of tile companies there which will tend to reduce exports from India, though it has still to be proved that the tiles manufactured in Ceylon can compete as regards quality with those manufactured on the west coast of this Province. The tile industry in South Kanara remained in a depressed condition owing to over-production

and prices cutting on the part of manufacturers. There was, however, some improvement in demand. The demand for edge tools and cutlery manufactured on the West Coast is reported to have been maintained though the difficulty in obtaining suitable steel has persisted. The progress of the slate manufacturing industry was maintained. The slate frame manufacturing company at Kallai manufactured during the year 4,320,000 running feet of frames which provided framing for the manufacture of 96,000 dozens of slates. The company continued to manufacture on a small scale good quality slates out of slabs imported from Markapur and they acquired a plot of land near Markapur under a mining lease during the year. The plywood industry was started at Kallai in the previous year and the manufacturers produced and sold plywood to the value of Rs. 35,000 during the period under review. Attention has so far been confined chiefly to the production of plywood out of soft wood available in Malabar, but endeavours are being made to produce superior plywood from rosewood, teakwood and other hard woods and also tea-chests for estate use. The new re-rolling mill at Bezwada commenced manufacturing operations in October and by the end of the year had manufactured 250 tons of rods. The Indian Steel Rolling Mills, Limited, at Negapatam suffered from the competition of steel products manufactured in Northern India. Orders were placed for a rod mill to enable small sections of rounds and squares which are largely in demand for reinforced concrete work, to be manufactured and, when it comes into operation, the capacity of the mills will be about 1,500 tons per month. With a view to making the mills ultimately a self-contained unit, two electric-smelting furnaces for melting steel scrap have been ordered. The capacity of these furnaces will be 1,000/1,250 tons a month, and when they are in operation, it will be possible to convert into steel the scrap available in South India which is now exported. The year opened with brighter prospects for the aluminium industry, but owing to the increase in the price of the metal in the early part of 1937, the gradually increasing turnover in finished goods was arrested. Imports of cement declined from 19,935 tons in 1936–37 to 13,058 tons in the year under review. It has not been possible to obtain information as to the production of cement in the Coimbatore factory. The construction of three other cement factories is projected in the Province, one at Bezwada which is already under construction, and the others at Trichinopoly and Mangalagiri. When these additional factories are brought into operation, the productive capacity of the cement industry in the Province will be largely in excess of the consumption. It will then be very necessary to find other [illegible] which, if it can be produced sufficiently cheaply, may be able to compete with lime as a material for making good quality building work, and in the form of machine made building blocks with bricks as building material. There is also likely to be an increasing demand for cement for reinforced concrete work, while the

37219

possibilities of the asbestos cement sheet manufacturing industry have been referred to elsewhere in this report.

KERALA SOAP INSTITUTE, CALICUT.

82. *Staff.*—Sri A. K. Menon, B.A., continued as Superintendent of the Institute throughout the year.

83. *Production and accounts.*—In spite of the ever-increasing competition from private factories—both large and small—the total output of the Institute increased from 196 in the previous year to 200 tons in the year under review. There was also a satisfactory improvement in the sales which showed a further increase in value from Rs. 1,89,822 to Rs. 1,96,545. The result of the year's working, subject to audit, was a net profit of Rs. 22,719, as compared with Rs. 22,113 in the previous year.

84. *Agencies.*—The volume of business introduced by the agents and stockists showed an increase over that of the previous year in spite of the severe competition which continued to be encountered in all lines. The turnover of the West Coast agent increased and he introduced the largest volume of business, whilst the turnover of the Bezwada, Madura, Colombo, Kumbakonam, Karachi, Aden and Rangoon agents also increased. On the other hand, the turnover of the Madras, Bombay, Trichur and Hyderabad agents showed a falling off. Regular orders were received from an organization in Calcutta which is gradually developing a demand for Kerala soaps in that very competitive market. The question of appointing them as agents for Bengal will be taken up after watching their progress for some time longer. If sales are to be maintained and developed in the face of the competition which continues to intensify and develop, it may be necessary to appoint agents in centres in India where Kerala Soap Institute soaps are not yet known and also in overseas countries such as Aden, Strait Settlements, Malay States, etc., but if a forward step is to be taken in this direction, it will be necessary to make an appreciably larger provision for advertising and publicity as it is impossible under modern conditions to develop new markets without incurring considerable initial expenditure on publicity. A soap containing a specific for snake-bite was supplied to His Highness the Elaya Raja of Cochin, who tried it on his patients and declared it extremely satisfactory. Three varieties of medicated soaps (i) Amritavalli, (ii) Vanaspati, and (iii) Karappan, were made and supplied to an ayurvedic practitioner in Travancore. A special kind of soft soap for use in hair-dressing saloons was made during the year.

85. *Visits to important markets.*—During the year, the Superintendent was on tour for 92 days and visited Ootacamund, Lovedale, Aruvankadu, Coonoor, Kotagiri, Wellington, Gudalur, Vayitiri, Nilambur, Malappuram, Raichur, Gulberga, Gooty, Cuddapah, Madras, Salem, Yercaud, Erode, Coimbatore, Mangalore, Udipi, Coondapoor, Mysore, Bangalore, Nellore, Bezwada, Trichur,

29

Ernakulam, Cochin, Trivandrum, Quilon, Alleppey, Nagercoil, Kottarakara, Kottayam, Kodaikanal, Madura, Dindigul, Trichinopoly, Tanjore and Kumbakonam. The close co-operation of the agents secured and the careful study of the requirements of the several markets rendered possible, by these personal visits has contributed in no small measure to the maintenance, and even improvement, of the turnover of the Institute, during the last few years in spite of the difficult economic conditions. The Superintendent of the Institute also inspected a number of private factories and advised the owners how to improve their methods and products.

86. *Training of apprentices.*—Nine students were under training in the Institute during the year. It is an important function of the Institute to maintain touch with its ex-students who often re-visit the Institute and work in it for short periods in order to bring their knowledge up-to-date. Many of the former students also correspond with the Institute with a view to the elucidation of practical difficulties which they have encountered in the course of their factory work and send their soaps for inspection and advice as to how their quality may be improved.

87. *Laboratory.*—In order to maintain the uniformly high standard of the Institute's products, a careful examination of the various raw materials and of the finished products in different stages of manufacture is necessary, and during the year, 590 analyses were carried out in the laboratory, of which 430 were of raw materials and soaps in different stages of manufacture and 160 were of soaps and allied products received from ex-students and members of the public, agents and stockists or collected by the Superintendent of the Institute in the course of his tours. Certificates of analyses were issued in respect of four products on payment of the prescribed fees. The students continued to receive training in the laboratory in the practical testing of oils and soaps for 12 hours a week.

88. *Preparation on a laboratory scale of creams, brilliantines, and other toilet articles.*—The experimental work on hair oils, brilliantines and vanishing creams, was continued and developed during the year. The object of these laboratory or small-scale experiments is to determine whether creams, brilliantines or other cosmetic articles, such as will find a ready sale, can be produced at the Institute, and if the results of the experiments are satisfactory, it is intended to take up the commercial manufacture of the products, since this would not only extend the industrial utilization of some of the raw materials available in the province, but also enable small concerns to be started and additional employment created, whilst the present volume of imports of cosmetic products would be reduced. Further the commercial manufacture of the products in the Institute would expand the scope of training at present given to the students. Samples of the various products prepared were distributed to the agents, stockists, merchants, and users with a view to ascertaining their suitability for placing on

the market. The merchants and persons to whom the samples were sent pronounced favourably in regard to the quality of the products. At the All-India Khadi and Swadeshi Exhibition held at Calicut, the cosmetic articles prepared at the Institute were awarded a gold medal for their excellence. Arrangements are in progress to obtain a small consignment of fancy bottles and labels, and when they are received, the products will be offered to the public. When the new shed for the conduct of the cosmetic experiments is completed, other lines, such as dental creams, dental soaps, etc., will be taken up.

89. *Experimental manufacture of insecticides, fungicides and sprayers.*—The collection and study of indigenous products available for use as insecticides and fungicides was continued and the following materials were examined during the year: (i) *Fruits*: Mallotus philippinensis (Kamala), acacia concinna, randia dumatorem, (ii) *Barks and leaves*: Nicotina eurphorbia tirucalli, diospyros montana, vakkanai, Lawsonia alba, (iii) *Roots*: Mundela suberosa, calotropus gigantica (madar) curcuma longa, (iv) *Flowers*: Mimusops elangi, lantana, wormwood (artemesia vulgaris), (v) *Gums*: Karaya, dammar, dipterocarpus indicus, diospyros embryopteris, spathalobus roxburgil, spondius mangifera, canarium strictum, and (vi) *Resins*: Mesua ferrea, hardwickia pinnatta, hardwickia binata, vateria indica, tachardia lacca. These materials have been analysed with a view to determining the active principles and utilizing them as tinctures, extracts or salts in various insecticidal preparations. A tree banding compound was evolved for the purpose of preventing ants and other creeping insects from mounting the stems of fruit trees and destroying leaves, flowers, fruits, etc. The compound was tried by one or two estates with excellent results and orders for it have been received. A leach killer has been prepared for protecting those working in plantations situated in high elevations of 2,000 to 3,000 feet, where owing to the dense growth of vegetation and absence of the sun's rays, leaches thrive. Cardamom estates are understood to be the favourite resort of these blood-sucking creatures. Samples of the preparation were distributed to planters in the Nilgiris and Wynaad and very satisfactory accounts as to its efficacy have been received. Insecticides containing copper salts, lime, soda, lead, arsenic and sulphur were made and samples sent to the Agricultural Entomologist and Mycologist for trial. An anti-termite compound for use as a protection against white ants, has been prepared and is under trial. Insecticides imported from foreign countries, such as calcium arsenate, arsinatte, crude oil emulsion, flosol, alboleus, buisol, katakiller, and sulfinette were subjected to test during the year with a view to preparing similar preparations. A crude oil emulsion was prepared and found satisfactory for the purpose for which it is intended.

90. *Essential oils.*—Experiments on the extraction of essential oil from cloves, ginger, cinnamon, ajowan, zedoary, vetivert, wormwood, linaloe, patcha were continued in the laboratory through the

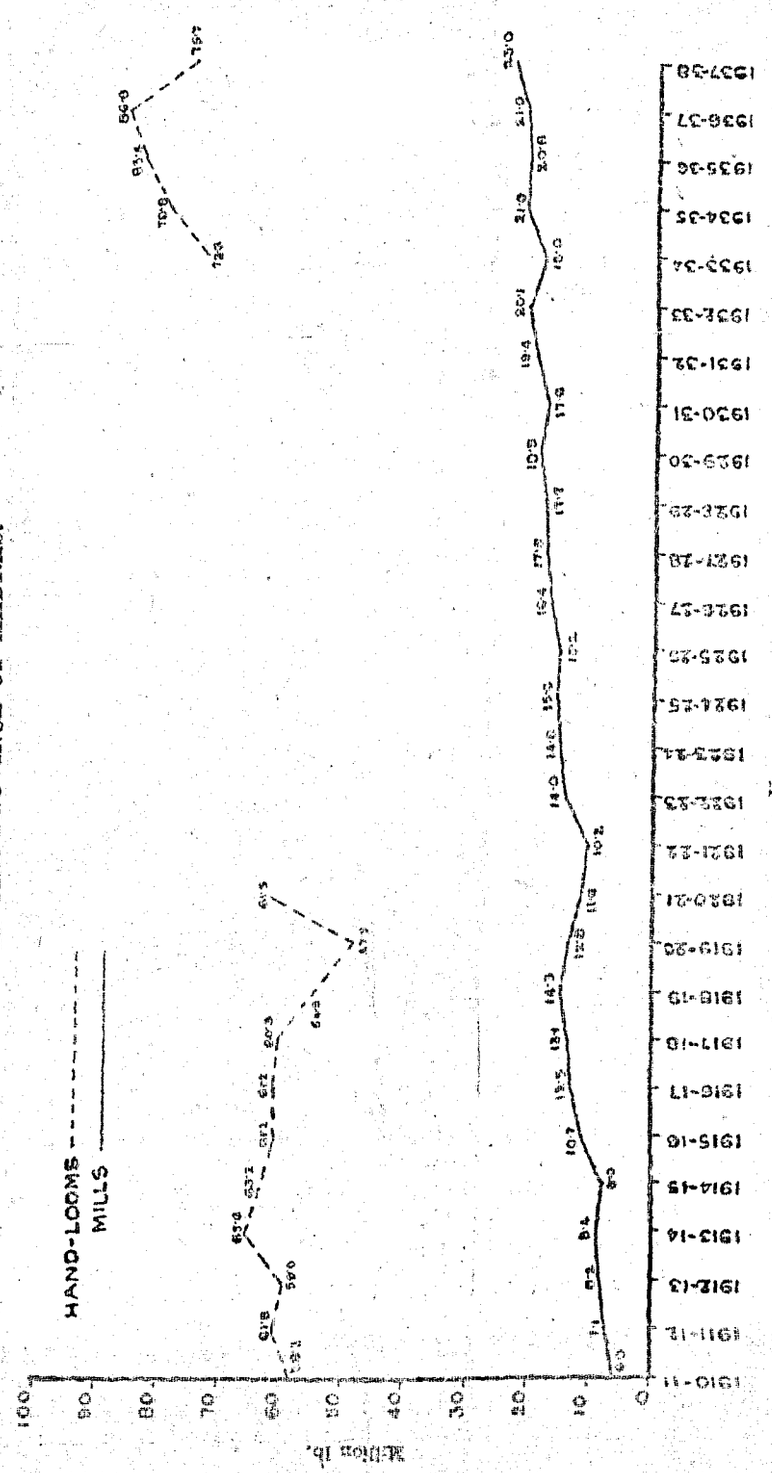
30

agency of solvents. It has been found that the percentage of yield obtained by this process is higher than that yielded by the ordinary distillation method, due to the solvents extracting not only essential oils, but resins, lipoids, and other non-essential oil ingredients. Analyses and studies of these extracts were taken up and it was found that in some cases camphoreous products resembling menthol having a fine crystalline structure and aroma could be obtained by repeated crystallization in ether. A few experiments on steam distillation with these substances were also conducted, but owing to the lack of proper stills, the experiments could not be pursued further. The stills had not arrived by the end of the year, and as soon as they are received and set up, the necessary large-scale experimental work on extraction and distillation processes will be undertaken.

91. *Miscellaneous research and experimental work.*—The oil refining plant continued in operation for experimental and demonstrational purposes and six tons of coconut oil were refined during the year. The refined coconut oil continued to be supplied to hospitals and to some private individuals. Samples of different batches of refined oils were vacuum-sealed in the vacuum sealing plant and kept under observation. A study of mesua ferrea, sandalwood and garcinia morella seeds was carried out. The high oil content (about 70 per cent) found in the kernel of native mesua ferrea seed and the fairly wide distribution of the tree in the Nilgiris, Wynaad and Anamalai Hills opened up the possibility of utilizing this seed as a new source of raw material for soap making. It is understood, however, that the fruiting season is sporadic and the quality of the seeds collected from the forests as a minor produce consisting mainly of tender and damaged ones with an oil content of only 3 per cent has been found to be unsatisfactory. A sample of sandalwood seed received from the Research Range Officer, Denkanikota, was found to have an oil content of 50 per cent and the oil to have the properties of a semi-drying oil, such as cotton seed oil. If a supply of this seed could be made available for oil extraction, it should yield an additional profit to the plantation owners. *Garcinia morella* is an oil bearing fruit that is said to be available in large quantities in the forests. An analysis of a sample received from the Forest department showed an oil content of 19·6 per cent which is too low for economic utilization. Arrangements were made to cure *ginger* in the manner suggested by the British Pharmacopea Commission and according to the methods practised in Jamaica. Samples of the treated products were sent to the Indian Trade Commissioner, London, for trial and report.

92. *General.*—The institute praticipated in 27 exhibitions, as well as in the Health and Baby Week celebrations at 37 centres, and secured a number of awards for the excellence of its products. A large number of enquiries in regard to the manufacture of soap and the various problems connected with the oil and allied industries were received and answered during the year. A bulletin on

GRAPH SHOWING THE CONSUMPTION OF COTTON YARN BY MILLS AND HAND-LOOMS IN THE PROVINCE OF MADRAS.



N. B.—As the publication of the rail and river borne statistics was discontinued from 1931–32 to 1932–33 it is not possible to estimate the consumption of yarn by hand-looms during these years.

the cottage cashew roaster evolved by the institute was published during the year and has aroused a good deal of interest. The institute was visited by a large number of people, including several special parties of teachers and students from educational institutions.

TEXTILE SECTION.

93. *Staff.*—Mr. D. M. Amalsad continued as Principal, Government Textile Institute, throughout the year. Mr. Amalsad continued to serve as a member of the Board of Directors and of the Executive Committee of the Madras Handloom Weavers' Provincial Co-operative Society, Limited. He also served as a member of the Cotton Purchase Committee for the Central Jail, Coimbatore, and of the Wool Purchase Committee for the Central Jail, Bellary.

94. *Grant-in-aid by the Government of India for the development of the handloom weaving industry.*—The administration and control of the grants-in-aid to the handloom industry provided by the Government of India and of the Madras Handloom Weavers' Provincial Co-operative Society in relation to it continued to vest in the Registrar of Co-operative Societies, but as the Department of Industries is closely associated with the work of the Provincial Society, it will not be out of place in this section of the report to refer to the work of the Society during the year. As regards the finance of the scheme, out of the total grant of Rs. 2,23,600 allotted by the Government of India to Madras for the development of the handloom industry up to the end of 1937–38, an amount of Rs. 58,595 was expended during the first three years, whilst a sum of Rs. 30,000 had been advanced to the Madras Handloom Weavers' Provincial Co-operative Society, Limited, for utilization as working capital. There was thus a balance of Rs. 1,35,005 available for expenditure during 1937–38. The Government of India approved a scheme of expenditure amounting to Rs. 1,32,140 for 1937–38 leaving a reserve of Rs. 2,865 for unforeseen items of expenditure. A sum of Rs. 58,119 was drawn by the Society from the Government of India grant and an amount of Rs. 54,094 was expended. At the end of the year, there were on the rolls of the Provincial Society 93 weavers' primary co-operative societies, 88 individual members, 14 central banks and other societies and eight firms and the paid-up share capital amounted to Rs. 31,045. During the year, 72 primary societies were given subsidies to meet their establishment charges and for financing the purchase of appliances, and the total amount of the subsidies so provided was Rs. 17,654. Guarantees to the extent of Rs. 70,000 were given by the Provincial Society to the primary weavers' societies and yarn to the value of Rs. 17,728 was supplied to them by the mills. Cash credit loans amounting to Rs. 58,798 were given to the primary societies to assist in financing production, whilst loans on the security of finished goods were also granted to the extent of Rs. 5,671. With a view to popularizing

and finding an outlet for the cloth produced by the primary weavers' societies, the Provincial Society continued to maintain an emporium in Madras and sales depots at Calicut, Bellary and Bezwada, whilst additional depots were opened during the year at Coimbatore, Tinnevelly and Vellore. Goods to the value of Rs. 73,074 were supplied to these depots by the primary production societies and sale to the value of Rs. 61,671 were effected. The total sales of the primary societies during the year amounted to Rs. 3,15,863. A number of new designs for handwoven cloths were introduced during the year. If certain classes of handwoven cloth are to compete with mill-made cloth and sales are to be effected in bulk, the goods will have to be finished and calendered and arrangements were in progress during the year for the setting up of a power driven finishing and calendering plant. Unfortunately, the price of machinery rose to such an extent that it was not found possible to obtain a new finishing and calendering plant within the amount available in the budget. As an alternative, a second-hand calendering plant was selected in Bombay by the Principal, Government Textile Institute, and purchased at a cost of Rs. 6,000. The Government sanctioned during the year the construction, at the cost of the Provincial Society, of a building in the compound of the Textile Institute at a cost of not exceeding Rs. 8,000 to house the calendering and finishing plant subject to the condition that the building vests absolutely in Government and will remain the property of Government if at any time the society is wound up. In March, orders were placed with Messrs. Volkart Bros., for a spray damping machine and sewing machine and since the close of the year orders for the remaining parts of the finishing machinery, including bleaching apparatus, have been placed. An essential part of the original scheme was the preparation and distribution of ready-made warps with the object of effecting a reduction in the manufacturing costs of handloom weavers. In order to encourage primary societies to instal hand-sizing machines, the Provincial Society decided, with the approval of Government, to meet the recurring and non-recurring charges for a period of six months. One machine was installed by the Melapalayam Weavers' Society with satisfactory results. Subsequently further departmental hand sizing machines were set up by the Adoni Weavers' Co-operative Society and the Kavandapalli Weavers' Co-operative Purchase and Sale Society, whilst the Melapalayam Weavers' Society applied for a second machine. On the whole, it may be claimed that some progress has been made by the Provincial Society during the year under review.

95. *Government Textile Institute.*—It was stated in last year's report that Government had sanctioned the bifurcation of the supervisor's course into two, and that it would consist of (i) supervisor course, power spinning and weaving, extending over a period of two years, and (ii) supervisor course, dyeing and finishing, extending over a period of one year. The revised courses were introduced with effect from the school year 1937-38. On

the 31st March 1938, there were undergoing training in the institute 20 students in the supervisor course, power spinning and weaving, second year; 29 in power spinning and weaving, first year; and 14 in dyeing and finishing. In the artisan course there were 18 undergoing training in weaving; three in Jacquard weaving, three in bleaching, dyeing and finishing; five in pile carpet weaving; three in knitting; and one in sericulture and ericulture. There were 14 mill apprentices under training, one in spinning and weaving, first year; five in spinning and weaving, second year; five in weaving, first year; and three in weaving second year. Three passed supervisor course pupils were admitted for training in the pupil-teachers' course, but one discontinued his training soon after joining. It was mentioned in last year's report that it had been arranged with Messrs. Binny & Co. (Madras), Limited, that the textile apprentices for the Buckingham and Carnatic Mills should be selected from candidates who have passed the supervisor course of the Textile Institute and three candidates were selected for these apprenticeships during the year. The equipment of the institute was enlarged by the addition of three old and condemned power looms transferred from the Central Jail, Coimbatore, for the purpose of providing practical instruction to students in loom parts and mechanism.

96. *Aided textile schools.*—The 27 aided schools devoted to textiles continued to be under the supervision of the Principal, Government Textile Institute. The introduction in these aided textile schools of a system of maintaining a practical work-book for each pupil has proved very beneficial as it enables the inspecting officer to check the nature and extent of training given to the pupils and to ascertain whether the pupils have spent sufficient time in the instructional section and not been drafted for work in the manufacturing section. An amount of Rs. 19,635 was sanctioned as maintenance grant to the textile schools, and a sum of Rs. 1,204 was distributed as capitation grant. Equipment grants were given to the extent of Rs. 869.

97. *Assistance to jails.*—As in previous years, visits to the textile manufacturing sections of the jails and the provision of technical advice in regard to their working formed part of the work of the textile branch and the Central Jails at Coimbatore and Bellary were visited by the Principal during the year whilst the Senior Certified School, Chingleput, was visited by the Textile Inspector. The Principal continued to serve on the Cotton Purchase Committee and the Wool Purchase Committee for the Coimbatore and Bellary Jails respectively.

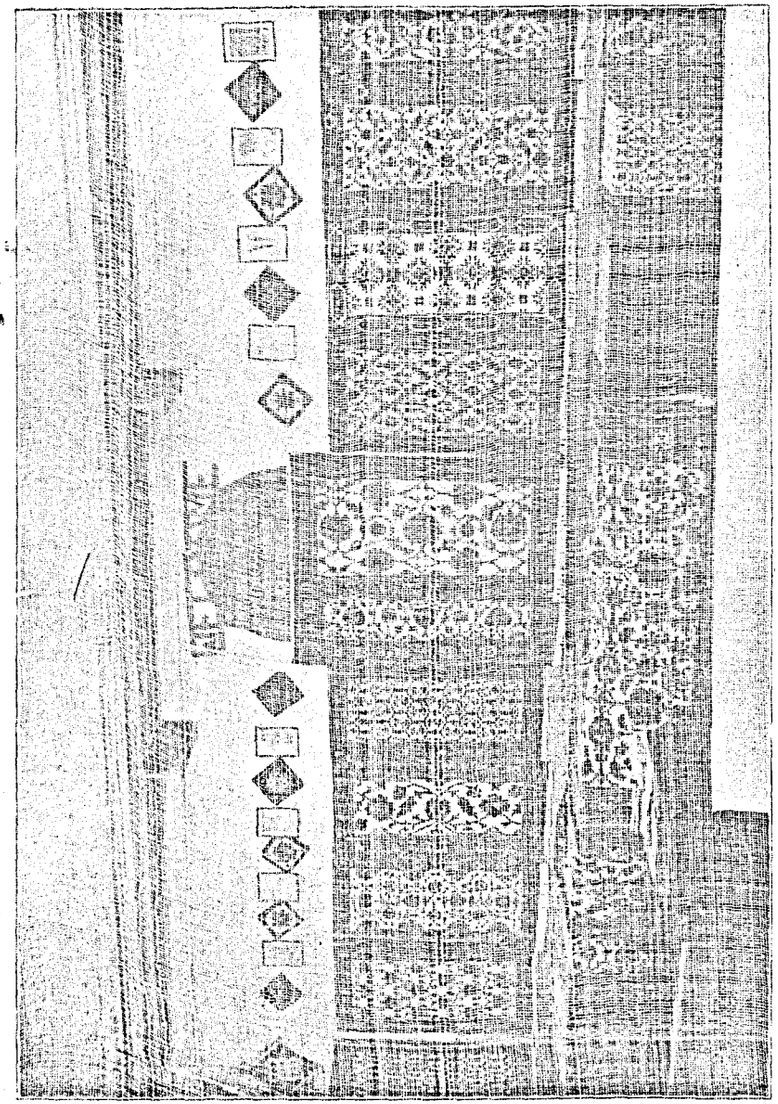
98. *Short-reeling of cotton yarn.*—Mention was made in the report of the previous year of the question of short-reeling of cotton yarn. Some of the yarn manufacturing mills raised a doubt whether the make-up of bundles into five and ten lb. is imperative, or whether it is permissible to make bundles of varying weight and whether under the existing provision of the law,

variation from the British standard limit of 840 lb. is permissible. Government, therefore, considered it desirable to issue a further Press Communiqué in February and in this communiqué it was again made clear that yarn is ordinarily made up in 5 or 10 lb. bundles containing a certain number of knots which in turn contain a certain number of hanks and that the statutory length of a hank is 840 yards. The standard measure for yarn is the relation of length to weight which is known as the count. The unit of count is one hank to one lb. whilst a count is the number of hanks of 840 yards required to make up a pound weight of yarn. The trade were asked to note that the units are the hank and the count and that therefore, in the make-up of yarn in bundles, the number of hanks and knots should have a definite relationship to the count and weight and that any variation from the statutory length of the hank except as provided for in the rules under the Indian Merchandise Marks Act, would be a false trade description.

99. *Experiments in gold thread manufacture.*—A reference was made in last year's report to the conduct, at the Government Textile Institute, of experiments in the manufacture of gold thread. These experiments involved the setting up of a silver wire flattening machine, lametta twisting machine and gilding machine, the latter of which was constructed at the institute. With the silver wire obtained from Surat, gold thread of a quality of 2,000 to 2,300 yards per ounce was prepared satisfactorily. Arrangements were in progress at the end of the year for the installation at the institute of a silver wire drawing machine, complete with dies so as to enable a silver wire of standard quality and uniform thickness and width to be drawn according to requirements.

100. *Grant-in-aid by the Government of India for the development of the small-scale woollen industries of the Province.*—A reference was made in the report of the previous year to the decision of the Government of India to provide a grant for the benefit of the cottage and small-scale woollen industries and that it had been decided that the assistance to the woollen industries in this Province should take the form of (i) organization of a number of co-operative societies in the cumbly weaving areas and the establishment of a sales depot for marketing their products, (ii) organization of a central co-operative society of weavers engaged in the pile carpet industry at Ellore, (*a*) for the dyeing of wool in a small central dyehouse and (*b*) for the marketing of finished products and (iii) employment of a designer to assist in the development of both sections of the woollen industry. The amount of grant available for Madras for 1937–38 was Rs. 21,700, but owing to the scarcity and high cost of wool, difficulty was experienced in organizing the co-operative societies and only Rs. 8,762 was expended by the end of the year. The amount spent on the dye-house and cumbly weaving demonstrators from Provincial funds up to the end of the year was Rs. 1,311. The co-operative societies are assisted with working capital and by

DISPLAY OF PILE CARPETS MANUFACTURED BY THE ELLORE PILE CARPET WEAVERS' CO-OPERATIVE PURCHASE AND SALE SOCIETY, LIMITED, ELLORE.



DISPLAY OF PILE CARPETS.

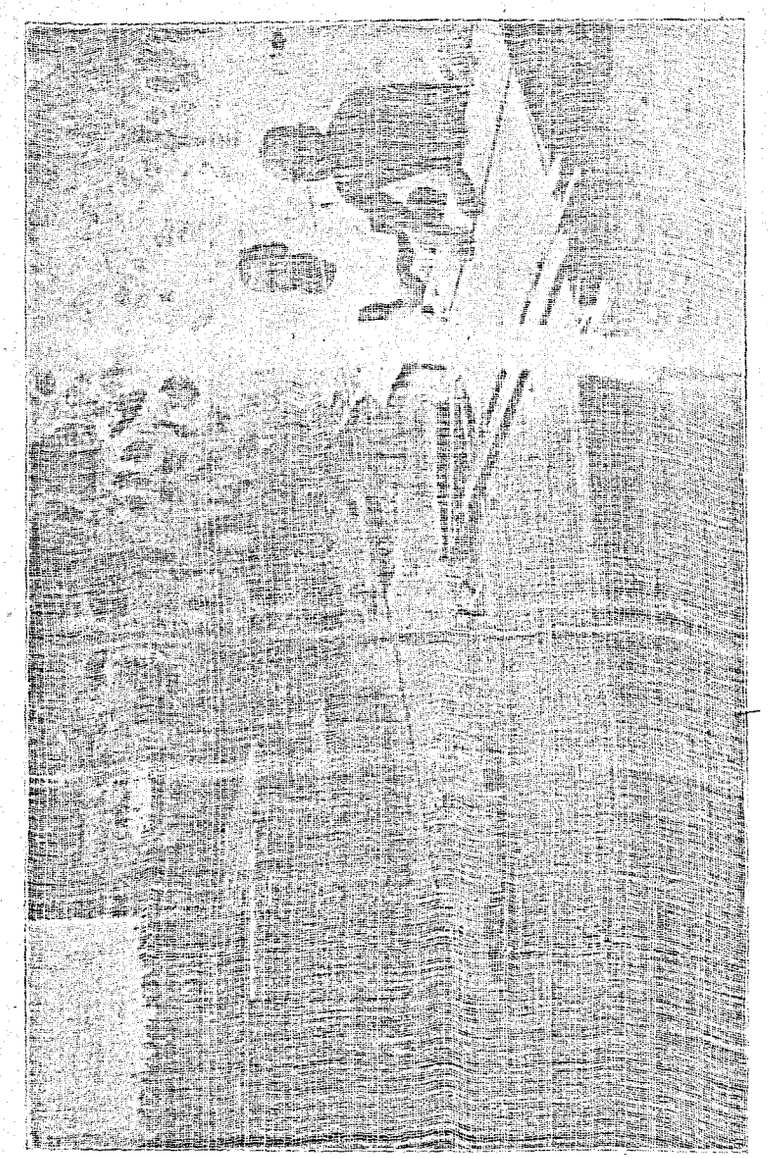
the provision of improved appliances, whilst a special staff including a designer, dyer, demonstrators and co-operative inspectors has been appointed to supervise and assist the working of the societies.

101. *Ellore Pile Carpet Weavers' Society.*—The membership of this society, which was registered on the 30th June 1937, includes 54 master-weavers, all of whom are Muslims, who have contributed a share capital of Rs. 550. The society has also admitted six non-weaver members who contributed a share capital of Rs. 50. The cost of running this society is met partly from the Government of India grant and partly from funds made available by the Provincial Government, the Government of India providing the working capital and defraying the rent, pay of the designer and the pay of the special co-operative inspector and their travelling allowance and the pay of the clerk and peon, and the Provincial Government meeting the cost of the dyehouse equipment, rent of the dyehouse and the pay of the dyer and the day watchman besides some miscellaneous expenditure. The society commenced operations on the 31st July 1937. The equipment required for the dyehouse was supplied from the Government Textile Institute. The amount of Rs. 2,000 provided for working capital was disbursed on the 19th October 1937, and up to the 31st March 1938, the society had purchased 5,957 lb. of loose wool for Rs. 1,440, 5,657 lb. of woollen yarn for Rs. 1,812, 870 lb. of cotton yarn for Rs. 286, 1,275 lb. of jute yarn for Rs. 158, 2,378 lb. of dyes and chemicals at a cost of Rs. 697 besides fuel to the value of Rs. 41. The society manufactured 356 carpets valued at Rs. 3,000 and carpets to the value of Rs. 2,300 were disposed of leaving a stock of carpets valued at Rs. 700 in hand at the end of the year. The amount of wages earned by the weavers in the production of these carpets was about Rs. 1,070. Some of the carpets manufactured by the society were sold locally, whilst an exporting house bought some carpets of 4½ stitches quality with a view to testing the demand for these in foreign markets. A representative of a well-known carpet firm in London visited the society during the year and placed a trial order for carpets of 6 threads quality at a cost of about Rs. 450. The Victoria Technical Institute purchased a few carpets. Messrs. Spencer & Co., Limited, Madras, have been appointed sole agents for the society's superior carpets in Madras City. Since the close of the year, the possibilities of developing the Australian market for Ellore carpets have received attention, and a trial order for a thousand square yards has been obtained. It is hoped that this preliminary order will lead to the development of a market for Ellore carpets in Australia. The organization that has been set up is capable of supplying carpets of a good quality and uniform standard provided a demand can be created for them, and it is hoped that as a result of the efforts made to extend the demand for these carpets, employment will be found over a period for an increased number of weavers at Ellore.

102. *Cumbly Weaving Societies.*—The object of the formation of the cumbly weaving societies is to assist the cumbly weavers by arranging for the joint purchase of wool and sale of the cumblies, whilst steps have been taken by the department to demonstrate the use of the fly shuttle loom with a view to increasing the daily output of the cumbly weavers, and also of the working of hand-driven warping and sizing machines for preparing long woollen warps. Demonstrators have been appointed to train the local weavers in the use of the fly shuttle loom. The capital required for the purchase and introduction of improved appliances, working capital and also the recurring expenditure of the societies have been provided from the Government of India subvention grant, whilst the pay of the demonstrators is met from Provincial funds. The following four societies were organized during the year.

103. *Kuditini Cumbly Weavers' Co-operative Purchase and Sale Society, Limited.*—Kuditini, a village in the Bellary district, is noted for the manufacture of cumblies of fine texture. There was already a cumbly weavers' co-operative credit society in this village and the original intention was to revive the dormant society but the attempts made to resuscitate it were not attended with success. A new cumbly weavers' society was therefore organized and registered on the 23rd October 1937. At the end of the year there were 38 members on the rolls with a paid-up share capital of Rs. 76. The working capital of Rs. 1,000 was disbursed to the society on the 7th January 1938. An improved fly shuttle loom fitted with weavers' beam was constructed at the Government Textile Institute and the demonstration with it was commenced in August. It was demonstrated to the satisfaction of the cumbly weavers of the locality that cumblies of the required texture can be produced on the fly shuttle loom in a lesser time and with greater ease than on the country loom. A second improved fly shuttle loom and a hand-driven sectional warping and sizing machine were supplied to the society shortly after the close of the year. By the end of the year, the society had purchased 702 lb. of wool costing Rs. 215 and distributed it to 36 members. One hundred and twenty-one cumblies of different varieties were produced five of which were sold by the society itself and 48 were sent for sale to the cumbly sales depot.

104. *Bislahalli Weavers' Co-operative Purchase and Sale Society, Limited.*—Bislahalli is a small cumbly weaving centre about four miles from Bellary and there are 15 looms engaged in the manufacture of coarse single-size cumblies for bedding and spreading purposes. The society was registered on the 24th November 1937, and commenced work on the 19th January 1938 with 23 members on the rolls with a paid-up share capital of Rs. 46. The working capital of Rs. 1,000 was disbursed to the society in March. An improved fly shuttle loom constructed at



KANUMOLU BLANKET WEAVERS' CO-OPERATIVE SALE SOCIETY, LIMITED, KANUMOLU.

36

the Government Textile Institute was supplied to the society in March, whilst a hand-driven sectional warping and sizing machine for preparing and sizing long warps was supplied to the society shortly after the close of the year. The society purchased 1,062 lb. of black wool, 396 lb. of grey wool and 576 lb. of white wool valued at Rs. 584 for distribution to the members, who manufactured 76 cumblies which were sent to the cumbly sales depot at Bellary.

105. *Cumbly Sales Depot, Bellary.*—The depot was opened on the 1st March 1938, in Bangalore Road, Bellary, where there are a number of cloth shops. The cumblies manufactured by the cumbly weavers' societies in the Ceded districts will be stocked and sold by the sales depot, the object of which is to bring buyers in touch with the production societies. The depot will also arrange for the display of the cumblies at various exhibitions throughout the province and in adjoining areas.

106. *Kanumolu Blanket Weavers' Co-operative Purchase and Sale Society.*—The operations of this society, which was registered on the 20th November 1937, are confined to the villages of Kanumolu, Kakulapadu and Narasannapalem. The working capital of Rs. 1,000 was disbursed to the society in January 1938. An improved fly shuttle loom provided with a weavers' beam and with suitable take-up motion and also a hand-driven sectional warping and sizing machine were constructed and supplied to the society before the close of the year and preliminary demonstration of the appliances was carried out to the satisfaction of the society. The society produced 1,750 lb. of woollen yarn valued at Rs. 567 and of this quantity, 1,480 lb. were utilized by the members in the weaving of cumblies. The society had manufactured cumblies to the value of Rs. 103–4–0 by the end of the year and distributed an amount of Rs. 56 as wages for the spinners and weavers.

107. *Dharmajigudam Cumbly Weavers' Co-operative Purchase and Sale Society.*—This society was registered on the 19th January with 16 members and a paid-up share capital of Rs. 16. The working capital of Rs. 1,000 was disbursed to the society in March. An improved fly shuttle loom and a hand-driven warping and sizing machine constructed at the Government Textile Institute were supplied to the society in March and a preliminary demonstration was satisfactorily staged. As the working capital was disbursed only late in March, the society was not able to commence the manufacture of cumblies before the end of the year. The Pile Carpet Weavers' Society at Ellore is supplying cut wool to this society for spinning into yarn by the women-folk of the Kuruba members of the society. A quantity of 1,000 lb. of wool was spun into yarn before the end of the year.

SERICULTURE.

108. Sri K. T. Achaya continued as Sericultural Expert throughout the year. The Sericultural Expert toured for 188 days during the year and visited all the important sericulture centres in the Presidency. The contact of the sericulture section of the department with the rearing villages in the Kollegal area is close and intimate and the usefulness of the work conducted by the department has been greatly increased since the transfer of the Sericultural Expert to Kollegal in 1936.

109. *Government of India grant.*—The period under review was the second full year that the scheme for the production and distribution of disease-free 'cellular' seed and for the conduct of research on silk-worm diseases, sanctioned by the Government of India, was in operation. The full sanctioned staff of three farm managers, one clerk, nine moth testers, seven operatives on moth testing work, two mulberry cultivators and one pathology assistant for research, was employed during the year. The work performed under the scheme by the peripatetic rearing party and at the various farms will be discussed in separate paragraphs. Each of the moth testers is attached to certain rearing villages with his headquarters in a central village and is expected to test two lakhs of layings. The work of the nine new moth testers, who were appointed during the previous year, gradually improved as they gained experience. The total number of layings tested during the year by these moth testers amounted to 1,745,564 as against 1,354,868 in the previous year. The amount provided for 1937–38 under the Government of India subvention scheme was Rs. 15,700 out of which Rs. 15,484–8–6 was expended by the end of the year.

110. *Aided grainages.*—Three more aided grainages were added during the year and they began to function from 1st September. The six aided grainages have been established at Hosamalangi, Alahally, Chilaukvadi, Honderbalu, Kamakarai and Singanallur in the Kollegal taluk. The six grainages tested and distributed 526,856 layings during the year as against 230,000 tested and distributed by the three grainages in the previous year. It will be some time before the newly recognized graineurs become as experienced as the ones aided in the previous year.

111. *Research on diseases of silk-worms.*—A number of experimental rearings on the incidence of contamination in relation to pebrine disease in the mulberry silk-worms was undertaken and completed during the year. In one experiment it was found that pebrinized cow-dung smeared trays infected a healthy batch of worms even though the trays were exposed to sunlight before commencing the rearing. The contaminated lot showed 1·25 per cent pebrine in the moth stage while the control lot was pebrine free. This experiment confirmed the result of a preliminary

experiment conducted in the previous year. The aim of another experiment was to ascertain whether mulberry leaves stored in a room where a batch of pebrinized worms were reared would bring infection to a healthy batch of worms, when fed, to the latter. The results of the rearing and moth examination showed that the healthy lot became infected to the extent of three per cent in the pupae stage by feeding on leaves stored in a contaminated room. A further experiment proved that the disease could be spread through an infected mulberry chopping knife and board which had been previously used for rearing a pebrinized batch of worms, a moth examination after the completion of the rearing showing that the lot was affected with pebrine to the extent of 6·9 per cent. A fourth experiment showed that a healthy batch of worms became infected by pebrine to the extent of 10 per cent when the same rearer who rears a pebrinized batch also rears a healthy batch of worms. The control lot out of the same brood was found to be pebrine free since it was reared by a separate rearer. An experiment bearing on the heriditary source of infection was undertaken with the object of determining whether the pebrinized male moth actually transfers the disease to the disease-free female moth during the act of fecundation and thereby infects the embryo inside the ova. It was found that the male moths do transfer the disease to the female moths along with the spermatazoids, and that such spores adhere to the egg shells of the ova and do not enter the embryo inside. By washing such seeds with formalin it has been found that the layings are disease-free and good results have been obtained by rearing these layings. The unwashed layings were affected with three per cent pebrine. As a result of this experience all the tested cross-breed seeds are now washed with formalin. Another experiment was conducted in order to ascertain whether an infected stand which was previously used for rearing a pebrinized batch of worms would bring infection to a healthy brood of worms when reared in the pebrinized stands. The result of the rearing showed that the incidence of the disease was not high and that the lot was affected with pebrine only to the extent of 1·4 to 2 per cent. Among other rearing experiments undertaken may be mentioned (i) to determine the incidence of contamination through infected trays which were previously used for rearing a pebrinized batch of worms, (ii) to ascertain the difference in the degree of infection acquired by two healthy batches of worms of the same brood when reared in a highly infected room, one batch being covered with perforated paper boxes in order to avoid the direct action of contaminated air on the worms and the other reared in an open tray. In addition to the experimental rearings, a study of the pebrine disease was conducted and much useful information obtained. The success of the several varieties of Japanese races that are now so largely used for hybridization purposes is the result of a careful seed selection and elimination of the scourge of pebrine by strict selection and application of the cellular method of seed

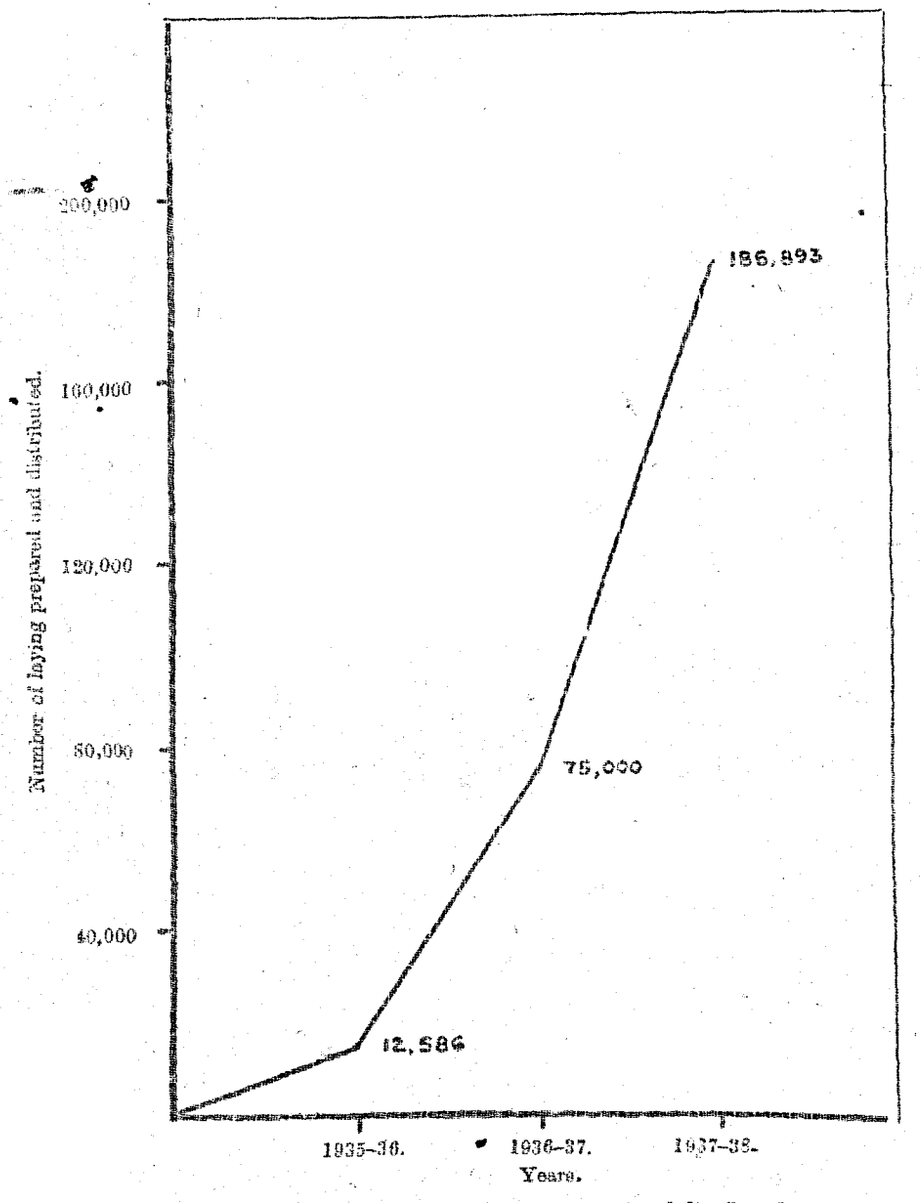
selection, coupled with the gut examination method. By the adoption of these methods the several white races that are now reared in the Government silk farms are completely free from pebrine.

112. *Peripatetic rearing party.*—The party which consisted of one rearer, fourteen moth testers and one silk reeling demonstrator, of which nine moth testers were provided under the Government of India subvention scheme, was divided up amongst fifteen important rearing villages of Kollegal taluk. These moth testers completed the testing of two lakhs of layings each, the quota fixed for them, despite the fact that many of them had to assist in the preparation and distribution of cross-breed seeds. The party tested 3,043,395 layings during the year as against 2,474,445 layings in the previous year. Strict supervision is exercised over the work of these moth testers and each and every mother moth is examined under the microscope to ensure the distribution of cent per cent 'cellular' seed to the rearers. Owing to the confidence created in the efficacy of tested seed, many of the rearers now bring their seed cocoons and hand them over to the party for test in the office itself, and it is gratifying to note that several villages are using only tested seed supplied by the department and are thus able to harvest all the crops satisfactorily. The salient features of the seed campaign conducted by the department are (i) supply of disease-free layings (cellular), pure Mysore cross-breed, etc., to the village rearers from the Government silk farms and by purchasing seed cocoons from seed cocoon areas in the Mysore State, (ii) careful supervision and control of the rearing operations, (iii) selection of the best cocoons for further propagation, and (iv) introduction of aided grainages and supervision over their work. The exercise of control by the department over the production of seed cocoons renders the work of the village rearers and grainages more efficient and economical and by strict selection even the disease pebrine can be controlled to a certain extent. The basis of the organization and development of the supply of tested seeds is the production of seed cocoons from 'cellular' layings. The Government silk farms at Hosur, Palmaner and Thadagunt are devoting their entire attention to seed cocoon production from 'cellular' layings, whilst in addition seed cocoons are purchased for conversion into seed and distribution. A profit of Rs. 645 was realized by the sale of disease-free layings out of the purchased lot against Rs. 276 in the previous year. Owing to the rise in the price of seed cocoons, the sale price of layings was raised during the year from As. 5–4 to 8 annas for 100 pure Mysore layings and from As. 5–4 to Re. 1 per 100 cross-breed layings.

113. *Cross-breeding work.*—With a view to evolving a hardier race of worms, that would yield cocoons of a superior quality with an increased output of raw silk, the members of the rearing party conducted a series of experiments in cross breeding work.

38

GRAPH SHOWING THE NUMBER OF DISEASE FREE CROSS BREED SEEDS PREPARED AND DISTRIBUTED BY THE SERICULTURAL SECTION DURING THE PAST THREE YEARS.



SCALE :—1" = 40,000 Layings prepared and distributed.

The work of popularizing cross breed layings by rearing white cocoons in the Government farms at Hosur, Palmaner and Thadaguni and crossing the male moths of the white cocoons with the female moths of the Mysore seed cocoons secured from the Kunigal area, is of great importance. These seeds are becoming very popular owing to the benefit derived by the rearers in the shape of (i) increased yield of cocoons by at least 40 per cent over that of the pure Mysore, (ii) richer silk content enabling an increased output of raw silk to be obtained, (iii) shorter period required for rearing with almost the same consumption of leaves, and (iv) higher prices than pure Mysore to the extent of at least a rupee per maund. The highest yield so far obtained for 100 layings of cross breeds is 75 lb. The production and distribution of cross breed layings will in time give the sericulture section full control over the seed supply as these seeds can only be prepared by the staff of the Sericulture section with the assistance of the more intelligent and experienced rearers who are being selected to rear the pure white race as well as suitable Mysore seed cocoons for the purpose. It is anticipated that in a few years' time the requirements of the sericulturists in the Madras Presidency will be met mainly by hybrid crosses and this should materially increase the earning capacity of the village rearers. During the year under review, 186,893 cross breed layings were prepared and distributed with satisfactory results, as against 75,000 layings in the previous year. The production of cross breed seeds will be greatly facilitated by the setting up of a refrigerator at Kollegal, which has been sanctioned by Government, as by retaining one of the varieties in the refrigerator, the moth emergence can be delayed for a few days according to requirements.

114. *Univoltine seeds.*—The Government sanctioned during the year the purchase of 1,000 oz. of foreign hybrid seeds for distribution to selected rearers in Kollegal taluk. Accordingly orders were placed for 700 oz. of French and Italian, and 300 oz. of Kashmir univoltine seeds. Of the seed received from France, 10 oz. were released for rearing in December. Another 100 oz. of French seed were released for rearing in February, but the results of the rearing were disappointing owing to the sudden rise of temperature at the time of rearing. Further experimental work will be necessary in order to establish the correct period of hibernation under Indian conditions as the success of a rearing depends to a large extent on uniform hatching. The univoltine seed can remain in the refrigerator—which will shortly be purchased—for a considerable time and may be taken out when hatching is required in quantities to meet the requirements at any time. Sericulture technique has advanced so far that univoltine seed, which ten years ago could be hatched only once a year, can now be hatched like polivoltine seeds in ten days' time by treating the eggs artificially after oviposition. Several experiments in artificial hatching were conducted during the year and

the results were encouraging. The most satisfactory method of hatching univoltines artificially with 15 per cent hydrochloric acid, 12 to 26 hours after oviposition, for a period of five minutes, was found after a series of experiments. It was ascertained that the eggs produced out of a univoltine variety could be made to hatch after three months when hibernated at 40°F. It was also ascertained that univoltine seeds cannot be made to hatch artificially if the period after oviposition exceeds 36 hours, and that in such cases hibernation is essential.

115. *Coonoor silk farm.*—The general condition of the farm and the yield of leaves were satisfactory during the year. One rearing of univoltine seeds received from Kashmir was commenced in February and completed in April producing 10 lb. of seed cocoons which were sent to Kollegal for distribution. One rearing of the white race of seeds and one rearing of pure Mysore variety were also undertaken. There are now seven kinds of mulberry grown on the farm. The cocoon mulberry from Calcutta seems to be the best of all the varieties, both from the point of view of yield of healthy leaves and of resistance to disease. The next best variety is the white variety—*morus alba*, the leaves of which are suitable for rearing univoltine worms. A cross between the *morus indica* and *morus alba* was in progress at the end of the year with a view to evolving a graft between the two which would be rich in leaf-bearing properties and at the same time suitable for rearing the Mysore worms. As the castor plant grows well at Coonoor, the farm functions as a centre for the distribution of eri silk worm seed. Five rearings of eri silk worms were completed during the year and eri eggs were supplied to the district centres, including Madras (Government Textile Institute and Gokulam Harijan colony), Buchireddipalam, Kudligi and Bezwada.

116. *Palmaner silk farm.*—The five acres of mulberry came up well during the year, but owing to the continuous drought from June to September, the yield of leaves suffered very much for want of irrigation facilities. A portion of the plantation was pruned in the beginning of August and another portion in November for supplying cuttings to the ryots of the locality for planting. Nineteen acres of land have been brought under mulberry in five villages in the vicinity of the farm and the ryots have undertaken to plant mulberry in about 40 acres during the planting season. Five hundred and forty-eight pounds of cocoons were harvested, of which 186 lb. were steamed for reeling and the balance was converted into 48,268 disease-free layings and distributed to the rearers of Kollegal taluk. The layings gave good results.

117. *Hosur silk farm.*—The farm has 13 acres of mulberry garden attached to it which was hitherto irrigated during the summer. It was not, however, possible to irrigate the mulberry plantation even once during the year under review, since

owing to the scanty rainfall at Hosur, the tank did not get enough water for irrigation purposes. This resulted in reducing the leaf supply to a certain extent. Twenty-eight rearings were conducted during the year with 8,449 layings, consisting of 5,380 Mysore layings, 3,069 white layings, and 2½ oz. of univoltine eggs. The total quantity of cocoons harvested was 3,367 lb. of which 2,480 lb. were Mysore cocoons, 869 lb. white cocoons and 18 lb. univoltine cocoons. Seventeen thousand univoltine worms were supplied for the preparation of silk-worm guts. The farm produced 84,896 disease-free layings during the year and these were distributed to the Kollegal rearers with satisfactory results. Owing to the existence of pebrine in the last stage of worms under each rearing, a number of batches of cocoons had to be steamed and converted into 225 lb. of raw silk and 172 lb. of silk waste. Three hundred and seventeen bundles of mulberry cuttings were supplied to about 10 centres from the farm. The tree mulberry plants which were planted during the previous year have come up well.

118. *Thadaguni farm.*—There were 9·32 acres under mulberry. Thirty batches of worms were reared during the year (12 batches of pure Mysore, 15 batches of white race, and three batches of univoltine) with 7,615 layings which yielded 2,880 lb. of cocoons. Of the three univoltine rearings, only one was partly successful and the other two failed. All the foreign races of seed cocoons were used for cross breeding work. The farm produced and distributed 237,822 disease-free layings to Kollegal rearers with satisfactory results. The pebrinised cocoons were converted into 44 lb. 13 oz. of raw silk and 41 lb. 14 oz. of silk waste. The 9·32 acres of mulberry yielded 32,150 lb. of leaves which works out to 3,450 lb. per acre. A trial rearing of cross breed worms of 200 layings was conducted in order to demonstrate to the village rearers the value of cross breeds, and this rearing yielded a record quantity of 146 lb. of cocoons, i.e., 73 lb. for every 100 layings of seed.

119. *District sericulture work.*—The five demonstrators of sericulture were stationed at (i) Vadakangulam in Tinnevelly district, (ii) Kudligi in Bellary district, (iii) Pudupatti in North Arcot district, (iv) Bajpe in South Kanara district, and (v) Kovur, West Godavari district until November and thereafter Bezwada in the Kistna district. The four centres which show promise of development are (i) Palmaner area of the Chittoor district, (ii) Berikai area of the Salem district, (iii) Pudupettai area of the North Arcot district, and (iv) Vadakangulam area of the Tinnevelly district. Sixty acres are under mulberry in the four centres and worm rearing is progressing satisfactorily. The Pudupettai centre is sending seed cocoons to Kollegal for cross breeding work,

but the experiments in the South Kanara district have been disappointing owing to unfavourable climatic conditions. The drought conditions prevailing in the Kudligi taluk during the last two years have retarded the development of sericulture in that area. At Kadayam in the Tinnevelly area, eri worm rearing and spinning are carried on successfully.

120. *Silk reeling.*—The Kollegal Silk Filatures, Limited, was formed during the year with an issued capital of Rs. 1,78,500 to manufacture quality filature silks and, as stated elsewhere in this report, the Government subscribed for 10 per cent of the share capital. The filature is expected to give employment to some 375 persons when the full number of 150 basins is installed. The advent of this silk filature is of considerable importance to the silk industry in the Kollegal taluk, as it should tend to improve the price of cocoons and thereby improve the economic condition of the silk-worm rearers since there will be competition for cocoons between the filature and the country reelers. Improved accessories in the shape of pulleys and buttons were supplied for attaching to the existing country charkas in two reeling establishments. The Secretary of the All-India Spinners' Association, Tirupur, who visited Kollegal, undertook to buy all the output of these establishments at enhanced rates if it is reeled according to the advice given by the departmental officers.

121. *Silk-worm guts.*—Experiments continued to be carried out by the Pathology Assistant with a view to the production of quality silk-worm guts. It was found that (i) sulphurous acid (an acidulated solution of sodium bi-sulphite) in the nascent state is a good bleaching agent for removing the colouring matter and other impurities of the gut, (ii) potassium carbonate removes the trace of acids present and imparts a glossy lustre to the guts, (iii) a mixture of tannic acid formaldehyde is a good hardening agent, and (iv) French univoltine worms give guts measuring 14 to 18 inches suitable for surgical purposes as ligatures and also for fish tackle as against the 9 to 10 inches of the Mysore race of worms. A number of experiments were in progress at the end of the year with a view to ascertaining the best varieties of worms for gut production. Ten thousand long length guts were prepared from univoltine worms in February by Mr. A. H. Whittle and sent to the London market for report which is awaited with great interest as upon it may depend the future of the gut industry. If the hatching and rearing of univoltine seed become an established success, the development of the gut industry will receive an impetus. A paper on 'Silkworm gut and the possibilities of developing the industry' by the Sericultural Expert and the Pathology Assistant was submitted for the prize competition conducted by the Industrial Research Council during the year.

122. *General.*—The rainfall during the year in the Kollegal taluk was 39·39 inches as against 23·46 inches in 1936–37, and a normal rainfall of 40 inches. Owing to the timely rainfall and favourable seasonal conditions, the acreage under mulberry, which was about 6,000 in the beginning of the year, increased to about 7,060 by the end of the year. The rearers in Kollegal taluk harvested one crop more than the annual average of six crops. The Sericultural section prepared and distributed in all 3,941,937 disease-free layings (including layings prepared by the examination of moths which emerged out of the cocoons preserved by the ryots) as against 2,925,750 in the previous year, representing 93 per cent of the entire seed requirements of the Province. There was a temporary rise in the prices of cocoons and raw silk, but the advances were not held. The average prices recorded per maund of 1,000 tolas during the year were: raw silk, first quality, Rs. 150 to Rs. 155; second quality, Rs. 110 to Rs. 120 and third quality, Rs. 95 to Rs. 100; silk waste, Rs. 10–8–0 per 45 seers and pierced cocoons, Rs. 18 per 45 seers.

Engineering Section.

123. *General.*—The work of the Engineering section consists mainly of the conduct of pumping and boring operations, the systematic inspection, under the compounding fee system, of engine installations and industrial machinery already at work, the purchase and erection of industrial machinery and pumping plants, and the investigation of applications for loans under the Land Improvement Loans Act, as well as the valuation of machinery offered as security under the State Aid to Industries Act. In addition the section provides technical advice to the public on matters relating to industrial plant and machinery.

124. *Staff.*—Mr. L. S. Pinto, Industrial Engineer, continued to act as Deputy Director of Industries until the 24th May 1937, when he proceeded on leave. Mr. Pinto retired on invalid pension from the 25th September 1937. Rao Sahib Sri C. S. Ramachandra Ayyar continued to act as Industrial Engineer until the 7th July 1937, when he was relieved by Sri N. M. Adyanthaya on the latter's return from leave. Sri Adyanthaya continued to be in charge of the post during the remainder of the year, except from the 22nd November to 9th December 1937, when he was on leave. The Industrial Engineer was assisted by four Assistant Industrial Engineers, one in charge of the Industrial Engineering Workshop, Madras, and one each in charge of the Bezwada, Tanjore and Coimbatore divisions, the Industrial Engineer holding direct charge of the Madras subdivision, comprising the districts of Madras and Chingleput.

125. *Boring.*—The department maintained 14 Armstrong power drills, one air compressor drill and 106 hand-boring sets. The following table exhibits the territorial distribution of the

applications received for boring, the number of feet bored in each of the divisions and other relevant particulars:—

Division.	Applications pending on 1st April 1937.	Applications received during 1937–38.	Applications disposed of during 1937–38.	Applications pending on 1st April 1938.	Total number of feet bored.	Number of borings put down.	Number of successful borings.
Bezwada	88	276	282	82	32,835	397	365
Coimbatore	35	134	117	52	13,422	241	153
Tanjore	31	79	73	37	17,006	184	161
Madras	4	54	50	8	6,578	145	54
Total ..	158	543	522	179	69,840	971	673

It will be seen that the total number of borings put down and the depth bored during the year were 971 and 69,840 feet respectively, as against 1,034 and 66,369 feet respectively in the previous year. The total number of borings decreased by 63, but the footage bored increased by 3,471 feet, reflecting the tendency for deeper borings. It is axiomatic that the deeper a bore is sunk, the slower is its progress and the apparent contradiction of an increase in footage bored despite the increased number of deeper borings put down is explained by an improvement in the supervision and control. The demand for borings for providing drinking water supplies is on the increase, and the existing equipment has been found inadequate to cope with it. With a view to meeting the situation proposals have been submitted to Government for the manufacture of 25 additional hand-boring sets. The amount expended by the public on the boring operations conducted during the year is estimated at Rs. 1,61,974. Of the 673 successful borings put down, those for agricultural purposes numbered 510. The deepest of the borings completed during the year by a hand-boring set was 566 feet and by a power drill was 875 feet. A diagram showing the total feet bored during the last five years is on the next page.

126. *Artesian borings.*—At the close of the previous year, the department had to its credit 126 artesian boreholes. During the year under review, 24 fresh artesian springs were tapped. Of these, 23 were in the East and West Godavari districts discharging fresh water at rates varying from 5 to 225 gallons per minute at ground level, the height of discharge being up to three feet above ground level. The other artesian spring was tapped at Oomangalam in South Arcot district and is discharging fresh water at the rate of 400 gallons per minute. Special mention may be

made of the following successful artesian borings. An artesian spring tapped at Medapadu, Cocanada taluk, is discharging fresh water at the rate of 225 gallons per minute at ground level. This boring has helped to bring under cultivation an increased area of 15 acres resulting in an enhanced annual income of Rs. 1,250 to the party. An artesian spring, discharging two gallons per minute at three feet above ground level was tapped by a trial boring put down for the Labour department for supplying drinking water to the Adi-Andhras of Buttayyagudem, Tadepallegudem taluk. A cement trough has been constructed around the borewell and suitable taps and pipe connexion have been fitted up, affording an ideal protected water-supply scheme for a rural area. Another artesian current of 200 gallons capacity and three feet height of discharge was tapped at Dwarapudi, Ramachandrapuram taluk. An increased area of 14 acres is now irrigated with the water from this boring and the cultivator expects to derive an additional annual income of Rs. 1,000. The cost of the boring was Rs. 860. A few reports in regard to a diminution in the original discharge from the artesian borings put down have been received from South Arcot district and the question of whether it is possible to restore the original flow will be investigated.

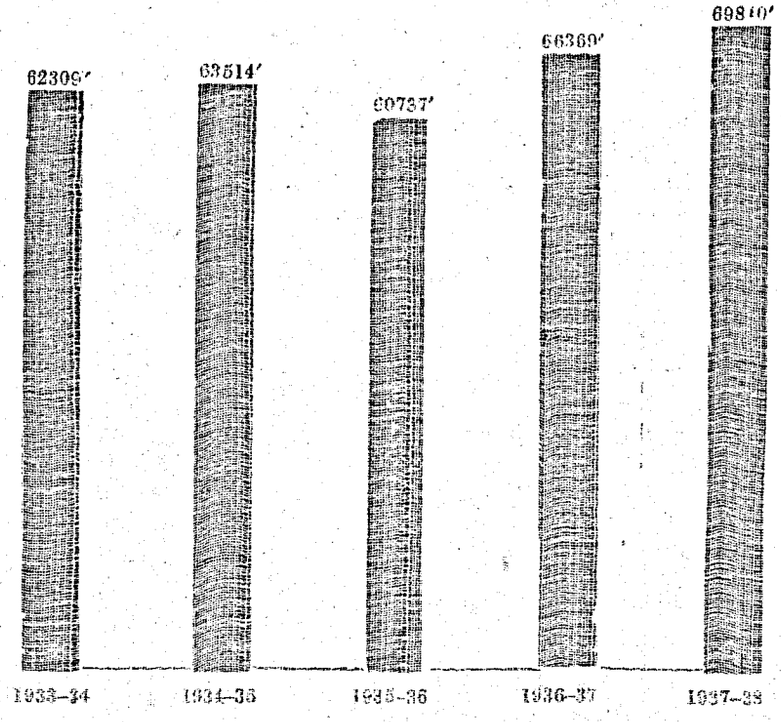


DIAGRAM SHOWING THE TOTAL FEET BORED DURING THE LAST FIVE YEARS

127. *Sub-artesian borings.*—An 8″ cum 6″ boring was conducted to a depth of 235 feet below ground level at Uddanum village near Ichchapur, Vizagapatam district, and springs were tapped, which yield four gallons per minute at 206 feet below ground level. The locality was notorious for water scarcity and the district board had spent large amounts on dug wells without finding water. The borewell is a great boon to the villagers, being the only source of water-supply within a radius of five miles. A boring was conducted to a depth of 150 feet below ground level in an existing well, 25 feet deep at Gadarada village in Rajahmundry taluk. The well was completely dry before the boring operation and the borehole now discharges 40 gallons of water per minute into the well. The increased income derived by the cultivator by irrigating garden crops is Rs. 300 per annum. Five borings were conducted in four wells at Dharmajigudem, Ellore taluk. In three of these borings good sub-artesian springs were tapped at 90 feet, 95 feet and 135 feet below ground level, and each of them discharges 30 gallons of water per minute into the wells which contained no water at all prior to the conduct of boring operations. Four well borings were put down at Boddapadu, Bezwada taluk, each to a depth of 40, 42, 54 and 62 feet from ground level, strong sub-artesian springs being tapped in all the four borings which discharge 120, 120, 120 and 100 gallons per minute at 9, 19, 23 and 27 feet below ground level respectively. The increased acreage brought under cultivation as a result of these borings and the annual income derived by the cultivator are 17 acres and Rs. 1,845 respectively. Fifteen borewells were put down in the villages of Tanjore district under the rural water-supply scheme. All these borewells were provided with hand pumps which have been functioning satisfactorily. Five borings were put down for the Panchayat Board, Allinagaram, Madura district, to tap drinking water and hand pumps have been fitted up on the borewells, which provide an unfailing supply of water to the public. In accordance with the programme for providing rural water-supply, 39 borings were completed in Tinnevelly district and all the successful boreholes were fitted up with hand pumps manufactured at Tinnevelly. Five sub-artesian borewells were put down in the Poonamallee health unit area, and hand pumps have been fitted up on all these borewells which are mainly intended for the people residing in cheris.

128. *Work of the power drills.*—Considerations of space will admit only of a brief reference to the work of the power drills. One of the drills was engaged at Vizagapatam throughout the year in putting borings for the Mental Hospital, for the Public Works Department at the District Hospital site, and for the Andhra University. The boring for the Mental Hospital which was in progress at the close of the previous year was completed

during the period under review with satisfactory results. The boring at the District Hospital site also proved successful and the boring for the Andhra University was in progress at the close of the year. Another drill was engaged by the District Board, Vizagapatam, for work at Simhachalam and the boring was also in progress at the close of the year. Another drill completed a boring for the Andhra University, Waltair, in which water was tapped. A power drill boring was put down for the Andhra Cinetone Company, Limited, Vizagapatam, for industrial purposes and this boring proved successful after reaching a depth of 107 feet 3 inches. With another drill, a boring was put down for agricultural purposes at Erramalla, Tadepalligudem taluk, and eventually proved successful after reaching a depth of 436 feet. A power drill boring was put down for the Electricity department at Eguvapallc, Cuddapah district, to a depth of 561 feet below ground level. Strong sub-artesian springs were tapped between 30 feet and 32 feet and between 315 and 321 feet below ground level and the water level rose to 17 feet below ground level. The discharge from the borehole was tested by the departmental air compressor pump and was found to be 100 gallons per minute at 42 feet below ground level. A 6″ well boring was put down by a power drill for the Coimbatore district Tuberculosis Sanatorium at Perundurai. Strong sub-artesian springs were tapped at 122 to 168 feet below ground level and as a result the water in the well rose by 22 feet. An 8″ boring to a depth of 82 feet was conducted for the Tirumalai-Tirupati Devasthanam at Tirupati. In this case a spring was tapped at 25 feet below ground level and the borehole discharges 25 gallons per minute. The Commissioner of the Devasthanam Committee has proposed to instal an electric motor and pump on the borehole to pump water for the pilgrims. A power drill was engaged in putting down a borehole in the compound of the Collector's bungalow at Trichinopoly, to tap water for drinking purposes, and a sub-artesian spring was tapped in the borehole. It is proposed to fit up a deep well pump driven by an electric motor on the borehole which was tested and found to yield nine gallons per minute. The same drill was engaged for putting down a boring 175 feet deep in the quarters of the District Medical Officer, Trichinopoly. The supply from this borehole has not yet been tested.

129. *Torpedoing operations.*—There were at the beginning of the year, eleven applications pending, 15 were received and 15 applications were disposed of during the year.

130. *Pumping sets.*—The department maintained 22 pumping plants for hiring out to ryots to pump water to their crops during periods of drought or for well sinking. The number of applications pending at the beginning of the year was 5, 70 were received and 68 were disposed of. Two pumping sets were employed continuously during the year at the Central Jail, Trichinopoly, to pump out water from wells for the use of the prisoners in the jail.

43

A pumping set was deputed for conducting yield tests in connexion with the water investigation scheme at Arantangi, Tanjore district.

131. *New investigations.*—There were at the beginning of the year, 17 pending applications for information and advice, 263 applications were received and 267 applications were disposed of during the year.

132. *Assistance to agriculturists and industrialists—New erections.*—The department undertakes the erection of machinery and plant on payment of a nominal fee on the capital cost of machinery installed. The number of such plants erected during the year was as follows :—

Division.	Pending on 1st April 1937.	Received during the year 1937–38.	Disposed of during the year 1937–38.	Pending on 1st April 1938.	Remarks.
Bezwada	7	15	18	4	All pumping plants.
Coimbatore	..	10	10	..	Eight pumping and two industrial.
Tanjore	9	20	25	4	Sixteen pumping, eight industrial and one application withdrawn.
Madras	..	2	2	..	One pumping and one industrial.
Total ..	16	47	55	8	

The capital invested in the above plants, including the cost of buildings, amounted to Rs. 77,730. It may be of interest to record the horse power of the largest and smallest plant erected during the year in each division :—

Division.	Largest plant B.H.P.	Smallest plant B.H.P.
Bezwada	16	1
Coimbatore	32	10
Tanjore	30	5
Madras	9	..

The acreage brought under cultivation and the probable enhanced income accruing therefrom as a result of the pumping

plants erected by the department during the year under review are shown below :—

Division.	Acreage brought under cultivation.	Probable enhanced income accruing therefrom.
		RS.
Bezwada	63½	3,800
Coimbatore	5	100
Tanjore	17	945
Madras	3	55

133. *Compounding system.*—Under this system owners of private installations are entitled to have their plants inspected and overhauled three times a year on payment of a small fixed fee per annum and also at other times, if special requisitions are received, for which, however, a small additional fee is charged. The number of such plants compounded during the year under review was 470 as against 491 in 1936–37. The following statement shows the number of plants under maintenance in the four divisions :—

Division.	Industrial plants.	Pumping plants.	Combined plants.	Electrical plants.	Total.
Bezwada	31	50	3	1	85
Coimbatore	31	95	8	..	134
Tanjore	109	75	15	10	209
Madras	9	21	12	..	42
Total ..	180	241	33	11	470

The compounding system has been extended to the maintenance of borewells and an arrangement entered into with the District Board, Tanjore, under which the departmental mechanics inspect and maintain the boreholes for an annual fee of Rs. 2 per borehole. There are at present 89 boreholes maintained under this scheme.

134. *Sugarcane crushing mills.*—The department is in possession of nine power driven sugarcane crushing mills, three with engines and six without engines and these are hired out to the public for crushing their cane. All the cane mills were fully engaged during the season with the exception of one mill attached to Tanjore division. The mills with engines attached to them, in Bezwada division were hired out to five individuals. About 1,816 tons of cane were crushed and 14,175 maunds of jaggery and 157 maunds of white sugar were produced, the total amount realized therefrom being Rs. 13,478. Cane mills were hired out to three land-owners in Chinglepat district and the produce of about 25 acres was crushed for manufacturing jaggery.

135. *Sugar manufacture.*—The department maintains two sugar centrifugals which are primarily intended for demonstration purposes. A complete equipment of machinery consisting of a sugarcane mill with engine, centrifugal and a set of juice boiling pans, with necessary staff, was lent to the Dimili Co-operative and Agricultural Demonstration Society for demonstrating the manufacture of sugar by open pan system. A similar demonstration was conducted at Hospet at the request of Dr. Nagan Gowda. Both these demonstrations were in progress at the close of the year under review. For demonstrations of this character, a new and improved furnace was designed by the Industrial Engineer and proved very satisfactory. In working this furnace, it was found that for boiling juice the begass of the cane crushed by the mill is sufficient and that no additional fuel is needed.

136. *Services rendered to co-operative societies.*—A Pinto chekku driven by reduction gear belonging to the Coimbatore Co-operative Stores and Bank Limited, and an engine belonging to the Udipi Co-operative Agricultural and Industrial Society, Limited, Kalyanpur, were under the supervision of the department. The plants of the Kallakurichi, Rishivandyam, Sankarapuram and Nangavaram Co-operative Societies in the Tanjore division continued to be under departmental supervision during the year. A ginning factory was erected for the Pandur Co-operative Society. A power drill was lent to the Co-operative Central Bank, Vellore, for demonstration purposes.

137. *Services rendered to departments of Government.*—During the year under review, the value of services rendered to the Agricultural, Revenue, Public Works, Jail, Forest, Judicial, Public Health, Registration, Postal and Meteorological departments in the various divisions amounted to Rs. 19,124–15–0 as shown below, as against Rs. 14,815–6–4 in 1936–37 :—

Division.	Value of services rendered.		
	RS.	A.	P.
Bezwada	7,617	0	0
Coimbatore	5,879	13	8
Tanjore	4,628	1	4
Madras	1,000	0	0
Total ..	19,124	15	0

138. *Loans for purchase of pumping plants.*—The grant of loans under the Land Improvement Loans Act has been restricted to cases where there is a reasonable prospect that by means of such

loans the lands of the ryot will be improved and his income increased and where investigation has proved that the source of water-supply, is unfailing. A loan of Rs. 2,600 was granted and disbursed during the year to Sri R. Nagan Gowda of Rupanagudi, Bellary division, for setting up a pumping plant.

139. *Industrial Engineering Workshop.*—The total value of work orders executed in the workshop for the various departments, and for private persons, during the year under review was as follows :—

Details of work done under different heads.	Amount realized.					
	1937-38.			1936-37.		
	Rs.	A.	P.	Rs.	A.	P.
I Pumping and boring ..	67,339	2	0	59,740	0	0
II Inter departmental	16	0	0	9	0	0
III Other Government departments	4,522	6	0	663	0	0
IV Private parties	296	13	0	832	0	6
V Value of work written off ..	72	6	0	Nil.		
Total ..	67,246	11	0	61,244	0	0

The working of the concern during the year resulted in a net loss of Rs. 3,208-10-0 as against a net loss of Rs. 2,427-2-6 in the previous year. Several improvements in the design and manufacture of tools were carried out. An air compressor drill which was not much in demand was reconditioned and improvised as an air lift pump for testing the yield of deep-bore-holes, and it is in considerable demand for the purpose. Two types of spring loaded pulleys were designed with a view to minimizing wear and tear of drilling cables which constantly break under the heavy strain to which they are subjected, and they were under trial in the field at the close of the year. New designs of pin heads, drilling bits, sand-shells, etc., have been evolved and are being tested in actual working.

140. *General.*—Several new innovations calculated to improve the prevailing methods of work and supervision were introduced during the year. For example, a system of log books was ordered to be maintained as part and parcel of each boring set or plant and inspecting officers are required to record their visits and remarks. A system of stamping each tool in a drilling set with the number of the set, the date of manufacture and the brand or quality of steel used, has also been introduced. These measures, it is hoped, will tend to improve the outturn and reduce wear and tear on, and breakages and accidents to, the plant and machinery.

INDUSTRIAL EDUCATION.

141. *Staff.*—The post of Inspector of Industrial Schools, which had been held in abeyance from the 19th March 1937 was revived with effect from 20th November 1937 on the abolition of the post of Deputy Director of Industries and Mr. W. Fyfe reverted to the former post from that date. In 1936, the Inspector of Industrial Schools was appointed an additional Inspector of Factories in respect of the workshops attached to industrial and technical schools recognized and managed by the department registered as factories within the said Act, but the order was cancelled during the year consequent on the post of Inspector of Industrial Schools having been ordered to be held in abeyance. The Inspector of Industrial Schools continued to act as an official visitor to eleven central jails and the Senior Certified School, Chingleput. In G.O. No. 19, Public Works (General), dated 5th January 1938, the Inspector of Industrial Schools was appointed a member of the Board of Examiners for the grant of certificates of competency for engine drivers, engine operators, water works fitters and pipe line fitters.

142. *State technical scholarships.*—At the beginning of the year there were five scholars under training in the United Kingdom. Md. M. Farokhi who was awarded a scholarship in 1935 for the study of Sugar Engineering relinquished it in October 1937 as he was offered and accepted an appointment with the British Oxygen Company Limited, London. Sri V. G. Sundaram whose scholarship for the study of Electrical Engineering with special reference to broadcasting would normally have expired in 1940 had to relinquish his scholarship in February 1938 owing to illness and he returned to India before the end of the year. Sri G. C. Arya who was awarded a scholarship for aviation sailed for India towards the end of March on the completion of his training in England. The following scholars were under training outside India at the end of the year :—

Name.	Subject of study.
1. V. V. Lakshmana Rao ..	Electrical Engineering with special reference to Broadcasting.
2. B. Jagganatha Hegde ..	Glass technology.

143. *Scholarships tenable at the Victoria Jubilee Technical Institute, Bombay.*—The number of scholarships tenable at a time at this institute is two of the value of Rs. 50 each per mensem and they are awarded for the study of Textile Manufacture, the course extending to four years. There were two scholars under training during the year in the Department of Textiles at the Institute, and a subsidy of Rs. 200 was paid by Government on behalf of each scholar per annum.

144. *Scholarships tenable at the Andhra University.*—The number of scholarships tenable at a time at the Andhra University is six and these are available for the study of B.Sc. (Hons.), in

Technology for a period not exceeding three years. The value of the scholarships was reduced during the year from Rs. 40 to Rs. 30 each per mensem as a measure of economy in expenditure. One fresh scholarship of the value of Rs. 30 per mensem was awarded during the year. Of the six scholars who have satisfactorily completed their training so far at this university it is understood that four have secured suitable employment in sugar factories in the province and that one is conducting research work at the university.

145. *Post-graduate scholarships tenable at the Indian Institute of Science, Bangalore.*—These scholarships are awarded to graduates in Chemistry and Physical Science for research in the various departments of study at the institute for a period of three years. The value of the scholarships was reduced during the year from Rs. 60 to Rs. 45 per mensem. Three new scholarships of the value of Rs. 45 each per mensem were awarded during the year, one for Bio-Chemistry and two for General and Organic Chemistry. There were ten scholars under training in the Institute during the year as shown below:—

Bio-Chemistry	4
General and Organic Chemistry	3
Electrical Technology	2
Physics	1
	10

146. *Scholarship for practical training in the manufacture of pharmaceutical products.*—In view of the considerable scope that exists in the Province for the manufacture of pharmaceutical products, one of the scholarships tenable at the Indian Institute of Science was held in abeyance and the funds made available thereby utilized for awarding a scholarship to Sri S. Ganapaty for practical training in the manufacture of such products at the Alembic Chemical Works, Limited, for six months and at the Medical Stores Depot, Madras, for three months. The candidate commenced his training on the 16th October 1937 at the Alembic Chemical Works, Limited, Baroda.

147. *Industrial scholarships.*—Under the provisions of Chapter IX of the Code of Regulations for Industrial schools, sixty new scholarships tenable in each case for a period not exceeding five years and ranging in value from Rs. 1-3-0 to Rs. 7-8-0 each per mensem were, as usual, awarded with effect from 1st July 1937 to pupils learning trades in various industrial schools recognized by the department. A bonus equivalent to two months' average scholarship was also granted to such of the pupils as

satisfactorily completed the prescribed courses of study during the year. The object of these scholarships is to encourage deserving pupils who are in need of assistance to remain long enough in an institution to acquire a sufficient working knowledge of their trade.

148. *Government School of Technology—Staff and General.*—Sri M. V. Jagannatha Ayyangar and Sri N. S. Rajan continued to act as Principal and Senior Lecturer, respectively, during the year. The school provides courses of instruction in mechanical engineering (five years), electrical engineering (four years), printing (five years), plumbing (two years), electric wiring (two years), as well as courses in mechanical drawing for woodworkers, metal workers, bricklayers, masons and plumbers, each of two years' duration. Students who satisfactorily complete the mechanical and electrical engineering courses are awarded L.M.E. and L.E.E. diplomas, respectively, while those who complete the printing course are awarded L.P.T. diplomas. The annual prize day was held on the 10th March 1938 when the Hon'ble Sri V. V. Giri, Minister for Industries and Labour, presided, distributed the diplomas and prizes and delivered an instructive address to the students.

149. *Admissions.*—Admission to the various courses of study in the School is restricted to bona fide apprentices and workmen who are actually engaged in the trade which they wish to learn. The number of new admissions during the year was 298 as against 365 in the previous year, of which 93 were admitted to the electrical engineering course, 17 to the mechanical engineering course, 45 to the printing course and the remainder distributed among the other courses, such as, wiring, plumbing and vernacular drawing classes. The strength of the school on the 31st March 1938 was 883 as against 992 in the previous year, the decrease being due to the limited number admitted to the mechanical engineering and vernacular drawing classes. The average number of classes held during the week was 99 as against 98 in the previous session.

150. *Examinations.*—The final examinations in various subjects were, as usual, conducted by outside examiners. The L.M.E. and L.E.E. diploma examinations were conducted by Messrs. A. P. Adam, Engineer, Buckingham Mills, and J. Meck, Engineer, the General Electric Company, Limited, respectively. Twenty-two students qualified themselves for the L.M.E. diploma and 54 for the L.E.E. diploma. The electrical wiring competency examination was conducted jointly by Messrs. P. V. Chari, Electrical Engineer, and K. Subramaniam of the Madras Port Trust. One hundred and thirty-eight students including 51 school candidates appeared for the examination and 48 were awarded competency certificates, of whom

18 were school students. Sri V. Ganesa Ayyar of the Madras Corporation conducted the examination on the plumbing and in vernacular drawing classes, and 21 students who were declared to have passed these examinations were awarded certificates. The supplementary examinations in mechanical and electrical engineering were held in October 1937, and were conducted by Messrs. A. P. Adam and J. Meek, respectively. Thirty-six students were awarded the L.E.E. and 12 the L.M.E. diplomas. The first batch of students admitted to the printing course which was reorganized in 1933, in accordance with the recommendations of the Royal Commission on Labour, completed the five years' course in April 1937 and four of them were awarded the L.P.T. diploma, the examination being conducted by Mr. J. Munro of the Madras Publishing House. The school continued to be the centre for the Province for the City and Guilds of London Institute Technological examinations for which 335 candidates appeared for the various technological subjects and 151 came out successful, two of them obtaining prizes, one of the prize-winners being a student of the fourth-year electrical engineering class in the school. During the year, the L.A.E. diploma examination was also held at the School for which four candidates from the Ramakrishna Mission Industrial School appeared and all of them were declared successful.

151. *Scholarships.*—In addition to the 12 Government scholarships of the value of Rs. 15 each, per mensem, tenable at the school for a period not exceeding five years, the Commissioner of Labour awarded five non-residential scholarships to students belonging to the depressed classes, whilst the Trustees of the Sri Venkateswara Hostel continued to award nine scholarships during the year. Each of the District Boards of Guntur and West Godavari continued to award one scholarship to the candidate nominated by them. The Council of the Victoria Technical Institute, Madras, awarded one scholarship during the year to a student of the school. Scholarships of the value of Rs. 12 each per mensem from Dr. S. Rangachari Endowment Fund were awarded to two students of the electrical engineering classes, whilst the Trustees of the Sir Dorabji Tata Trust, Bombay, continued their award of one scholarship of the value of Rs. 40 per mensem to a student of the school. One student belonging to the Ganjam district, was in receipt of a loan scholarship awarded by the Raja of Parlakimedi. A few charitable institutions in the City such as, the Muhammadan Educational Association of Southern India, continued their grant of monthly stipends to a few deserving poor students.

152. *Career of ex-students.*—The Principal continues to maintain an employment bureau with a view to assisting passed students to secure suitable employment. It is understood that

several of them have obtained suitable appointments, some having been absorbed in the Electricity department in the works establishment. The four printing students who secured the L.P.T. diploma during the year have all secured suitable employment in printing concerns.

153. *Preparatory section.*—In this section, selected boys who have passed Form I and are below 15 years of age are given a three years' course of general education heavily biased towards industry to prepare them to take up apprenticeships in workshops. The Madras and Southern Mahratta Railway Company, Limited, pays stipends to such of their nominees as are selected for admission and takes them into the works as trade apprentices on completion of the preparatory course of training in the school. The number of new admissions to this section during the year was 57 and its strength at the end of the year 130 as against 129 in the previous year. Twenty students who satisfactorily completed the course of training were awarded certificates. The old building in which this section was located suddenly collapsed in July 1937 while certain repairs were being effected by the Public Works Department contractor. The classes are now being conducted in temporary sheds and proposals for the construction of a new building are under consideration.

154. *Perambur Branch School.*—This school is attached to the Madras and Southern Mahratta Railway Workshops at Perambur and caters for the apprentices and workmen employed in the shops. The courses of instruction provided in the school are: (i) senior five-year course in engineering, (ii) junior three-year course in engineering, and (iii) two-year drawing course for fitters and carriage builders. The number of new admissions to the school was 61 and its strength at the end of the year was 108 as against 98 in the previous year. The final-year examinations were, as usual, conducted by the railway officials and 23 students who came out successful were awarded certificates.

155. *Sports.*—The School of Technology participated during the year in the inter-collegiate sports and won the Professor's Tournament Cup for football and the Jabbar Memorial Cup, while being runners-up in the League Championship and in the Wilson Cup Tournament. The school also annexed the Chettinad Cup in the Badminton Tournament conducted by the Loyola College, whilst in hockey, the school was runner-up in the Panagal Cup Tournament.

156. *Casting and metal-working class.*—In last year's report, reference was made to the opening of a class for training in casting and simple metal-working at the School of Technology. Twelve students were admitted to the class in April 1937 of whom nine were paid stipends at the rate of four annas per day.

The course of training extends over one year and students are given instruction in the preparation and manufacture of articles of brass and other metallic alloys using modern moulding processes. All the 12 students admitted to the course completed their training satisfactorily at the end of the year and were awarded certificates. The expenditure incurred on this class during the year was Rs. 3,404-15-2 and the receipts realized by the sale of articles manufactured by the students amounted to Rs. 269-8-0.

157. *Finance.*—The total expenditure on the School of Technology during the year was Rs. 84,981-3-1 and the receipts were Rs. 28,247-1-0 including the contribution made by the Madras and Southern Mahratta Railway, towards the cost of the teaching staff in respect of the Perambur Branch School. The net cost to Government in maintaining the school during the year was Rs. 56,734-2-1 or Rs. 50-6-2 per student per year.

158. *Government Industrial School, Madura—Staff and General.*—Sri V. Raghava Ayyar continued as Superintendent during the year. The Superintendent was appointed Secretary to the Board of Visitors for the school in place of the Inspector of Industrial Schools when the latter post was held in abeyance. This school which caters for the needs of the southern districts of the Province provides courses of training in the metal working and woodworking trades extending over a period of five years and also a course in electrical wiring which extends over two years. The Hon'ble Sri V. V. Giri, Minister for Industries and Labour, visited the school in August 1937.

159. *Admissions and withdrawals.*—During the year, 88 candidates sought admission to the school, but only 46 actually joined. There were 15 withdrawals due mainly to the inability of the parents of the apprentices to maintain them. The strength of the school at the end of the year was 100 as against 87 in the previous year.

160. *Examinations.*—The annual and final examinations for the year were, as usual, conducted by the Board of Examiners consisting of the Superintendent of the School and the Manager of the Pasumalai Trades School. Of the 85 students who presented themselves for the various examinations, 77 were declared to have passed. All the 18 final-year students in woodworking and metal working sections having satisfactorily completed their training, they were awarded certificates. Of these 13 are reported to have secured suitable posts in mills, workshops and factories

161. *Equipment.*—Two new lathes in place of the old and unserviceable existing ones and one arc welding plant were purchased during the year with a view to providing efficient practice to the apprentices.

162. *Hostel.*—The hostel attached to the school functioned satisfactorily. The present strength of the hostel is 36 consisting of 11 in the vegetarian mess and 25 in the non-vegetarian mess. The messes are efficiently run and the charge per head averages about Rs. 9 per month.

163. *Financial position.*—The receipts and expenditure of the school for the year were Rs. 19,422 and Rs. 36,826, respectively. The latter figure includes an expenditure of Rs. 6,116 incurred under capital account on the purchase of new machinery during the year. The net cost to Government of maintaining the school was only Rs. 11,289 as against Rs. 13,293 in the previous year, in spite of the fact that an expenditure of about Rs. 2,000 was incurred in connexion with the electric wiring classes which were started in the year 1936. The result of the working of the school must be regarded as satisfactory having regard to the fact that the Retrenchment Committee in 1932 considered that an annual expenditure of Rs. 17,500 on the school would be reasonable. The average cost of training per pupil was Rs. 113 as against Rs. 153 in the previous year and Rs. 182 in 1935-36.

164. *Other Government industrial schools.*—The Government Industrial Schools at Calicut and Bellary and the Government Trades School at Mangalore functioned satisfactorily during the year. Proposals were submitted to Government for their permanent retention and the orders of Government approving the proposals were received immediately after the close of the year. These schools provide instruction in the metal working and woodworking trades. No fee is levied for tuition, but deserving pupils are awarded scholarships up to a limit of one-third of the number of pupils admitted every year in the first year classes in each industrial school, whilst certain district boards and municipalities award a few scholarships to pupils coming from their areas. The strength of these schools at the close of the year was 73 in Bellary, 53 in Calicut and 50 in Mangalore. The annual and final examinations were conducted by the Boards of Examiners appointed by Government consisting of the Superintendent of each school and one professional gentleman of the locality. Seven students satisfactorily completed their courses of study in Calicut, eight in Mangalore and one in Bellary and all of them were awarded certificates. The Boards of Visitors and Selection Committees constituted for each school continued to function satisfactorily and during the year they met twice in Bellary and Mangalore and once in Calicut. The Bellary and Mangalore Schools participated in the local industrial exhibitions and were awarded certificates of merit for the excellence of their manufactures. The hostel attached to the Bellary school was opened on the 8th November 1937 by the Hon'ble Sri V. V. Giri, the Minister for Industries

and Labour. There are now 26 boarders in the hostel. The receipts and expenditure of these schools for the year were :—

	Receipts.	Expenditure. Recurring.	Expenditure. Non-recurring.	Net recurring cost.
	RS.	RS.	RS.	RS.
Calicut	11,362	19,730	720	8,368
Bellary	18,230	22,621	676	4,391
Mangalore	3,116	10,603	..	7,487
Total ..	32,708	52,954	1,396	20,246

It will be seen that the net cost to Government of running these schools during the year was Rs. 20,246 which is less than half the amount fixed by the Retrenchment Committee in 1932 and accepted by Government as reasonable. Proposals were submitted to Government during the year for the opening of additional classes in electrical wiring and casting and metal working at the Calicut School during 1938–39 and the orders of Government sanctioning the proposals were received shortly after the close of the year.

165. *Aided industrial schools.*—The non-textile schools were inspected by the Director and Deputy Director until the 20th November 1937, when, on the revival of his appointment, the Inspector of Industrial Schools took over the whole of the inspection work. The Principal, Government Textile Institute, continued to supervise the textile schools. Several applications from local bodies and private agencies for the starting of industrial schools in their areas were received during the year and necessary assistance was rendered them. Some new industrial schools under private management were recognized shortly after the close of the year. Additional courses of instruction were introduced in a few of the existing schools, namely, the Industrial School at Rajahmundry, the Servindia Agricultural and Industrial School at Mayanur, the St. Joseph's Industrial School at Tindivanam and the St. Therese's Institute at Salem. The recognition of the Anbian Art Industrial School at Armuganeri, Tinnevelly district, was withdrawn towards the close of the year. At the close of the year there were 73 recognized schools, excluding those managed by Government direct. On the 31st March 1938, there were 7,885 pupils receiving instruction in these schools (including Government institutions) as against 7,717 in the previous year. Of these, 2,635 were Indian Christians, 2,553 Non-Brahman Hindus, 946 Depressed Classes, 757 Brahmans, 499 Muhammadans, 168 Europeans and Anglo-Indians, 71 criminal tribes and 256 others. An amount of Rs. 91,804 was distributed in the form of maintenance grant (including Rs. 3,004 capitation grant), representing an average of

Rs. 20-8-0 per pupil per annum. A further grant of Rs. 10,472 was distributed as equipment grant and Rs. 19,629 as building grant to certain schools. The teachers' training sections attached to the St. Joseph's Industrial School, Tindivanam, in cabinet-making, the Church of Scotland Mission Girls' Industrial School, Madras, in embroidery and the American Mission Industrial School at Palmaner, Chittoor district, in needlework and dress-making, continued to function satisfactorily during the year.

Leather Trades Institute, Madras.

166. *Staff.*—Sri K. Seshachalam Choudhary continued as Leather Research Chemist and to function as Superintendent of the institute throughout the year. Sri P. Sivian Choudhary continued as temporary Tanning Expert throughout the period under review.

167. *Advice and assistance to tanners.*—The Tanning Expert visited a number of tanneries and demonstrated improved methods and processes of tanning. At a tannery at Erode, (i) wet pickling, (ii) correct method of soaking of dry hides, (iii) liming with the use of sharpening agents, and (iv) correct deliming and bating methods, were demonstrated. Practical instruction in regard to chemical tannages was given to a tanner at Sembiam. A demonstration of the method of wet pickling was conducted at a tannery at Pallavaram. At a tannery at Dindigul, a demonstration of the process of avaram tannage by introducing certain changes in the liming and deliming processes with a view to remedying loss of weight and dull colour, was carried out. Instructions were given to a tanner at Madhavaram in regard to the manufacture of chrome sheep lining as carried on in Calcutta and three lots of about one thousand skins were manufactured into lining leather. It is understood that, as a result, the tanner has been able to find a ready market for this leather. At the request of the District Collector, the Tanning Expert visited the tanneries at Ellore in connexion with the suits pending in the court in regard to the quantity of water to be charged for by the revenue authorities, and after collecting the necessary data he calculated the quantity of water consumed in the tanneries. Among the enquiries received by the Tanning Expert may be mentioned, (i) pickling of hides for tanning in order to remove bark stains and to improve the colour of the hides turned out, (ii) improvement of the colour of bark tanned sheep skins and retanning of discoloured tanned sheep skins, (iii) removal of slight stains from the flesh side of tanned goat skins due to defective oiling and in regard to a suitable method of oiling to avoid this defect, (iv) method of avoiding stains in tanned skins by allowing the water to settle and using the clear water for tan pits, and (v) method of retanning stained skins and avoiding

stains. The Tanning Expert inspected and passed each consignment of leather supplied to the Central Jail, Vellore, in order to ensure that deliveries were up to the standard of tendered samples. The samples of russets were selected at the Institute after tests and analyses. The Tanning Expert visited the Central Jail, Vellore, twice during the year, once for scrutinizing the cutting of russets for uppers and on another occasion for the selection of the tendered samples of soles, welting leathers, etc.

168. *Experiments and investigations.*—Experimental work on a small scale was carried out by the Tanning Expert during the year on (i) the pickling of hides and skins, (ii) Madras tannages with a view to introducing modifications that would result in a shortening of the period of the tanning process and so reduce the cost of tanning, (iii) the possibility of replacing the imported wattle bark by indigenous tanning materials, (iv) utilization to greater advantage of synthetic tannins, (v) preparation of suitable leather for water buckets, and (vi) improved methods of curing. In regard to the pickling of hides and skins, experiments were in the first instance carried out on wet pickling, but it was found that the wet method was not so advantageous as the dry method. Subsequently experiments were carried out on a small scale on dry pickling by which the prepared pelts are treated with chemical agents to give a false tannage to the skins and then dried so that they may be easily packed for export. The preliminary experiments initiated with a view to determining whether any improvement could be effected in the ordinary Madras tannage by shortening the period of tanning or by using lesser quantities of the materials employed in the different processes have given promising results, but the experiments require to be conducted on a larger scale in the tannery of the institute before the results of the experiments can be placed before the tanners. Experiments were conducted on a small scale with divi divi with the object of improving the colour of the leather and if they prove successful the way should be opened up to replacing wattle bark, at least to some extent, by divi divi in the tanning of hides. Preliminary experiments were initiated with a view to utilizing to the best advantage the synthetic tannins employed in Madras tannages by studying their action at different stages of the tanning process and with different tanning materials and providing a firm and full leather with special reference to its cost of manufacture and marketability. The chief use of leather in the non-deltaic districts of the Province is for making water buckets for lifting water from wells for irrigation purposes and experiments were initiated in the Institute with a view to the preparation of a leather suitable for water buckets by a cheap method which could be used by the village tanner on a cottage basis. Experiments were also carried out with the object of adopting and popularising improved methods of curing by using suitable

antiseptics along with salt. The results obtained from these several preliminary experiments have been promising and Government have sanctioned the necessary funds for the continuance and development of the experiments during the year 1938-39.

169. *Leather working class.*—A reference was made in last year's report to the opening of a class in the Institute for providing a year's intensive course in shoe-making and the manufacture of simple leather goods. The class was actually started on the 9th of March 1937. There were 12 students under training during the year of whom one was from the East Godavari, one from Coimbatore, one from Trichinopoly, and one from Guntur district, while the remainder were from Madras. Instruction was given in the tanning and dyeing of leather, besides the preparation of all classes of leather goods from wrist watch straps to suit cases. An amount of Rs. 185 was realized by the sale of the leather goods produced. The success of this class would appear to justify the starting of similar classes in other leather centres in the Province provided suitable instructors could be obtained for placing in charge of them.

170. *Leather chemistry and general chemical work.*—The Leather Research Chemist who was also in charge of the Institute, continued to devote part of his time to general industrial investigations in addition to his duties in the Leather Trades Institute, and in particular he was engaged during the year on a demonstration of the manufacture of improved jaggery from coconut juice in the Salem district which is referred to elsewhere in this report. The Government sanctioned the lending of the departmental coir appliances for a demonstration of improved methods of coir retting and coir production at Amalapuram, East Godavari district, and this demonstration was subjected to periodical supervision by the Leather Research Chemist. Eighty samples of tanning materials, water used in tanneries, lime, lime liquors, tan liquors, chrome liquors, leathers and effluents were analysed in the laboratory of the Institute during the year. The analyses of 16 samples of materials not pertaining to the sphere of leather chemistry such as jaggery, sugar, coconut oil, etc., were also carried out. The experimental work on the purification of the effluents from tanneries in Ellore to the standard of purification laid down for sewage effluents was continued. The last consignment of avaram bark from the plantations raised by the Forest department in various districts was received late in the year under review and as soon as it is analysed, the results will be tabulated and a consolidated report on the work done prepared. The work on South Indian terminalias was continued in the laboratory and the study of *terminalia arjuna* as a bark was completed, whilst, the study of *terminalia belerica* and of *terminalia tomentosa* were in progress at the end of the year.

171. *Certificate of country of origin of leather goods of local manufacture intended for export to Singapore.*—In December, the Tanning Expert was authorized by Government to issue certificates of the country of origin in respect of leather goods of local manufacture (e.g., money purses, watch straps, shoes, belts, bed straps, dog straps), with the sundry components used (e.g., buckles, rivets, studs, press buttons), intended for export to Singapore on payment of a fee of Rs. 5 per consignment.

SCHOOL OF ARTS AND CRAFTS, MADRAS.

172. *Staff.*—Sri D. P. Roy Choudhary, M.B.E., was in charge of the school throughout the year.

173. *Strength and attendance.*—The number of students on the rolls on the 31st March 1938 was 249 as against 244 in the previous year. The average attendance was 195 and the percentage of attendance during the year was 75 as against 78 in the previous year.

174. *General.*—In view of the success of the experimental work on enamelling on gold, silver, and copper which has opened up a new line of work for craftsmen so that it should be only a question of time for an artistic enamelling industry to be established in the Province, the Government sanctioned during the year the continuance of the Enamelling section up to 31st March 1940. Government sanctioned a proposal that in addition to the Champleve enamel and Cloisonne enamel work already taught, further experiments on two new methods of enamelling, namely, Plique a'Jour enamel and Bassetaille or encrusted enamel, should be carried on and the students trained in these two new methods also with effect from 1st April 1938. Good progress was made in turned lacquer work which has been taught on an experimental basis during the last two years. It was stated in last year's report, that it was intended to institute a pottery class with a view to providing training in improved methods of pottery for the members of the potter community and that a young graduate with a knowledge of chemistry had been recruited and sent to Calcutta for six months' training in the pottery section of the Industrial Research Laboratory. On his return a class was to be started to provide instruction in the manufacture of articles such as jars and domestic pottery, the instruction to include glazing. The class actually commenced work in the School of Arts and Crafts on the 5th January 1938 with a strength of five students. Subsequently two more students from the potter community were admitted making three from this community. Two more students were sent by the District Boards of Guntur and West Godavari. The students from the potter community were granted stipends of four annas a day per working day, whilst the students deputed by the District Boards of Guntur and West Godavari were granted scholarships of Rs. 10 and

Rs. 15, respectively. Experiments in glazed pottery were conducted with satisfactory results. Government sanctioned during the year proposals for the conversion, from 1st May 1938, of the pottery class into a ceramics course extending over a period of three years with a strength of ten students. The course is to be under the supervision of Sri V. R. Chitra, who will be designated Superintendent, Crafts section. The number of articles manufactured in the school during the year was 794 valued at Rs. 4,862-12-6 and the number of articles sold was 621 valued at Rs. 3,747-8-6. Repair work to the value of Rs. 424 was executed.

175. *Examinations.*—The results of the various Government Technical Examinations during the year are shown below with comparative figures in respect of the two preceding years:—

Year.	Number appeared.	Number passed.	Percentage.
1935-36	26	18	69
1936-37	52	28	54
1937-38	27	16	59

The annual school examinations were conducted in April and the students of the Arts and Crafts sections who had completed their training and passed the examinations were awarded diplomas. The Cotton Memorial Prize—a gold medal—was awarded to Das Gupta, a student of the modelling class of the Fine Arts section, whilst the Rao Bahadur N. R. Balakrishna Mudaliar's gold medals were awarded to C. Raju and N. Umapathi Asari of the Goldsmiths department.

176. *Stipends and scholarships.*—The number of scholarships and stipends awarded to students in the school from various sources was 45 as shown below:

i. Adi-Dravida industrial scholarships	17
ii. School stipends	15
iii. Victoria Technical Institute scholarships ...	9
iv. Dr. Rangachari's scholarship	2
v. Sri Venkateswara's scholarship	1
vi. Bihar Government's scholarship	1
	45

177. *Finance.*—The expenditure for the year amounted to Rs. 45,930-3-11 as against Rs. 45,658-0-2 in the previous year. The net cost of the school was Rs. 40,244-14-4, showing a decrease of Rs. 194-11-0 as compared with the previous year. As

mentioned in last year's report, in order to bring about a reduction in the net cost of the school, the fee payable by students admitted into the Fine Arts section from outside the Madras Province was raised from Rs. 3 to Rs. 5 per mensem, whilst a fee of Rs. 3 per mensem was charged for the first time in the case of students from Madras. In the case of the Crafts section, however, no fees are levied as the majority of the students under training in this section of the school come from poor families. The amount realized in the shape of fees during the year was Rs. 649-2-0 and this contribution enabled the net cost of the school to be reduced to a small extent as compared with the previous year. As new students are admitted in the course of the next two years, a larger amount will be realized from fees.

178. *Annual exhibition.*—The annual exhibition of the various specimens of arts and crafts prepared by the students and teachers of the school was not held during the year under review. It was usually held in the school in January, but was given up in favour of participation in the All-India Khadi and Swadeshi Exhibition held at Congress House in December and January, the Fine Arts section of which was organized by the Principal of the School. Practical demonstrations of enamelling work, leather work, lacquer turning work, and pottery were staged in the separate industrial section of the exhibition. A few specimens of the work of the students of the Fine Arts section were exhibited at the Fine Arts Academy Exhibition, Calcutta and some of them were awarded prizes in competition with professional artists of reputation.

Programme of Work for 1938–39.

179. I. *General.*—(*a*) Continuance of efforts to establish industries of basic importance, especially the manufacture of fertilisers, in the areas served by the hydro-electric projects.

(*b*) Completion of the investigation in regard to the possibility of manufacturing steel from the Salem iron ores.

(*c*) Collection of information in regard to the process employed in, and the equipment required for, the manufacture of various articles.

II. *Statistics.*—(*a*) Compilation of (i) a wholesale price index for Madras City, (ii) index numbers of import and export prices and (iii) a cost of living index for Madras City.

(*b*) Institution of a forecast of area and yield in respect of each variety of tobacco, subject to the approval of the Imperial Council of Agricultural Research.

(*c*) Compilation of weighted index numbers of wages in the textile industry, subject to the provision of the necessary staff for the work in time to permit of its being taken up during the year.

III. *Engineering.*—(*a*) Formulation of proposals for the opening of separate sections in the Industrial Engineering Workshop for (i) manufacture of agricultural implements, (ii) conduct of experiments in connexion with the devising of improved appliances for cottage industries, and (iii) experimental manufacture of components for radio sets.

(*b*) Evolution of a method of recovering silver from waste hypo in the photo-stat process of copying documents employed by the Registration Department.

(*c*) Examination of the possibility of introducing steps to control and regulate the degree of polishing in rice mills with a view to preventing unnecessary loss of the nutritive value of rice by over polishing.

(*d*) Examination of the possibility of substituting cement pipes or rings for steel lining pipes in boreholes.

(*e*) Institution of a log book for each drill and introduction of a system of stamping the description of steel used and the date of manufacture of each tool sent out from the workshop.

IV. *Industrial Education.*—(*a*) Setting up of a Technological Diploma Examination Board to control the conditions under which young men aspiring to the diplomas of the School of Technology or other central technological institutions, as school students or as outside students, are trained and examined for diplomas.

(*b*) Introduction of a course of electrical wiring at the Government Industrial School, Calicut.

(*c*) Introduction of a casting and metal working class at the Government Industrial School, Calicut.

(*d*) Examination of the possibility of providing more specialized courses of training in the Government Industrial Schools on the return of Sri V. R. Chitra from his deputation to Northern India.

V. *Textiles.*—(*a*) Conduct of experiments in silver wire drawing for gold thread manufacture.

(*b*) Development of the Government of India subvention scheme for the grant of assistance to the cumbly weaving and Ellore pile carpet industries and the intensification of efforts to develop an extended market for the products of the co-operative societies engaged in the production of the cumblies and carpets.

(*c*) Installation at the Government Textile Institute of the calendering and finishing plant of the Madras Handloom Weavers Provincial Co-operative Society, Limited.

(*d*) Attaching of a second hand calendering machine purchased from Messrs. Binny & Co. (Madras), Ltd., to a primary weavers co-operative society in one of the districts.

VI. *Sericulture.*—(*a*) Opening of two aided grainages.

(*b*) Conduct of further research on the diseases of silk worms.

(*c*) Organizing the supply of 51 lakhs of disease-free layings.

(*d*) Further rearing of univoltine seeds kept under hibernation.

(*e*) Increasing the supply of cross breed layings.

(*f*) Preparation on a small experimental scale of silk worm guts.

(*g*) Installation of a refrigerator at Kollegal for the hibernation of foreign univoltine seeds and cross breed layings.

(*h*) Conduct of propaganda work in connexion with the extension of the area under mulberry cultivation in the Kollegal taluk and in certain other district centres.

VII. *Kerala Soap Institute, Calicut.*—(*a*) Continuance and development of the laboratory experiments on the preparation of toilet creams, brilliantines, hair oils and other similar articles.

(*b*) Continuance of the experiments on the preparation of insecticides, fungicides and sprayers.

(*c*) Continuance and development of the experimental distillation of essential oils.

VIII. *Leather Trades Institute, Madras.*—(*a*) Continuance of the study of pickling of hides and skins.

(*b*) Further study of Madras tannages with a view to shortening the period of the tanning process.

(*c*) Continuance of the investigation of the possibility of replacing the imported wattle bark by an indigenous tanning material.

(*d*) Study of the possibility of utilizing to greater advantage the synthetic tans employed in Madras tannages.

(*e*) Preparation of a leather suitable for water buckets.

(*f*) Investigation into improved methods of curing.

IX. *School of Arts and Crafts.*—(*a*) Conduct of experiments on two new methods of enamelling, namely Plique a' Jour and Bassetaille or encrusted enamel, and training of students in these new methods.

(*b*) Introduction of a course in ceramics extending over a period of three years.

(*c*) Further development of the work on lacquer and of painting on leather.

180. *Receipts and expenditure.*—Hitherto only preliminary figures for the year were being exhibited in the statement of receipts and charges appended to the administration report of the department as it was not possible to obtain the final figures by the time the administration report was printed. This year, however, the final figures are available, as from 1937–38 the accounts are closed earlier than in the previous years. In the circumstances the final figures for 1936–37 and 1937–38 are given in the statement enclosed for purposes of comparison.

The following statement compares the receipts and expenditure of the department during the years 1936–37 and 1937–38. Details are exhibited in Appendix I.

Item.	1936–37.	1937–38.	Decrease — or Increase +.
	RS.	RS.	RS.
Expenditure	12,36,940	14,08,252	+ 1,71,912
Receipts	5,07,145	5,20,272	+ 13,127
Net cost	7,29,195	8,87,980	+ 1,58,785

It will be observed that there has been an increase both under expenditure and receipts during the year under review as compared with the previous year.

Expenditure.—There has been a decrease in the expenditure under the heads 'Grants-in-Aid to Industrial Schools, Industrial Scholarships, Textile Institute, and Experiments on oils and fats' at the Kerala Soap Institute to the extent of Rs. 10,878 as compared with that of the previous year. On the other hand, there has been an increase in expenditure under Direction, District Engineering, Industrial Schools, School of Technology, Leather Trades Institute, School of Arts and Crafts, Sericulture, Kerala Soap Institute, Calicut, Industrial Engineering Workshop and Miscellaneous Experiments to the extent of Rs. 1,04,773. An expenditure of Rs. 89,716 was incurred under the head 'Grants for the hand-spinning movement.' There was an expenditure of Rs. 80,365 under the head 'Grants for the hand-loom, sericultural and small scale cotton and woollen industries,' as against Rs. 87,397 during the previous year under the grants for 'Handloom and sericultural industries alone.' The amount of Rs. 80,365 was set off by a similar amount under receipts. The reduction in expenditure under 'Grants for Industrial Schools' and 'Industrial Scholarships' was due to the smaller provision sanctioned under 'Equipment' and to the reduction in the number of scholars and rates of scholarships, and to the fact that some of the scholars left the institutions before the completion of their training, while the reduction in expenditure under 'Experiments on oils and fats' at the Kerala Soap Institute was due to the restricted production of refined oils and non-arrival of machinery ordered. The reduction

under 'Textile Institute' does not call for comment. The increase in expenditure under 'Direction' was mainly due to the part payment to the Kollegal Silk Filatures, Ltd., of the purchase price of Rs. 17,850 worth of shares of the company, and to the payment of rent for the private building occupied by the office during the latter half of the year, under 'District Engineering' to larger amount spent on plant and machinery and to leave salary of the Assistant Industrial Engineers, under 'Industrial Schools' to the purchase of machinery for the Industrial Schools at Madura, Calicut and Bellary and to the larger amount spent under apparatus and materials and wages due to increased volume of orders, received by the schools. The increase under 'School of Technology' was due to leave salary of the permanent Principal of the School who availed himself of leave during the year, under Leather Trades Institute chiefly to the demonstration of the preparation of coconut and palmyra jaggery in the Salem district and to the conduct of factory tests in regard to the suitability for refining purposes of jaggery manufactured from sweet coconut toddy. The increase under 'Sericulture' was chiefly due to the purchase of French and Kashmir seeds and also to the increase in cost of Mysore seed cocoons purchased. The increase in expenditure under Kerala Soap Institute was due to increased purchase of raw materials owing to expansion of sales and the consequent increase in incidental expenses, and under Industrial Engineering Workshop to the rise in prices of raw materials and increased value of orders received from the Pumping and Boring section. The increase in expenditure under 'Miscellaneous Experiments' was mainly due to the introduction during the year of the scheme for developing the small scale woollen industries of the Province.

Receipts.—There was an increase under receipts under Industrial Schools, Textile Institute, Sericulture, Kerala Soap Institute and Industrial Engineering Workshop.

Net cost of the department.—The net cost of the department increased by Rs. 1,58,785 due to expansion of existing activities, and to the incurring of additional expenditure on new development schemes.

APPENDIX I.

Statement showing the Receipts and Charges of the Department of Industries for the years 1936–37 and 1937–38.

Receipts.	1936–37.			1937–38.		
	RS.	A.	P.	RS.	A.	P.
Pumping and boring	86,993	4	7	78,020	5	8
Industrial installations	3,151	12	0	2,348	16	0
Industrial schools	66,367	15	11	76,671	5	11
School of Arts and Crafts	5,779	8	10	4,706	2	6
Textile Institute	623	6	9	1,387	12	2
Sericulture	3,504	1	10	7,136	11	10
Sugarcane crushing mills	1,953	9	6	918	0	0
Rent of buildings	18	0	0	18	0	0
Kerala Soap Institute	1,82,098	14	7	2,92,614	4	11
Industrial Engineering Workshop ..	64,234	15	1	70,075	2	6
Grant for handloom industry ..	74,260	0	0	56,119	0	0
Grant for sericulture industry ..	13,137	1	3	15,484	8	6
Grant for small scale and woollen industries	..			8,761	12	6
Other receipts	6,220	7	1	5,341	15	8
Total ..	5,12,340	9	11	5,29,634	12	2
Recoveries of overpayments ..	1,726	11	0	518	9	3
Collection of payments for services rendered	3,759	5	0	3,696	11	0
Total ..	5,17,817	9	11	5,33,850	0	5
Deduct Refunds.	10,672	6	4	13,578	4	4
Net Receipts ..	5,07,145	3	7	5,20,271	12	1
Net cost of the department ..	7,29,194	5	4	8,87,980	6	10
Total ..	12,36,339	8	11	14,08,252	2	11

Expenditure.	1936–37.			1937–38.		
	RS.	A.	P.	RS.	A.	P.
A. Direction	1,15,918	0	6	1,26,026	5	8
B. District Engineering	3,06,022	13	0	3,14,390	3	0
C. Grants-in-aid to Industrial Schools	1,34,534	6	0	1,31,848	15	0
D. Industrial Scholarships ..	24,929	7	0	22,851	9	0
E. Industrial Schools	78,918	15	11	91,303	7	4
F. School of Technology	82,485	12	8	84,064	0	1
G. Leather Trades Institute ..	14,285	9	4	20,950	12	3
H. School of Arts and Crafts ..	45,656	12	2	45,939	3	11
J. Textile Institute	49,581	2	0	46,284	3	10
K. Sericulture	28,612	12	10	32,329	6	7
L. Kerala Soap Institute, Calicut.	1,62,472	7	8	1,95,295	14	3
Experiments on oils and fats at the Kerala Soap Institute, Calicut	17,156	5	0	11,343	10	5
M. Industrial Engineering Workshop	62,130	11	5	71,159	10	11
N. Grant for handloom industry.	74,260	0	0	56,119	0	0
O. Grant for sericultural industry.	13,137	1	3	15,484	8	6
P. Miscellaneous experiments ..	2,974	7	2	21,921	3	7
Q. Grants for the handspinning movement	..			89,716	0	0
Total ..	12,10,847	8	11	12,73,065	0	10
Expenditure in England stores ..	3,165	0	0	12,443	0	1
Expenditure other than on stores..	22,778	0	0	17,061	3	7
	12,36,840	8	11	14,08,469	6	6
Gain by exchange	151	0	0	157	3	7
Total ..	12,36,339	8	11	14,08,252	2	11

APPENDIX II.

Statistics relating to Government and recognized Industrial Schools for 1937–38.

Serial number, name and place of institution.	Number on rolls on 31st March.		Mechanical Engineering.		Electrical Engineering.		Wood working trades.		Rattan work.		Textiles, cotton.		Textiles, wool.		Other textile trades.		Lace embroidery and needle work.		Other subjects (specified in remarks column).		Remarks.
	1937.	1938.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
GOVERNMENT INSTITUTIONS.																					
1 Government School of Technology, Madras.	1,219	1,150	1,165	34	418	90	..	..	..	..	..	..	..	..	..	..	..	..	(a) 567	43	(a) Printing .. 107 Electrical wiring .. 111 Plumbing .. 52 Vernacular drawing 35 Preparatory classes . 130 Railway apprentices .. 122 Metal casting .. 10 Total .. 567
2 School of Arts and Crafts, Madras.	244	249	53	..	16	..	48	..	51	..	36	..	..	..	..	..	3	..	(b) 34	..	(b) Printing .. 17 Leather works .. 6 Miscellaneous .. 11 Total .. 34
3 Government Textile Institute, Madras.	106	112	..	..	..	..	..	..	..	..	112	16	..	..	..	..	..	..	..	..	
4 Government Industrial School, Calicut.	55	53	38	5	..	..	15	2	..	..	..	..	..	..	..	..	..	..	..	..	
5 Government Trade School, Mangalore.	52	50	39	6	..	..	11	2	..	..	..	..	..	..	..	..	..	..	..	..	
6 Government Industrial School, Bellary.	59	73	50	..	..	..	23	1	..	..	..	..	..	..	..	..	..	..	..	..	
7 Government Industrial School, Madura.	87	100	56	12	23	..	16	6	..	..	..	..	..	..	..	..	..	..	..	..	
ADED SCHOOLS (BOYS).																					
8 C.N.T. Institute, Vepery, Madras.	474	478	190	46	56	21	26	3	..	..	..	..	..	..	..	..	..	..	208	16	Printing, Engine driving workshop mechanism.
Anjuman Industrial School, Madras.	87	93	..	..	..	..	58	11	4	3	..	..	..	..	..	..	..	..	31	10	Tailoring.
10 Orr's Assisted Industrial School, Madras.	47	73	41	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	6	Vernacular Drawing.
11 Ramakrishna Mission Industrial School, Mylapore, Madras.	43	48	48	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
12 Gokulam Cottage Industries School, Madras.	46	50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	30	Bee-keeping and Sericulture.
13 Sri Ram Motor School, Madras.	32	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	6	Motor car driving.
14 A.A.M. Industrial School, Katpadi.	115	123	..	..	..	..	83	20	..	..	..	..	..	..	..	..	..	..	20	6	Do.
15 Anjuman Industrial School, Vellore.	87	93	..	..	..	..	83	4	..	..	..	..	..	..	..	..	..	..	..	..	
16 Anjuman Industrial School, Melvisharam.	63	63	..	..	..	..	63	3	..	..	..	..	..	..	..	..	..	..	..	..	
17 Anjuman Industrial School, Tiruppattur.	40	44	..	..	..	..	44	3	..	..	..	..	..	..	..	..	..	..	..	..	
18 Don Bosco Industrial School, Vellore.	26	25	..	..	..	..	35	5	..	..	..	..	..	..	..	..	..	..	..	..	
19 St. Joseph's Industrial School, Tindivanam.	74	78	..	..	..	..	78	6	..	..	..	..	..	..	..	..	..	..	..	..	
20 Danish Mission Industrial School, Panruti.	21	62	..	..	..	..	50	4	..	..	12	2	..	..	..	..	..	..	..	..	
21 C.S.M. Agricultural School, Melrosapuram.	65	73	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	73	10	Agriculture and allied trades.
22 A.A.M. Industrial School, Veladiori.	23	23	..	..	..	..	22	4	..	..	..	..	..	..	..	..	..	..	..	..	
23 Kodambakkam Industrial School, Kodambakkam.	27	22	5	2	..	..	12	2	12	3	..	..	..	..	..	..	..	..	..	..	
24 Victory Memorial Blind School, Poonamallee.	17	34	..	..	..	..	..	..	34	..	..	50	..	..	..	..	..	..	..	..	
25 Lady Willingdon Leper Settlement, Tiruvanai, Chingleput district.	17	16	..	..	..	..	16	2	..	..	..	..	..	..	..	..	..	..	..	..	
26 St. Joseph's Industrial School, Coimbatore.	173	156	48	5	..	..	98	10	10	1	..	..	..	..	..	..	..	..	..	..	
27 P.S.G. & Sons Charity Industrial Institute, Peelamedu.	241	215	22	10	43	5	37	6	..	..	24	2	..	..	..	..	..	..	19	..	Printing.
28 L.M. Weaving School, Erode.	43	43	..	..	..	..	..	..	..	..	43	11	..	..	..	..	..	..	..	..	
29 U.L.C.M. Rural Reconstruction School, Guntur.	27	31	..	..	..	..	..	..	..	..	9	..	..	..	..	..	..	..	22	4	Agricultural trades.
30 American Mission Cabinet Making School, Guntur.	39	42	3	..	..		..	39	3	..	..	..	..	..	..	..	..	..	..	..	

APPENDIX II—*cont.*

Statistics relating to Government and recognized Industrial Schools for 1937–38—*cont.*

Serial number, name and place of institution.	Number on rolls on 31st March.		Mechanical Engineering.		Electrical Engineering.		Wood working trades.		Rattan work.		Textiles, cotton.		Textiles, wool.		Other textile trades.		Lace embroidery and needle work.		Other subjects (specified in remarks column).		Remarks.
	1937.	1938.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
AIDED SCHOOLS (BOYS)—*cont.*																					
31 Commonwealth Trust Engineering Works, Mangalore.	16	17	17	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
32 Industrial School, Rajahmundry.	113	121	10	..	..	..	19	..	..	..	..	..	..	..	..	..	..	..	92	..	Paper-making and book-binding.
33 Sri Krishna Parisramalayam, Industrial School Kavutaram.	25	27	..	..	..	..	27	2	..	..	..	..	..	..	..	..	..	..	..	..	
34 C.M.S. Industrial School, Vidyanagar.	20	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	4	Leather work
35 St. Joseph's Industrial School Ongadala.	77	84	..	..	..	..	84	9	..	..	..	..	..	..	..	..	..	..	..	..	
36 Municipal Technical Institute, Masulipatam.	88	60	44	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	..	Artisan course.
37 Pasumalai Trades School, Pasumalai, Madura.	58	54	17	5	..	..	23	7	..	..	..	..	..	..	..	..	..	..	14	5	Printing.
38 C.S.M. Industrial School, Dindigul.	64	50	6	2	..	..	31	4	..	..	..	..	..	..	..	..	..	..	13	7	Tailoring.
39 St. Joseph's Industrial School, Ootacamund.	56	38	..	..	..	..	38	5	..	..	..	..	..	..	..	..	..	..	..	..	
40 District Board Industrial School, Sivagangai, Ramnad district.	38	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	25	Agricultural, animal husbandry, poultry farming and bee-keeping.
41 St. Theresa's Industrial School, Salem.	51	44	6	..	..	..	38	5	..	..	..	..	..	..	..	..	..	..	..	..	
42 St. Francis Xavier's Industrial School, Tanjore.	97	109	..	..	..	..	60	11	..	..	45	..	..	..	..	..	..	..	..	..	
43 St. Mary's Industrial School, Kumbakonam.	61	67	5	..	..	..	59	6	..	..	..	..	..	..	..	..	..	..	..	..	
44 Municipal Industrial School, Kumbakonam.	29	29	..	..	..	..	19	3	..	..	10	2	..	..	..	..	..	..	..	..	
45 Board Industrial School, Tanjore.	32	35	17	..	..	..	18	..	..	..	..	..	..	..	..	..	..	..	..	..	
46 S.P.G. Art Industrial School, Nazareth.	130	127	20	7	..	..	87	10	..	..	..	..	..	..	..	..	..	..	20	4	Tailoring.
47 St. Joseph's Industrial School, Adaikalapuram.	49	75	..	..	..	..	48	2	..	..	27	2	..	..	..	..	..	..	..	..	
48 C.M.S. Industrial School for the Blind, Palamcottah.	38	41	..	..	..	..	..	..	..	..	..	..	..	..	35	4	..	..	6	..	Gardening.
49 St. Ignatius Industrial School, Tuticorin.	38	31	..	..	..	..	29	2	2	..	..	..	..	..	..	..	..	..	..	..	
50 Anbian's Art Industrial School, Arumanaeri.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Recognition since withdrawn.
51 St. Joseph's Industrial School, Trichinopoly.	120	108	48	6	..	..	60	5	..	..	..	..	..	..	..	..	..	..	..	..	
52 Methodist Mission Industrial School, Karur.	105	100	2	..	..	..	63	10	3	..	37	2	..	..	..	..	..	..	..	..	
53 All Saints' Industrial School, Puthur.	31	28	..	..	..	..	..	23	3	..	..	..	..	..	..	..	..	..	..	..	
54 Servindia Agricultural and Industrial School, Mayanur.	24	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40	..	Agriculture and subsidiary industries.
55 St. Aloysius Industrial School, Vizagapatam.	25	24	24	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
AIDED SCHOOLS (GIRLS).																					
56 C.S.M. Industrial School, Kilpauk.	61	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	78	43	..	..	
57 Sevasadan Industrial School, Chetput, Madras.	78	83	..	..	..	..	..	..	10	..	..	..	..	..	..	..	43	3	25	..	
58 St. Bridget Industrial School, Nungambakkam.	38	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40	6	..	..	
59 St. Agnes Industrial School, Rayapuram.	49	55	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2	3	..	..	

56

Statistics relating to Government and recognized Industrial Schools for 1937–38—*cont.*

Serial number, name and place of institution.	Number on rolls on 31st March.		Mechanical Engineering.		Electrical Engineering.		Wood working trades.		Rattan work.		Textiles, cotton.		Textiles, wool.		Other textile trades.		Lace embroidery and needle-work.		Other subjects (specified in remarks column).		Remarks.
	1937.	1938.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
AIDED SCHOOLS (GIRLS)—*cont.*																					
60 St. Thomas Convent Industrial School, Mylapore.	31	34	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34	..	..	..	
61 O.S.M. Lace School, Chingleput	69	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	65	16	..	..	
62 Methodist Mission Industrial School, Ikkadu.	110	97	..	..	..	..	..	..	..	..	28	2	..	..	..	..	59	7	..	..	
63 St. Antony's Industrial School, St. Thomas' Mount.	83	56	..	..	..	..	..	..	..	..	..	..	..	..	..	..	56	4	..	..	
64 L.M. Girls' Industrial School, Erode.	48	56	..	..	..	..	..	..	..	..	..	..	..	..	..	..	56	7	..	..	
65 Methodist Mission Industrial School, Dharapuram.	57	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	4	..	..	
66 Immaculate Conception Convent, Coimbatore.	43	38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38	5	..	..	
67 St. Joseph's Orphanage Industrial School, Guntur.	4	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	
68 St. Joseph's Industrial School, Madura.	28	28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28	15	..	..	
69 Nazareth Convent Girls' Industrial School, Gotacamund.	28	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	3	..	..	
70 Leipzig Mission Womens' Industrial School, Mayavaram.	30	28	..	..	..	..	..	..	..	..	17	4	..	..	..	..	7	3	4	2	Mat weaving.
71 R.C. Lace School, Vadakangulam.	32	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	7	..	..	
72 Hindu Girls' School, Kudungulam.	28	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	..	..	..	
73 Holy Cross Convent Industrial School, Tuticorin.	77	55	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55	18	..	..	
74 Holy Cross Convent Industrial School, Trichinopoly.	38	44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44	4	..	..	
75 St. Joseph's Convent Industrial School, Bellary.	23	94	..	..	..	..	..	..	..	..	..	..	..	..	..	..	94	6	..	..	
76 A.A.M. Women's Industrial School, Palmaner.	33	69	..	..	..	..	..	..	..	..	..	..	..	..	..	..	69	19	..	..	
77 Commonwealth Embroidery School, Calicut.	23	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	4	..	..	
78 St. Vincent Girls' Industrial School, Calicut.	43	38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38	5	..	..	
79 Sacred Heart Convent Industrial School, Anjengo.	26	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	3	..	..	
80 O.E.L.M. Girls' Industrial School, Nayudupet.	47	45	..	..	..	..	..	..	..	..	..	..	..	..	..	..	45	1	..	..	

APPENDIX III.

Statistics relating to Government and recognized Industrial Schools for the year 1937–38.

Serial number, name and place of institution.	Number on rolls on 31st March 1938.	Total recurring cost, (excluding expenditure on new buildings and equipment).	Receipts from Fees.	Receipts from Sales.	Total, columns (4) and (5).	Net recurring cost, column (3) *minus* column (6).	Net recurring cost per pupil, column (7) ÷ column (2).	Recurring grants from Department of Industries. Maintenance.	Recurring grants from Department of Industries. Scholarships.	Recurring grants from Department of Industries. Stipends.	Recurring grants from other departments or public bodies.	Total recurring grants, columns (9), (10), (11) and (12).	Balance of recurring cost met by managers' funds, column (7) *minus* column (13).	Non-recurring. Expenditure on new buildings.	Non-recurring. Building grant.	Non-recurring. Equipment grant.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
		RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
GOVERNMENT INSTITUTIONS.																
1 Government School of Technology, Madras.	1,159	84,881	28,247	..	28,247	56,734	50	..	2,155	..	..	2,155	54,579	..	..	..
2 School of Arts and Crafts, Madras.	249	45,080	5,685	..	5,685	40,245	162	..	1,342	..	..	1,342	38,903	..	..	..
3 Government Textile Institute, Madras.	112	46,254	..	1,388	1,388	44,866	401	..	3,088	..	..	3,088	41,808	..	..	..
4 Government Industrial School, Calicut.	53	19,790	..	11,362	11,362	8,368	158	..	2,128	..	..	2,128	6,240	..	..	720
5 Government Trade School, Mangalore.	50	10,603	..	3,116	3,116	7,487	150	..	..	..	..	..	7,487	..	..	..
6 Government Industrial School, Bellary.	73	22,621	..	18,230	18,230	4,391	60	..	1,608	..	..	1,608	2,783	..	..	675
7 Government Industrial School, Madura.	100	30,711	..	19,423	19,423	11,288	113	..	3,148	..	..	3,148	8,140	..	..	6,116
AIDED SCHOOLS (BOYS).																
8 C.M.S. Institute, Vepery, Madras.	478	56,226	21,193	6,730	27,923	27,303	57	5,500	1,395	585	...	7,480	19,823	..	100	500
9 Anjuman Industrial School, Madras.	98	36,036	..	7,413	7,413	28,623	307	5,300	..	..	..	5,300	..	..	..	53
10 Gri's Assisted Industrial School, Madras.	73	1,700	..	..	..	1,700	23	790	..	..	..	790	910	..	..	..
11 Ramakrishna Mission Industrial School, Mylapore.	48	14,282	1,437	4,932	6,369	7,913	165	2,200	400	..	..	2,600	5,313	..	..	500
12 Gokulam Cottage Industrial School, Madras.	50	2,945	..	90	90	2,855	571	750	45	..	..	795	2,110	..	..	135–8–0
13 Sri Ram Motor School, Madras.	16	..	..	..	..	Unaided school.										
14 A.A.M. Industrial School, Katpadi.	123	1,65,430	..	67,566	67,566	97,864	80	3,400	261	..	..	3,661	94,203	..	..	..
15 Anjuman Industrial School, Vellore.	83	20,818	..	12,343	12,343	8,475	102	1,900	294	..	558	2,752	5,723	..	..	200
16 Anjuman Industrial School, Melvisharam.	63	13,440	..	4,365	4,365	9,075	144	1,425	..	..	..	1,425	..	..	250	150
17 Anjuman Industrial School, Tiruppattur.	44	5,739	..	2,023	2,023	3,716	84	850	228	..	..	1,078	2,638	..	..	150
18 Don Bosco Industrial School, Vellore.	35	9,408	..	2,953	2,953	6,455	184	700	221	..	..	921	5,464	4,000	2,000	..
19 St. Joseph's Industrial School, Tindivanam.	78	37,366	..	18,939	18,939	18,427	236	2,950 + 1,800 (c)	299	..	464	3,713 + 1,800 (c)	12,914	..	..	..
20 Danish Mission Industrial School, Panruti.	62	23,469	..	8,498	8,498	14,971	241	2,800	92	..	80	2,972	11,999	..	..	..
21 C.S.M. Agricultural School, Melrosapuram.	73	7,354	..	865	865	6,489	89	1,100	146	..	..	1,246	5,243	..	..	150
22 A.A.M. Industrial School, Velacheri.	22	4,524	..	1,380	1,380	3,144	143	520	125	268	..	913	2,231	..	..	..
23 Kodambakkam Industrial School, Kodambakkam	29	4,430	..	2,160	2,160	2,270	78	650	..	..	..	650	1,620	..	..	..
24 Victory Memorial Blind School, Poonamallee.	84					Unaided schools.										
25 Lady Willingdon Leper Settlement, Tirumani, Chingleput district.	16															
26 St. Joseph's Industrial School, Coimbatore.	156	98,172	75	76,367	76,442	21,730	139	3,650	452	..	78	4,180	17,550	..	..	172
27 P.S.G. & Sons Charity Industrial School, Peelamedu.	215	16,356	762	5,531	6,293	10,063	47	800	262	..	15	1,077	8,986	22,448	7,010	3,000
28 London Mission Weaving School, Erode.	43	5,643	1	116	117	5,526	129	1,200	41	21	62	1,324	4,202	..	..	70
29 U.L.C.M. Rural Reconstruction School, Guntur.	31	8,503	..	2,082	2,082	6,421	207	700	14	..	..	714	5,707	848	422	83
30 American Mission Cabinet making School, Guntur.	52	22,796	..	10,766	10,766	12,030	236	1,000	137	..	..	1,137	10,893	1,143	500	112
31 Commonwealth Trust Engineering Works, Mangalore.	17	852	..	..	..	852	50	750	42	..	..	792	460	..	..	..
32 Industrial School, Rajahmundry.	121	7,428	..	1,174	1,174	6,254	52	800	11	..	119	930	5,324	..	..	200
33 Sri Krishna Parisramalayam Industrial School, Kavutharam.	27	..	..	..	..	..	..	1,000	..	..	..	1,000	..	..	..	..
34 C.M.S. Industrial School, Vidyanagar.	20	3,772	..	1,150	1,150	2,622	131	500	60	..	..	560	2,062	..	..	50
35 St. Joseph's Industrial School, Gunavala.	84	15,125	..	6,226	6,226	8,899	106	1,650	340	..	305	2,295	6,604	..	..	.

APPENDIX III—*cont.*

Statistics relating to Government and recognized Industrial Schools for the year 1937–38—*cont.*

Serial number, name and place of institution.	Number on rolls on 31st March 1938.	Total recurring cost (excluding expenditure on new buildings and equipment).	Receipts from Fees, etc.	Receipts from Sales.	Receipts and expenditure to the nearest rupee. Total, columns (4) and (5).	Net recurring cost, column (3) *minus* column (6).	Net recurring cost per pupil, column (7) ÷ column (2).	Recurring grants from Department of Industries. Maintenance.	Recurring grants from Department of Industries. Scholarships.	Recurring grants from Department of Industries. Stipends.	Recurring grants from other departments or public bodies.	Total recurring grants, columns (9), (10), (11) and (12).	Balance of recurring cost met by managers' funds, column (7) *minus* column (13).	Non-recurring. Expenditure on new buildings.	Non-recurring. Building grant.	Non-recurring. Equipment grant.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
		RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	A. P.
AIDED SCHOOLS (BOYS)—*cont.*																
36 Municipal Technical Institute, Masulipatam.	60	15,347	1,423	8,256	9,679	5,668	94	1,000	106	262	300	1,969	4,299	..	..	..
37 C.B.M. Industrial School, Samalkottah.	..	..	..	..	..	..	..	280	..	..	..	280	..	..	..	..
38 Pasumalai Trades School, Pasumalai.	54	76,745	72	61,657	61,729	15,016	278	1,690	73	..	516	2,219	12,797	..	134	300–0–0
39 C.S.M. Industrial School, Dindigul.	50	21,360	17	7,494	7,511	13,849	277	1,300	116	61	23	1,500	12,349	..	..	150–0–0
40 St. Joseph's Industrial School, Ootacamund.	38	38,426	..	20,914	20,914	17,512	461	850	139	..	161	1,210	16,302	..	..	212–7–0
41 District Board Industrial School, Sivaganga, Ramnad district.	30	..	..	156	..	..	..	1,100	..	..	..	1,000	..	..	..	354–8–0
42 St. Theresa's Industrial School, Salem.	44	8,493	..	4,046	4,046	4,449	101	900	50	..	..	950	3,499	..	..	..
43 St. Francis Xavier's Industrial School, Tanjore.	103	30,699	..	15,084	15,084	15,608	151	1,400	165	..	..	1,565	14,041	..	..	..
44 St. Mary's Industrial School, Kumbakonam.	67	20,830	..	13,440	13,440	7,390	110	1,400	..	..	..	1,400	5,990	..	..	..
45 Municipal Industrial School, Kumbakonam.	25	3,071	..	216	216	2,855	114	900	..	..	..	900	..	..	..	32–12–0
46 Board Industrial School, Tanjore.	35	..	..	..	..	..	..	800	..	..	..	800	..	..	6,600	750–0–0
47 S.P.G. Art Industrial School, Nazareth.	127	23,887	..	14,349	14,349	14,538	113	3,800	230	..	70	4,100	10,438	..	..	50–0–0
48 St. Joseph's Industrial School, Adaikalapuram.	75	8,643	..	2,805	2,805	5,838	78	1,200	29	..	..	1,229	4,609	..	..	746–1–0
49 C.M.S. Industrial School for the Blind, Palamcottah.	41	9,606	..	3,970	3,970	5,636	139	1,700	102	..	300	2,102	3,534	..	..	..
50 St. Ignatius Industrial School, Tuticorin.	31	4,193	..	461	461	3,732	120	600	57	..	..	657	3,075	..	..	..
51 St. Joseph's Industrial School, Trichinopoly.	108	94,972	..	61,000	61,000	33,972	315	2,800	1,197	473	375	4,785	29,187	..	..	250–0–0
52 Methodist Mission Industrial School, Karur.	100	34,607	..	10,524	10,524	24,083	241	2,500	427	..	784	3,711	20,372	4,672	2,000	..
53 All Saints' Industrial School, Puthur.	28	9,724	..	3,106	3,106	6,618	236	900	24	..	..	924	5,694	..	..	100–0–0
54 Servindia Agricultural and Industrial School, Mayavar.	40	3,275	..	756	756	2,519	63	840	88	36	48	1,002	1,517	556	300	491–12–0
55 St. Aloysius Industrial School, Vizagapatam.	24	42,089	60	20,739	20,799	21,290	888	1,300	30	..	..	1,330	19,960	..	..	..
56 Anbian's Industrial School, Arumuganeri.	..	..	..	..	..	..	..	650	..	..	..	650	..	..	..	.. ‡
AIDED SCHOOLS (GIRLS).																
57 C.S.M. Industrial School, Ellipank.	78	8,558	588	2,831	3,419	5,139	66	410 + 180 (*e*)	47	..	..	457 + 180 (*e*)	4,502	..	..	25–0–0
58 Seva Sadan Industrial School, Chetput, Madras.	83	..	..	..	..	..	..	1,200	34	..	..	1,200	..	..	..	..
59 St. Bridget's Industrial School for Girls, Nungambakam, Madras.	40	..	..	..	..	..	..	1,700	..	..	..	1,700	..	..	..	100–0–0
60 St. Anne's Industrial School, Rayapuram.	55	5,803	..	370	370	5,433	99	675	33	..	..	708	4,725	..	..	100–0–0
61 St. Thomas Convent Industrial School, Mylapore.	84	8,518	..	983	983	7,535	221	400	113	..	..	513	7,022	..	..	..
62 C.S.M. Lace School, Chingleput.	65	4,377	..	864	864	3,513	54	400	70	..	..	520	2,993	..	..	23–0–0
63 Methodist Mission Industrial School, Jakadu.	97	25,084	..	16,792	16,792	8,132	25	850	423	..	..	1,273	7,919	..		
64 St. Anthony's Industrial School, St. Thomas' Mount.	56	..	..	..	..	..	..	700	113	..	..	700	..	..		
65 L.M. Girls' Industrial School, Erode.	56	..	..	..	..	..	..	300	..	..	..	300	..			..
66 Methodist Mission Industrial School, Dharapuram.	31	3,294	..	1,988	1,988	1,306	42	450	..	..	..	450	..	..	..	..
67 Immaculate Conception Convent, Coimbatore.	38	7,565	..	2,014	2,014	5,551	146	950	60	..	..	950	..	..	..	125–0–0

* Recognition withdrawn from 1st August 1936. Grant paid for the previous year.
† Recognition since withdrawn
‡ Recognition withdrawn.

APPENDIX III—*cont.*

Statistics relating to Government and recognized Industrial Schools for the year 1937–38—*cont.*

Serial number, name and place of institution.	Number on rolls on 31st March 1937.	Total recurring cost (excluding expenditure on new buildings and equipment).	Receipts from Fees, etc.	Receipts from Sales.	Receipts and expenditure to the nearest rupee. Total, columns (4) and (5).	Net recurring cost, column (3) minus column (6).	Net recurring cost per pupil, column (7) ÷ column (2).	Recurring grants from Department of Industries. Maintenance.	Scholarships.	Stipends.	Recurring grants from other departments or public bodies.	Total recurring grants, columns (9), (10), (11) and (12).	Balance of recurring cost met by managers' funds, column (7) minus column (13).	Non-recurring. Expenditure on new buildings.	Building grant.	Equipment grant.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
AIDED SCHOOLS (GIRLS)—*cont.*		RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS. A. P.
68 St. Joseph's Orphanage Industrial School, Guntur.	5	1,537	76	178	254	1,283	257	..	..	..	..	..	1,283	..	..	..
69 St. Joseph's Industrial School, Madura.	28	3,056	..	..	..	3,056	109	500	33	..	..	533	2,523	..	..	..
70 Nazareth Convent Girls' Industrial School, Ootacamund.	21	8,913	..	2,236	2,236	6,677	318	800	..	..	..	800	..	..	..	..
71 Leipzig Mission Women's Industrial School, Mayavaram.	28	3,605	..	1,343	1,343	3,262	595	1,500	74	23	..	1,597	1,665	..	..	100-1-0
72 R.C. Lace School, Vadakkanulam.	31	2,211	..	67	67	2,144	69	500	..	..	..	500	1,644	..	..	..
73 Hindu Girls' School, Kudanguiam.	21	—	..	209	..	..	..	100	68	..	..	100	..	..	..	..
74 Holy Cross Convent Industrial School, Tuticorin.	55	3,465	..	..	..	3,465	63	900	..	..	..	900	..	..	..	41-0-0
75 Holy Cross Convent Industrial School, Trichinopoly.	44	3,095	..	..	..	3,095	90	800	..	..	..	800	..	..	..	57-0-0
76 St. Joseph's Convent Industrial School, Bellary.	94	4,895	..	50	50	4,845	52	1,500	14	..	..	1,500	..	..	..	36-15-0
77 A.A.M. Women's Industrial School, Palamner.	69	5,043	164	3	167	4,876	71	1,400 + 240 (c)	50	..	..	1,458 + 240 (c)	3,160	..	..	148-0-0
78 The Commonwealth Embroidery School, Calicut.	23	2,050	..	1,074	1,074	1,876	81	700	47	..	..	747	1,129	..	..	..
79 St. Vincent Girls' Industrial School, Calicut.	38	4,941	..	254	254	4,587	121	750	80	..	..	830	3,757	..	..	24-4-0
80 Sacred Heart Convent Industrial School, Anjengo.	23	2,002	..	7	7	1,995	86	400	115	..	..	400	..	..	..	..
81 O.E.L.M. Girls' Industrial School, Nayindatet.	45	7,541	..	2,822	2,822	4,719	105	500	..	..	..	500	..	..	..	..

APPENDIX IV.

Statistics relating to recognized Industrial Schools for the year 1937–38.

Serial number and name of the institution.	Subjects in which instruction is provided.	Number of candidates who passed out in the year.	Particulars as far as available as to the after-career of the passed candidates.	Approximate total value of work turned out.			Sale-proceeds of school manufacture during the year.		
(1)	(2)	(3)	(4)	(5)			(6)		
AIDED SCHOOLS (BOYS).				RS.	A.	P.	RS.	A.	P.
C.N.T. Institute, Vepery, Madras ..	(a) Mechanical engineering, (b) electrical engineering, (c) electric mechanics, (d) electric wiring, (e) workshop mechanics, (f) carpentry, (g) oil engine driving.	(a) 15, (b) 15, (c) 31, (d) 6, (e) 12, (f) 2 and (g) 4.	Eleven are employed ..	8,247	0	0	6,076	0	0
2 The Anjumam Industrial School, Madras.	(a) Carpentry and rattan work, (b) carpet-weaving and dyeing and (c) tailoring.	(a) 11, (b) 3, and (c) 10.	Sixteen employed outside.	6,287	15	6	6,401	13	2
3 Orr's Assisted Industrial School, Madras.	Workshop theory and practice, mechanical engineering, scientific and mathematical instruments making.	....	....	..			..		
4 The Ramakrishna Mission Industrial School, Mylapore, Madras.	Automobile engineering, course leading to L.A.E. diploma (five years).	4	All the four are employed.	5,159	0	0	4,032	0	0
5 Gokulam Cottage Industrial School, Royapetta, Madras	(a) Bee-keeping carpentry and agriculture ..	30	Six are employed ..	220	0	0	42	8	0
6 Sri Ram Motor School, Madras	....	....	....	..			..		
A.A.M. Industrial School, Katpadi ..	Cabinet-making and carpentry, (b) Blacksmithy and motor mechanics.	(a) 20 and (b) 6.	Eighteen are employed ..	2,130	0	0	1,870	0	0
8 The Anjuman Industrial School, Vellore.	Cabinet-making	4	All are employed. ..	10,320	0	0	11,599	4	9
9 The Anjuman Industrial School, Melvisharam.	Do.	3	....	5,469	0	0	4,417	0	0
10 The Anjuman Industrial School, Tiruppattur.	Do.	3	Two employed as carpenters.	2,000	0	0	2,023	0	0
11 Don Bosco Industrial School, Vellore ..	Carpentry and cabinet-making	5	Three will continue as carpenters in the school itself.	2,952	10	6	2,952	10	6
12 St. Joseph's Industrial School, Tindivanam	Do.	8	All are employed as wood-workers.	16,245	0	0	18,259	0	0
13 Danish Mission Industrial School, Panruti.	(a) Carpentry and cabinet-making, (b) weaving.	(a) 4 and (b) 2..	....	6,392	5	2	3,493	14	0
14 C.S.M. Agricultural School, Melrosapuram.	Agriculture, carpentry, leafwork, mat-weaving tape-weaving, cloth-weaving poultry and goat-rearing.	10	Six are employed ..	915	0	0	831	0	0
15 Lady Willingdon Leper Settlement, Chingleput.	Carpentry	2	....	3,000	0	0	..		
16 A.A.M. Industrial School, Velacheri, St. Thomas Mount.	Cabinet-making	4	All are unemployed ..	1,535	12	5	1,379	9	10
17 Kodumbakkam Welfare Centre Industrial School.	(a) Woodwork, (b) Rattan work and (c) Smithy.	(a) 2, (b) 3 and (c) 2.	....	2,618	0	0	2,160	0	0
18 Victory Memorial Blind School, Poonamalle.	Cotton weaving and rattan work	..	....	3,750	0	0	3,595	0	0
19 St. Joseph's Industrial School, Coimbatore.	(a) Carpentry and (b) fitting	(a) 10 and (b) 5	All are employed	80,000	0	0	76,367	2	11
20 P.S.G. & Sons Charity Industrial Institute, Peelamedu.	(a) Mechanical engineering, (b) carpentry, (c) electrician's course, (d) printing and (e) weaving.	15	All are employed outside in the corporation workshop, in the Hydro-Electric department and in the local mills except one who was absorbed in the school workshop.	4,33,066	9	9	4,41,529	13	7
21 London Mission Weaving School, Erode.	Cotton-weaving	11	Some are employed in the factory side of the school while the rest are working in the villages.	150	0	0	116	0	9
22 U.L.C.M. Rural Reconstruction School, Guntur.	Agriculture and allied trades	4	All are employed in the Agriculture farm.	..			.		
23 A.M. Cabinet-making School, Guntur ..	Carpentry and rattan work	2	....	..			..		
24 Commonwealth Trust Engineering Classes, Mangalore.	Elementary, applied mechanics and machine drawing.	15	All working as improvers.	..			..		
25 Industrial School, Rajahmundry ..	Carpentry, mechanics, book-binding and paper-making.	....	....	..			..		
26 Sri Krishna Parisramalayam Industrial School, Kavutaram.	Carpentry and cabinet-making	2	....	..			..		
27 C.M.S. Industrial School, Vidyanagar ..	Leather work	4	Two are employed while the other two are remaining in Vidyanagar as piece-time workers to gain further improvement in their craft.	1,400	0	0	1,151	0	0
28 St. Joseph's Industrial School, Ommalala.	(a) Carpentry	9	All are employed ..	6,859	0	0	6,226	0	0
29 Municipal Technical Institute, Masulipatam	(a) Mechanical, (b) electrical engineering and (c) artizan course.	(a) 17, (b) 3 ..	All are employed in companies.	7,410	13	11	6,851	7	7
30 Pasumalai Trades School, Pasumalai ..	Printing, carpentry and general mechanics ..	17	Twelve are employed ..	64,891	4	10	61,657	10	7
31 C.S.M. Industrial School, Dindigul ..	(a) Carpentry, (b) blacksmithy and (c) tailoring.	(a) 4, (b) 2, (c) 7.	None are employed ..	10,017	3	10	9,422	2	7
32 St. Joseph's Industrial School, Ootacamund.	Cabinet-making	5	All are employed, four working in the school itself and one outside.	35,000	0	0	31,782	3	11
33 District Board Industrial School, Sivaganga.	Agriculture and animal husbandry, weaving, poultry farming and bee-keeping.	29	Nine employed	429	0	9	456	0	0
34 St. Theresa's Industrial School, Salem ..	(a) Cabinet-making, carpentry and (b) smithy	5	Four employed and one went for teachers' training.	3,518	9	6	3,984	5	3
35 St. Francis Xavier's Industrial School, Tanjore.	(a) Cabinet-making and (b) weaving	11	....	17,165	0	0	15,249	5	3
36 St. Mary's Industrial School, Kumbakonam.	(a) Carpentry and cabinet-making, and (b) blacksmithy.	(a) 6	All working in the school itself.	15,108	0	0	13,440	0	0
37 Municipal Industrial School, Kumbakonam.	Cabinet-making and weaving	(a) 3, (b) 2 ..	....	509	0	0	488	0	0
38 Board Industrial School, Tanjore ..	General mechanics and cabinet-making ..	..	....	14,348	9	6	14,348	9	6
39 S.P.G. Art Industrial School, Nazareth.	(a) Carpentry and cabinet-making, (b) blacksmithy and motor driving and (c) tailoring.	(a) 10, (b) 7, (c) 4.	Fourteen are employed ..	14,248	9	6	14,348	9	6
40 St. Joseph's Industrial School, Adaikalapuram.	(a) Carpentry and (b) weaving	4	....	4,008	8	4	2,804	10	0
41 Anbian's Art Industrial School, Arumuganeri, Tinnevelly district.	Carpentry tailoring and sewing	..	....	..			.. *		

* Recognition withdrawn from 1st April 1938.

Statistics relating to recognized Industrial Schools for the year 1937–38—*cont.*

Serial number and name of the institution. (1)	Subjects in which instruction is provided. (2)	Number of candidates who passed out in the year. (3)	Particulars as far as available as to the after-career of the passed candidates. (4)	Approximate total value of work turned out. (5)	Sale proceeds of school manufacture during the year. (6)
				RS. A. P.	RS. A. P.
AIDED SCHOOLS (BOYS)—*cont.*					
42 C.M.S. Industrial School for the Blind, Palamcottah.	(a) Cotton weaving, tape-making, mat-weaving and gardening.	4	After career not known ..	3,362 10 0	3,469 1 0
43 St. Ignatius Industrial School, Tuticorin.	Carpentry and rattan work	2	One is employed and the other is undergoing training in the St. Joseph's Industrial School, Tindivanam.	550 15 7	460 15 7
44 St. Joseph's Industrial School, Trichinopoly.	(a) Carpentry, (b) foundry fitting and turning and (c) Motor mechanics.	(a) 8, (b) 6 ..	....	67,308 0 9	61,579 10 6
45 Methodist Mission Industrial School, Karur.	(a) Carpentry, rattan work and (b) weaving.	(a) 12, (b) 2 ..	Three are employed while two have gone for further training.	17,705 0 0	17,705 0 0
46 All Saints' Industrial School, Puttur ..	Cabinet-making	3	....	3,500 0 0	3,196 0 0
47 Servindia Agricultural and Industrial School, Mayavaram.	(a) Agriculture, (b) poultry farming, (c) bee-keeping and (d) textile weaving.	....	....	674 8 1	717 12 9
48 St. Aloysius' Industrial School, Vizagapatam.	Mechanical engineering and motor mechanics ..	5	All are employed	24,334 0 0	20,618 0 0
AIDED SCHOOLS (GIRLS).					
49 C.S.M. Girls' Industrial School, Kilpauk, Madras.	Drawing, needlework, dress-making and embroidery.	43	....	3,058 14 6	2,830 14 6
50 Seva Sadan Industrial School, Chetput, Madras.	Needle-work, dress-making, embroidery and lacquer work.	3	All employed	1,470 15 0	1,154 1 4
51 St. Bridget Industrial School, Nungambakkam.	Embroidery and dressmaking	6	Most of them are employed.	900 0 0	582 6 0
52 St. Anne's Industrial School, Rayapuram, Madras.	(a) Cotton-weaving and (b) embroidery ..	(a) 2, (b) 3 ..	Two employed	450 0 0	390 0 0
53 St. Thomas Convent Industrial School, Mylapore.	Dress-making and embroidery	....	....	1,304 15 0	983 3 0
54 C.S.M. Lace School, Chingleput	Lace-making, embroidery and dress-making ..	16	....	1,083 0 0	863 9 9
55 Methodist Mission Industrial School, Ilkadu.	Weaving, embroidery and lace-making ..	9	All employed	15,028 15 6	16,792 2 1
56 St. Antony's Industrial School, St. Thomas Mount.	Dress-making, embroidery, and needle-work ..	4	....	2,369 0 0	924 0 0
57 L.M. Girls' Industrial School, Erode ..	Weaving	7	Undergoing further training.	116 0 0	69 0 0
58 Methodist Mission Industrial School, Dharapuram.	Embroidery	4	Three undergoing teachers' training.	2,478 4 2	1,933 12 9
59 Immaculate Conception Convent Industrial School, Coimbatore.	Needle-work, embroidery and dress-making ..	5	Three working as teacher's and two employed.	2,266 0 0	2,014 0 0

END