

GOVERNMENT OF MADRAS DEVELOPMENT

DEPARTMENT G.O. NO. 2474 9th

OCTOBER 1939

Industries Administration Report

1938-39-Recorded

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Government of Madras

DEVELOPMENT DEPARTMENT

G.O. No. 2474, 9th October 1939

Industries—Administration Report—1938-39—Recorded.

READ—the following paper :—

From the Director of Industries and Commerce, dated 11th August 1939, No. 2043-A/39.

Order—No. 2474, Development, dated 9th October 1939.

Recorded.

2. The investigation of the possibilities of establishing large-scale industries in this Province for the manufacture of fertilizers, i.e., ammonium sulphate, alloy steels from the Salem iron ores and power alcohol from molasses was continued during the year under review. Gypsum which is required for the manufacture of ammonium sulphate is known to occur along with the sedimentary rocks in Trichinopoly district. In order to determine the quantity and quality of the mineral an intensive survey and examination of gypsum was found necessary. As regards the manufacture of steel products from the Salem iron ores, it was considered necessary to investigate the several iron ore deposits around Salem, the apatite deposits in Trichinopoly and the suitability of the lime stone obtainable from Sankaridrug. If the proposal to appoint a mining geologist for detailed investigation of the mineral resources of this Province, considered last year, had materialized, the above items of work could have been entrusted to that officer. The proposal was however deferred for want of funds.

The Committee, appointed by the Government to examine the question of production of power alcohol from molasses and to report on the best method of manufacture, submitted its report. The report has been published separately for general information. The Committee was of opinion that the manufacture of power alcohol and its admixture with petrol would in the present state of the sugar industry in India be an economic proposition to be encouraged and developed by the Government for public interest. The Committee was also satisfied that power alcohol could be mixed in a satisfactory manner with ordinary cars without any alterations or intricate

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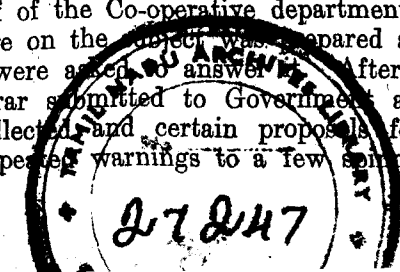
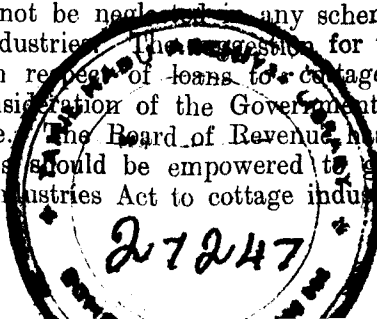
adjustments. The Committee recommended legislation to enforce such mixing. The question of introducing legislation on the lines recommended by the Committee is under the active consideration of Government.

3. The development of cottage and small-scale industries received special attention. With a view to finding out ways and means for the landless rural labour during periods of enforced idleness, the Collectors were asked to prepare comprehensive memoranda on the manner in which the interests of cottage industries in their districts could be furthered, to place them before the district periodical conferences for discussion and to submit detailed reports to Government for consideration. Reports have been received from the Collectors of Salem, Kurnool, Malabar, West Godavari and South Arcot and they are under the consideration of the Government. Ten candidates were deputed to Wardha for training in the manufacture of hand-made paper, and eight candidates for training in oil-pressing, and all of them have returned after completion of their training. Instructions have been issued to provide them with employment as instructors in Government and aided industrial schools as and when vacancies arise. Candidates who on return wanted financial assistance for starting industries in their villages were asked to apply for aid under the State Aid to Industries Act, 1922. It has been suggested that the old records and waste paper in the Government offices may be collected, soaked in water, reduced to pulp and made available for starting hand-paper making industry with the help of Wardha trained candidates. Detailed proposals have been called for from the Director for introducing the scheme in one or two selected districts. Training centres in the manufacture of hand-made paper at Kodambakkam near Madras and Peddakadur in Bellary district were opened with the assistance of grants-in-aid from Government. With a view to provide employment to ex-toddy tappers in the Cuddapah district where prohibition was introduced, jaggery-making from date palm juice was demonstrated as a suitable occupation. A demonstrator was deputed for about four months to assist a co-operative society at Amalapuram in carrying on demonstration in coir-retting and coir production and in training apprentices in that work. The Government have ordered the conduct of experiments to evolve suitable appliances for making sand paper on cottage industry basis.

The Government are aware that finance and marketing of cottage industries should not be neglected in any scheme for the development of cottage industries. The suggestion for the decentralization of functions in respect of loans to cottage workers which was under the consideration of the Government for some time took a definite shape. The Board of Revenue has proposed that Collectors of districts should be empowered to grant loans under the State Aid to Industries Act to cottage industrialists up

to Rs. 500 in each case, and that the Act should be suitably amended. The proposals are receiving the attention of Government. In the marketing of products of cottage industries, commercial museums *cum* emporiums have an important part to play. Museums have been opened in East Godavari, Guntur, Cuddapah, Malabar, Salem and South Kanara districts in addition to the Central Industrial Museum opened recently in the Madras City. Cottage industries products are displayed free of charge in these museums. Steps are being taken to open museums in other districts. Greater progress could not be made owing to the difficulties experienced in getting suitable sites and buildings for housing museums and in collecting exhibits for display in them. The Government trust that the cottage workers, businessmen and firms dealing with cottage industries products will realize the advantages of utilizing commercial museums for advertising their products, and come forward to place their exhibits at the disposal of the museum authorities for display.

4. The Government considered the various means by which the interests of the handloom weavers can be safeguarded in their struggle against the ever-increasing competition from cotton textile mills, Indian and foreign. A circular letter has been addressed to the Government of India and all Provincial Governments with a view to ascertaining how far it will be possible for them to take action on an agreed basis in the matter. The Government of India have also been addressed for the continuance of the subsidy for the handloom industry for another period of five years from 1st November 1940 and for increasing the subsidy substantially so that the problem may be effectively tackled without further delay. The membership at the close of the year of the Madras Handloom Weavers' Provincial Co-operative Society, Madras, the agency by which the Government of India subsidy is spent, was 255, comprising 131 weavers' co-operative societies, 88 individuals, 27 central banks and co-operative institutions and 9 firms, as against 203 last year comprising 93 weavers' co-operative societies, 88 individuals, 14 co-operative banks and institutions and 8 firms. A total subsidy amounting to Rs. 25,817 was disbursed during the year as against Rs. 17,654 last year. Cash credit loans to the extent of Rs. 96,350 and yarn guarantees to the extent of Rs. 55,463 were sanctioned by the Provincial Society. Goods to the value of Rs. 6,21,020 were produced by the primary societies and the sales amounted to Rs. 5,48,683 during the year. The Government also ordered the conduct of a survey of the cotton handloom industry in this Province by the Registrar of Co-operative Societies with the assistance of the staff of the Co-operative department. A comprehensive questionnaire on the subject was prepared and the Co-operative Inspectors were asked to answer it. After the close of the year the Registrar submitted to Government a report prepared on the data collected and certain proposals for protecting the industry. As repeated warnings to a few spinning mills in this



Presidency against short reeling of cotton yarn have not had the desired effect, the Government have ordered the launching of prosecutions against those that offend the provisions of the law in this regard. Concerted action is necessary to stop the practice of short reeling of cotton yarn and the Government of Bombay and the Central Government have been addressed in the matter.

The development of hand-spinning and khadi manufacture in this Presidency was continued during the year through the agency of the All-India Spinners' Association. Grant and subsidy were sanctioned for the purpose. An additional subsidy of Rs. 50,000 was sanctioned recently for the year under review based on the excess of khadi produced during the year over 1936-37. It was suggested that instead of organizing temporary relief measures to enable people to tide over periods of famine and stress whenever they occur, permanent measures should be attempted which would improve the general economic condition of the people and thus avert famine altogether in the tract. The All-India Spinners' Association with this object in view, prepared two schemes for the development of hand-spinning and khadi-weaving, both in cotton and wool in Adoni taluk of the Bellary district and Kurnool taluk of Kurnool district. The Government approved the two schemes and sanctioned necessary grant and subsidy for the purpose. The association opened only one centre of work during the year at Gudur in Kurnool taluk. There was some delay in the selection of the other centre. Peddakadubur was subsequently selected as the second centre and work will soon be commenced there. An advance was granted, as a special case, to two families in the Marikala village in Nugur taluk, East Godavari district, for revival of silk spinning and weaving.

5. The number of applications for State aid received during the year was 71 against 15 received last year. The Board of Industries considered and recommended grant of aid only in 12 cases. The main reasons for rejection in a large number of cases were the inadequacy of the security offered, the apparent inability of the applicants to work the industry satisfactorily, and their reluctance to furnish full particulars. The Government desire to stress the importance of avoiding the above defects in submitting applications for State aid. The Director of Industries and Commerce has suggested the formation of a strong Industrial Credit Corporation, for providing financial assistance to industries on a considerable scale. The proposal is under consideration.

6. Eleven students including one each from Assam, Orissa and Punjab underwent training in the Kerala Soap Institute and two ex-students worked in the institute to gain up-to-date knowledge. The distillation and extraction apparatus ordered from England was put into commission during the year under review and a series of experiments were conducted on the estimation of the essential oil content of the several materials available in the Province. The economic possibilities of these oils were under investigation

during the year with special reference to the availability of the raw materials, the best and cheapest method of extracting the odorous matter, the purposes for which the oils can be used and the price that can be realized from them. The institute earned a net profit of Rs. 19,069 during the year as against Rs. 22,719 last year.

7. The activities of the Sericultural section in respect of the scheme financed by the Government of India for the production and distribution of disease-free "Cellular" seed in the Kollegal taluk showed some slackness owing to the adverse seasonal conditions and consequential reduction in the area under mulberry. The confidence created in the use of tested seeds supplied by the department however gained ground. Consequent on the distribution of disease-free "Cellular" seeds and adoption of scientific methods of rearing by the rearers, the quality of the cocoons produced now is far superior to that of the cocoons produced in 1919, and the normal yield now is 35 pounds for every 100 layings as against 25 pounds some years ago. With a view to (1) enhancing the rearers' and reelers' income and (2) bringing down the cost of production of raw silk to such a level as would enable it to compete with high quality imported silk, the production and distribution of cross-breed seeds on a commercial scale was started in 1935-36 and the total distribution of these seeds advanced from 12,586 in 1935-36 to 394,127 in 1938-39, which however represents only 11 per cent of the entire seed requirements of the Kollegal taluk. A scheme for the production and supply of cross-breed seeds to meet the entire seed requirements of the Kollegal taluk within a period of five years was prepared and forwarded to the Government of India for sanctioning necessary grant to the scheme. The sanction of the Government of India was received towards the close of the year. The new scheme is being given effect to during the current year.

8. Paragraphs 136 to 153 of the Director's report give an account of the work done during the year by the Engineering section. Four hundred and three applications for boring were disposed of during the year, the number of borings put down being 759 and the total number of feet bored being 58,248, as against 971 and 69,840 feet respectively in the previous year. Although the total depth bored was lower, the percentage of successful borings increased from 69.31 in the previous year to 80.63 in the period under review.

(By order of His Excellency the Governor)

V. N. VISWANATHA RAO,
Secretary to Government.

To the Director of Industries and Commerce.
" Government of India, Department of Commerce (with C.L.).
" Public Department.
Press.

No. 2043-A/39.

OFFICE OF THE DIRECTOR OF INDUSTRIES AND COMMERCE,
MADRAS, *dated the 11th August 1939.*

From

L. B. GREEN, Esq., O.B.E.,
Director of Industries and Commerce,
Madras,

To

THE SECRETARY TO GOVERNMENT,
DEVELOPMENT DEPARTMENT,
Madras.

SIR,

I have the honour to submit the Administration Report of the Department of Industries and Commerce for the year ended 31st March 1939.

I have the honour to be,

Sir,

Your most obedient servant,

L. B. GREEN,
Director of Industries and Commerce.

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ADMINISTRATION REPORT OF THE DEPARTMENT OF INDUSTRIES AND COMMERCE, MADRAS, FOR THE YEAR ENDED 31st MARCH 1939.

Direction.—I continued to be in charge of the department until the 28th of December 1938, when I handed over charge to Mr. V. Ramakrishna, I.C.S., and proceeded on leave for a period of three months and sixteen days. Mr. Ramakrishna was in charge of the department during the remainder of the year. In G.O. No. 2850, dated 14th November 1938, recording the administration report of the department for 1937-38, Government were pleased to direct that the designation of the Director of Industries be changed to Director of Industries and Commerce.

2. *Tours.*—I was on tour for 77 days and Mr. Ramakrishna, I.C.S., for 33 days during the year.

3. *Exhibitions.*—The department participated during the year in a considerable number of agricultural and industrial exhibitions and Health and Baby Week celebrations held in various parts of the Province. At most of these 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 17th December 1938 to 15th January 1939. At this exhibition, a representative range of textile appliances suitable for cottage and small scale operation was selected for display. These included an aloe fibre rope making machine, improved cotton spinning charka, tubular banding or braiding machine for shoe lace and waist string, bobbin and pirn winding charka, vertical warping mill, kora grass mat weaving loom, table loom for weaving mufflers, foldable loom for weaving heavy cloth, small jacquard loom for weaving figured borders for sarees and dhoties, and improved tape loom. Actual demonstrations of enamelling, leather decoration, turned lacquer work with indigenous colours on country lathe and throwing on improved potters wheel were conducted by the School of Arts and Crafts. The manufacture of light metal castings and the working of the cane splitting machine were demonstrated by the Government School of Technology. In addition to a display of various tanning materials, finished leathers and implements required for tanning, the dyeing and finishing of art leathers on a cottage industries basis was demonstrated by the students of the leather working class of the Leather Trades Institute. The processes of spinning coir into coir yarn, the making of coir brush mats (coloured and uncoloured), with merely a frame, the dyeing of coir fibre and the

making of coir matting on a loom were shown. The cold process of soap manufacture and the milling of toilet soaps were also demonstrated and attracted a considerable number of interested spectators. The department participated in the Khadi and Village Industries Exhibition, held at Tripuri in connexion with the sessions of the Indian National Congress. A subordinate of the department was deputed to Tripuri to arrange for the display of the exhibits from the Forest, Agriculture and Industries Departments. The articles and products exhibited by the department included coir, sugar, leathers and leather articles, machine-reeled silk, country-reeled silk, cocoons, silkworm guts, glazed pottery, and light metal castings. In addition to timber and minor forest products, the Forest department exhibited sandalwood billets and dust. 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 this Province.

4. *Committees.*—I continued to serve on a number of committees, including the Advisory Committees of the Madras and Southern Mahratta Railway Company, Limited and South Indian Railway Company, Limited, Provincial Research Committee, Provincial Cotton Committee, Provincial Marketing Board, Executive Committee of the Victory Memorial School for the Blind, Poona-mallee, Employment Bureau Committee of the University of Madras, Council of the Victoria Technical Institute, Senate of the Andhra University and Court of the Indian Institute of Science, Bangalore. 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, Limited. I was appointed a member of the Board of Visitors of the College of Engineering, Guindy, of the University Extension Board at Madras, for conducting extension and popular lectures under the auspices of the University for the benefit of the public, and of the committee set up by Government to consider the possibilities of producing power alcohol from molasses. I served also as a member of the Famine Code Revision Committee, and in connexion with the work of the committee I was on tour in the Bellary district for ten days in June and for seven days in September. I prepared a comprehensive note for this committee on the economic resources and cottage industries of the Ceded Districts and the possibilities of their development. I was appointed Chairman of the Technological Diploma Examination Board which was set up during the year. I attended the meeting of the Irrigation Development Board to discuss the Thungabhadra project at Coonoor in July. It is becoming increasingly difficult to find the time to attend so many committee meetings.

5. *Tenth Industries Conference.*—A conference of Ministers in charge of Industries and Directors of Industries which was attended by Mr. V. Ramakrishna, I.C.S., was held at Bombay, on the 23rd and 24th January 1939. At this conference, the following subjects, amongst others, were discussed: (i) progress of the schemes for the

development of the handloom weaving industry and the question of the allotment for 1939-40; (ii) development of schemes of apprenticeship; (iii) amplification of inland trade statistics; (iv) industrial surveys and drawing up of a regular plan or programme for the establishment and development of industries of national or economic importance and of key industries. Mr. Ramakrishna also attended the meetings of the Imperial Sericulture and Woollen Industries Committees which were held in Bombay on the 25th January 1939.

6. *Industrial Research Council.*—I attended the fourth session of the Industrial Research Council which was held at Madras on the 8th and 9th August 1938, when the following subjects were discussed: (i) research on oils and soaps; (ii) research programme of the Government Test House; (iii) accessories for bangle manufacture; (iv) improvement of glass furnaces; (v) improvement of glass products and accessories; (vi) survey of glass making materials; (vii) casein plastics; (viii) publications of the Bureau; (ix) allocation of prizes; (x) industrial surveys; (xi) co-ordination of universities and research institutions in the development and extension of industrial research; (xii) production of cellulose and other materials required by an artificial silk industry and of synthetic resins of the bakelite type. I was appointed a member of the Prizes Committee of the Industrial Research Council for 1939.

7. *Tariff Board Enquiry.*—During the year under review a Tariff Board was constituted by the Government of India for the purpose of enquiring into the necessity for the continuance of the protection for the sericulture industry provided by the Indian Tariff (Textile Protection) Amendment Act, 1934. An exhaustive memorandum was drawn up in reply to the questionnaire issued by the Tariff Board. The Principal, Government Textile Institute, the Sericultural Expert and myself were orally examined by the Board at Bangalore on the 18th and 19th of August 1938. Subsequently the Tariff Board convened a conference of Directors of Industries and Sericultural Experts at Calcutta on the 16th and 17th November 1938 and I attended the conference accompanied by the Sericultural Expert.

8. *Statutory Board of Industries.*—There were some changes in the personnel of the Board of Industries during the year. Sri A. Ranganatha Mudaliyar, B.A., B.L., and Rao Bahadur C. V. S. Narasimha Raju, B.A., B.L., two of the members nominated by the Government under section 3 (2) of the Act vacated their seats by efflux of time and in their places, Sri Vavilla Venkateswara Sastri, Honorary Secretary of the Andhra Chamber of Commerce and Sri D. L. Narasimha Raju, M.L.A., were appointed by the Government as members of the Board. The composition of the Board of Industries at the close of the year under report was as follows:—

- | | |
|---|---------------|
| (i) The Director of Industries and Commerce. | } Ex officio. |
| (ii) The Secretary to Government, Finance Department. | |

(iii) F. Howard Oakley, Esq.	Elected by the Madras Chamber of Commerce.
(iv) Sri S. Rm. Ct. Pl. Palaniappa Chettiyar of Kanadukathan.	Elected by the Southern India Chamber of Commerce.
(v) D. Q. Davidson, Esq.	Elected by the Madras Trades Association.
(vi) Sri K. Chandramouli Choudari, M.L.A.	Elected by the Madras Legislative Assembly.
(vii) Sri P. S. Kumaraswami Raja, M.L.A.	
(viii) Sri Dewan Bahadur G. Narayanaswami Chetti, C.I.E.	
(ix) Sri Chandulal M. Kothari, B.A., LL. B.	Nominated by Government under section 3 (2) of the Act.
(x) Sri Vavilla Venkateswara Sastri.	
(xi) Sri D. L. Nurasimha Raju, M.L.A.	
(xii) The Registrar of Co-operative Societies, Madras.	

9. Three meetings of the Board of Industries were held during the year on the 29th June, 12th and 13th September 1938 and 30th January 1939 respectively at which the following applications for aid under the Act were considered :—

- (1) Application from Sri S. Gangaraju, Narsapur, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act for the purpose of starting a mango-pickle industry.
- (2) Application from Sri V. Charada Pai, Proprietor, Rickshaw Works, Calicut, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act for the development of his rickshaw works.
- (3) Application from Sri P. V. Lakshminarayana Ayyar, Pudiyanam village, Palghat taluk, for a loan of Rs. 2,000 under section 6 (a) of the State Aid to Industries Act for the purpose of starting a handloom weaving industry.
- (4) Application from the partners of the Manamadura Tile Works, Manamadura, for a loan of Rs. 10,000 under section 6 (a) of the State Aid to Industries Act for the development of their tile factory.
- (5) Application from Messrs. K. V. Shanthan and Company, Proprietors, Aryan Industrial Bureau, Mysore, for the subscription of shares of the value of Rs. 2½ lakhs in the company proposed to be floated by them under the name of "The Presidency Plywood Company, Limited" under section 6 (d) of the State Aid to Industries Act.
- (6) Application from Sri G. V. Venkataratnam, Proprietor, the Industrial and Scientific Works, Coimbatore, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act for the purpose of enlarging his workshop equipment.

- (7) Application from Sri Nalamveetil Kunhiraman, Proprietor, The Viswa Barathi Industrials, Pallikunnu, North Malabar, for a loan of Rs. 3,000 under section 6 (a) of the State Aid to Industries Act for the development of his handloom factory.
- (8) Application from Messrs. P. S. Munuswami Chettiyar Bros., Tiruvannamalai, for a loan of Rs. 10,000 under section 6 (a) of the State Aid to Industries Act for the purpose of enabling them to effect the re-purchase of their rice-hulling and groundnut decorticating mills.
- (9) Application from M. Anavaruzaman Khan Sahib, Contractor, Rajahmundry, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act for the purpose of manufacturing paddy husking machines and for casting and electro-plating.
- (10) Application from Sri M. Rangaswami, Industrial Chemist and Engineer, Bellary, for the subscription of shares of the value of about Rs. 6 lakhs under section 6 (d) of the State Aid to Industries Act in the company proposed to be floated by him under the name "The Young India Chemical and Industrial Works."
- (11) Application from Sri P. C. Munuswami Nayakar, Tirutani, Chittoor district, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act for the purpose of developing the manufacture of brass bracket lamps.
- (12) Application from Sri G. Chaganlal, Proprietor, Damodhar Envelope Manufacturing Company, Madras, for a loan of Rs. 10,000 under section 6 (a) of the State Aid to Industries Act and for the provision of a building to house the factory free of rent for the purpose of developing the manufacture of envelopes.
- (13) Application from Sri C. Appadurai Mudaliyar, Madras, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act for the purpose of establishing and operating a rice mill.
- (14) Application from Sri Chalapathy Chandrasekhara Rao, Bezvada, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act for the purpose of starting a dairy industry.
- (15) Application from Sri Mittadoddi Rama Rao, Nellore, for a loan of Rs. 2,000 under section 6 (a) of the State Aid to Industries Act for the purpose of setting up a factory for the manufacture of bread and allied products.
- (16) Application from Sri Gundala Kodanda Rao, Vizianagaram, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act for the purpose of setting up a small oil mill.

- (17) Application from the Metal Industries, Limited, Shoranur, for a further loan of Rs. 10,000 and for the subscription of shares to the value of Rs. 10,000 under section 6 (a) and (d) of the State Aid to Industries Act for the development of their factory.
- (18) Application from S. Khaja Hussain Sahib, Proddatur, for a loan of Rs. 900 under section 6 (a) of the State Aid to Industries Act for the purpose of setting up a flour mill at Cuddapah and for the development of his mill already at work in Proddatur.
- (19) Application from the partners of the Sree Ramakrishna Sugar Mills, Kirlampudi, East Godavari, for a further loan of Rs. 30,000 under section 6 (a) of the State Aid to Industries Act for the purpose of developing their sugar factory.
- (20) Application from the Madras Sugars, Limited, Madras, for the subscription of shares to the value of Rs. 30,000 under section 6 (d) of the State Aid to Industries Act.
- (21) to (29) Applications from Sri Nooli Veeraraghava Rao and eight other persons who sought aid under the State Aid to Industries Act, but failed to supply the particulars called for by the Director of Industries and Commerce with a view to the elucidation of their applications.
- (30) Application from the Indian Steel Rolling Mills, Limited, Madras and Negapatam, for the subscription by the Government of shares to the value of Rs. 1,11,000 and for a debenture loan of Rs. 8 lakhs under sections 6 (d) and (a) respectively of the State Aid to Industries Act.
- (31) Application from the Andhra Ayurvedic Pharmacy, Limited, Madras, for a loan of Rs. 8,000 under section 6 (a) of the State Aid to Industries Act for the purpose of clearing off debts, for the improvement of the plant and machinery and for working capital.
- (32) Application from Messrs. Walter Hugh and Company, Limited, Coimbatore, for the subscription of shares to the extent of 5 per cent of the issued capital of Rs. 7 lakhs and for the supply of electric energy at a concessional rate under section 6 of the State Aid to Industries Act, for the purpose of manufacturing textile mill machinery parts, precision tools, etc.
- (33) Application from Muhammad Ibrahim Sahib, carpenter maistry, Rajahmundry, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act, for the purpose of working capital.
- (34) Application from Sri S. Radhakrishna Ayyar, Vishuman-galam, South Kanara, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act for the purpose of starting a paddy-husking industry.

- (35) Application from the Managing Director of the Indian Wheelwrights Corporation, Limited, a company proposed to be formed, for the subscription of shares of the value of Rs. 50,000 under section 6 (d) of the State Aid to Industries Act.
- (36) Application from the India Canning Industries, Limited, Bezwada, for the subscription by the Government of shares of the value of Rs. 20,000 in the company under section 6 (d) of the State Aid to Industries Act.
- (37) Application from Sri T. T. Ramacharya, Gudiyattam, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act for the purpose of starting a coffee grinding industry.
- (38) Application from Sri M. Sundaresan, Madras, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act for the purpose of developing small lacquer work, leather work and cotton painting concern.
- (39) Application from Sri V. Rangabashyam, Neyikuppai, Ramnad district, for a loan of Rs. 2,000 under section 6 (a) of the State Aid to Industries Act for the purpose of starting an oil mill, etc.
- (40) Application from Mr. S. T. David, proprietor, Bone Mill, Ennore, for a loan of Rs. 3,000 under section 6 (a) of the State Aid to Industries Act for discharging a prior debt and for working capital.
- (41) Application from Mr. G. D. Soans, Mangalore, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act for carrying on industries, such as tailoring and knitting.
- (42) Application from Sri B. V. Harih, Madras, for a loan of Rs. 1,500 under section 6 (a) of the State Aid to Industries Act for the purpose of starting soap manufacture in the City.
- (43) Application from Sri Nalamveetil Kunhiraman, Proprietor, The Viswa Barathi Industrials, Pallikunnu, North Malabar, for a loan of Rs. 1,500 under section 6 (a) of the State Aid to Industries Act for carrying on the handloom weaving industry.
- (44) Application from Sri P. Chinnathambi Mudaliyar, Coimbatore, for a loan of Rs. 500 under section 6 (a) of the State Aid to Industries Act for the purpose of starting beedi manufacture.
- (45) Application from Miss J. Eveline, Mangalore, for a loan or subsidy of Rs. 200 under sections 6 (a) or (d) of the State Aid to Industries Act for the purchase of sewing machine and accessories.

- (46) Application from the Toilets Manufacturing Company, Limited, Chittoor, for the guarantee of a cash credit of Rs. 5,000 and for the subscription of shares to the value of Rs. 10,000 under section 6 (b) and (d) of the State Aid to Industries Act for purposes of working capital.
- (47) Application from Sri T. Dharmalinga Mudaliyar, Annasagaram, Salem district, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act for improving his handloom weaving industry.
- (48) Application from Sri S. T. Vijayaraman, Tranquebar, for a loan of Rs. 750 under section 6 (a) of the State Aid to Industries Act for starting a confectionary business.
- (49) Application from the East Coast Ceramic Industries, Ltd., for the waiver of one of the conditions governing the grant by the Government of the subscription of shares of the value of Rs. 20,000 under section 6 (d) of the State Aid to Industries Act.
- (50) Application from Mr. Elias Silva, Mangalore, for a loan of Rs. 1,500 under section 6 (a) of the State Aid to Industries Act for developing his handloom weaving industry.
- (51) Application from the Kalyanpur Sugar Mills, Ltd., Kalyanpur, South Kanara, on behalf of the proposed "West Coast Canneries, Ltd., Mangalore" for the subscription of shares of the value of Rs. 50,000 under section 6 (d) of the State Aid to Industries Act, etc.
- (52) Application from Sri R. Srinivasamurthi, Annamalainagar, South Arcot, for a loan of Rs. 450 under section 6 (a) of the State Aid to Industries Act for purchasing a hand knitting machine.
- (53) Application from Sri M. Rathnam, Madras, for a loan of Rs. 2,000 under section 6 (a) of the State Aid to Industries Act for developing the manufacture of tin printing, celluloid novelties and painted enamels.
- (54) Application from Hon. Captain Muhammad Abdus Salaam Sahib Bahadur, Nuzvid, Kistna district, for a loan of Rs. 5,000 under section 6 (a) of the State Aid to Industries Act for the setting up of a rice and groundnut factory.
- (55) Application from Sri N. R. Subbanna Bhat, B.A., Dip. (Tech.), Soap and Cosmetic Expert, Ninjoor, South Kanara, for a loan of Rs. 5,000 under section 6 (a) of the State Aid to Industries Act for establishing a soap and chemical works.
- (56) Application from Sri A. Dharmaraju, proprietor, Associated Home Industries, Vizagapatam, for a loan of Rupees 1,000 under section 6 (a) of the State Aid to Industries Act for the manufacture of sign boards, brass electrical fittings, etc.

- (57) Application from Sri R. Shanmuga Mudaliyar, Tirubuvanam, Tanjore district, for a loan of Rs. 2,000 under section 6 (a) of the State Aid to Industries Act for developing his handloom weaving industry.
- (58) Application from Sri K. Kandaswamy Mudaliyar, Tirubuvanam, Tanjore district, for a loan of Rs. 2,000 under section 6 (a) of the State Aid to Industries Act for developing his handloom weaving industry.
- (59) Application from the Kalyanpur Sugar Mills, Ltd., Kalyanpur, South Kanara, for a loan of Rs. 50,000 under section 6 (a) of the State Aid to Industries Act for discharging existing liabilities and for purposes of cane cultivation.
- (60) to (63) Applications from Sri Vyaburi Mudaliyar and three other handloom weavers of Tirubhuvanam, Tanjore district, for loans of Rs. 500 each under section 6 (a) of the State Aid to Industries Act for developing the handloom weaving industry.
- (64) Application from the Andhra Scientific Co., Ltd., Madras and Masulipatam, for the subscription of shares by Government, or in the alternative for a loan of Rupees 50,000, under section 6 (d) or (a) of the State Aid to Industries Act for the development of the manufacture of scientific instruments, etc.
- (65) Application from Sri V. S. R. Ayyangar, ivory dealer, Madras, for a loan of Rs. 1,000 under section 6 (a) of the State Aid to Industries Act for the purpose of working capital.
- (66) Application from the Industries Engineers and Merchants, Ltd., Madras, for a loan of Rs. 50,000 under section 6 (a) of the State Aid to Industries Act for purchasing additional equipment and for working capital.
- (67) Application from the Rural Industries Development Syndicate, Ltd., Amalapuram, for the subscription by Government of 10 per cent of the shares in the company under section 6 (d) of the State Aid to Industries Act for the development of the coir retting industry, etc.
- (68) Application from Sri V. L. Venugopal on behalf of the Stoneware Pipes (Madras), Ltd., Tiruvellore, for a loan of Rs. 10,000 under section 6 (a) of the State Aid to Industries Act for developing the manufacture of salt glazed stoneware pipes, etc.
- (69) Application from Sri N. K. Rama Raju, Theni, Madura district, on behalf of the Surgical Cotton Mills, Ltd., Rajapalayam, for the subscription by the Government of shares of the value of Rs. 7,500 under section 6 (d) of the State Aid to Industries Act for manufacturing sterilized surgical cotton wadding.

(70) Application from Sri S. M. Ramalingam Pillai, Melacheval, Tinnevely district, for a loan of Rs. 25,000 under section 6 (a) of the State Aid to Industries Act for the purpose of developing his dairy farming industry.

(71) Application from Messrs. Raja D. Mawney and Co., Ltd., Madras, for a loan of Rs. 50,000 under section 6 (a) of the State Aid to Industries Act for the purchase of additional machinery and for working capital.

Out of these 71 applications, 12 applications were recommended by the Board for the grant of aid as shown in the following statement:—

Name of the applicant or concern.	Amount of aid recommended by the Board. Rs.	Amount sanctioned by the Government. Rs.	Amount disbursed during the year. Rs.	Remarks.
1 Sri G. V. Venkataratnam, Proprietor, The Industrial and Scientific Works, Coimbatore.	800 (Loan)	800	800	....
2 Sri G. Chaganlal, Proprietor, The Damodhar Envelope Manufacturing Co., Madras.	6,500 (Loan).	6,500	..	The loan is pending payment since the applicant has not yet produced the deeds of title relating to the security.
3 Sri Mittadoddi Rama Rao, Nellore.	2,000 (Loan).	2,000	..	The Government Solicitor has not yet been satisfied as to the applicant's title to the security offered.
4 The Madras Sugars, Ltd., Madras.	15,000 (Subscription of shares).	..	..	On the representation of the Company to relax one of the conditions to be imposed, the case was again considered by the Board at its meeting held after the close of the year and submitted to Government thereafter.
5 Sri S. Radhakrishna Ayyar, Vishnumangalam, South Kanara.	500 (Loan).	500	..	The applicant subsequent to the grant of the loan, applied for certain modifications of the conditions of the grant and furnished the title deeds and other documents after the close of the year.

Name of the applicant or concern.	Amount of aid recommended by the Board. Rs.	Amount sanctioned by the Government. Rs.	Amount disbursed during the year. Rs.	Remarks.
6 The India Canning Industries, Ltd., Bezwada.	10,000 (Subscription of shares).	10,000 (Subscription of shares).	..	The conditions of the grant have not yet been fulfilled to enable payment to be made.
7 Mr. S. T. David, Proprietor, The Bone Mill, Ennore.	3,000 (Loan)	3,000	3,000	....
8 The Toilets Manufacturing Company, Ltd., Chittoor.	5,000 (Loan).	..	..	The orders of the Government are awaited; the consent of one of the Directors of the Company to stand personal surety for the concern is also awaited.
9 Sri M. Ratnam, 38, Murugappa Mudali street, Vepery, Madras.	1,000 (Loan).	1,000	..	Disbursement pending for want of a rectification deed which is under execution.
10 Sri A. Dharma-rajua Associated Home Industries, Kurupam Market, Vizagapatam.	1,000 (Loan).	1,000	..	Mortgage and surety bonds were received after the close of the year.
11 Sri N. K. Ramaraju, of The Surgical Cotton Mills, Ltd., Rajapalayam, Ramnad district.	7,500 (Subscription of shares).	7,500 (Subscription of shares).	..	Payment of the share money will be made on the fulfilment of the terms of the grant of the subscription.
12 Sri S. M. Ramalingam Pillai, Proprietor, Dairy Farm, Melacheval, Tinnevely district.	16,800 (Loan).	16,800	..	Orders sanctioning the loan were issued after the close of the year.

Five applications, viz., numbers 32, 64, 66, 68 and 71 were adjourned by the Board for further consideration at the next meeting. As regards number 30, namely, the Indian Steel Rolling Mills, Ltd., Negapatam, the Board resolved by a unanimous vote that it was unable to recommend that the Government should subscribe for shares to the value of Rs. 1,11,00 in the company. The Board stated that it would be prepared to consider recommending the grant of the financial accommodation applied for, provided that the unfair competition which the company appears to be meeting with from the Tata Iron and Steel Company, Limited, was brought to an end in some way or other.

This question has been engaging the attention of the Government. In the case of item number 49, viz., the application from the East Coast Ceramic Industries, Ltd., Sri D. L. Narasimha Raju on behalf of the company withdrew his application for the waiver of one of the conditions as he thought that he could, for the present, carry on with the capital subscribed by the public. The remaining 52 applications were rejected by the Board and consequently by the Government. The main reasons for the rejection of these applications by the Board were the inadequacy of the security offered, the apparent inability of the applicants to work the industries successfully and their reluctance to supply the particulars required for a proper consideration of their applications.

10. It was suggested during the year that one of the means of bringing help to the door of the cottage worker would be to decentralize the functions now exercised by the Director of Industries and Commerce and the Government under the Act and to delegate the power to grant loans to cottage industrialists, say up to Rs. 500 in each case, to the District Collector. This suggestion was under the consideration of the Government at the close of the year under review.

11. Of the concerns which were granted aid by the Government during the previous year, the following availed themselves of it to the extent mentioned below. The balance of the share money due to the Kollegal Silk Filatures, Ltd., amounting to Rs. 8,750 was paid to the company during the year under report. The loan of Rs. 7,200 sanctioned to Sri Sampangi L. Venkatachalapathi, Gold Thread Manufacturer, Kumbakonam, was reduced to Rupees 6,500 owing to the doubtful nature of a portion of the security offered and the reduced loan of Rs. 6,500 was disbursed during the year. The grant of the subscription of shares to Sri V. L. Venugopal was cancelled as the applicant decided not to float the company, while the payment of the subscription of shares to the value of Rs. 20,000 to the East Coast Ceramic Industries, Ltd., is pending owing to the non-fulfilment of the conditions of the grant. The total amount of aid disbursed during the year was Rs. 19,050.

12. As will be seen from the preceding paragraph, there has been a large increase during the year in the number of applications received and dealt with under the Act although a considerable number of the applications are not of a satisfactory character. In order to cope with the increase of work in connexion with the State Aid to Industries Act, a lower division clerk was sanctioned for a period of six months from 3rd December 1938 and proposals for the continuance of the appointment for a further period from 3rd June 1939 were submitted to the Government after the close of the year under report.

13. The following is a brief review of the affairs of the concerns which have received aid under the Act, but have not yet discharged it in full :—

- (i) *The Metal Industries, Ltd., Shoranur.*—The fifth instalment of the loan was paid on the due date and the insurance of the concern was also renewed for another year. The audit report and accounts of the concern for the year ending 30th June 1938 showed a net profit of Rs. 394-10-3 on the year's working.
- (ii) *Messrs. Boddu Paidanna Sons, Vizianagram.*—The sixth instalment of the loan was due on 1st April 1938, but was paid some four months later with penal interest. The audit report of the concern for the year ending 31st March 1938 showed that the profit earned by the oil milling side of the business amounted to Rs. 1,525-13-4. The excess of liabilities over assets on 31st March 1938 was Rupees 53,347-14-5 as against Rs. 56,477-7-3 on 31st March 1937. The position though showing some signs of improvement could not be considered to be satisfactory. The question whether it was necessary to take special action under section 12 of the Act was considered during the year and in G.O. No. 3007, Development, dated 3rd December 1938, the Government decided that no special action need be taken for the present as the balance of loan due to the Government was sufficiently secured.
- (iii) *Sri A. C. Krishnaswami Pillai, Mutupet, Tanjore district.*—The third and last instalment was due on 1st August 1938, but was recovered with penal interest and credited to the Government on 31st March 1939. The loan account is therefore closed.
- (iv) *Sree Ramakrishna Sugar Mills, Kirlampudi, East Godavari.*—The management repaid the second instalment of the loan on the due date and also effected the renewal of the insurance of the sugar mill for another year. The audit report of the concern for the year ending 31st October 1938 showed that the working of the factory resulted in a net loss of Rs. 5,018-11-11. The loss was stated to be due to the inadequate margin between the purchase price of the cane and the selling price of sugar, heavy expenditure on the transport of the materials from and to the factory and high interest charges.
- (v) *The Andhra Papers Mills, Ltd., Rajahmundry.*—The management of the mill closed down the mill temporarily in December 1938 owing, it was contended, to the objection taken to the running of the waste water of the mill through the municipal drains to the river Godavari. In order to provide the necessary drain to the mill for discharging waste water, it is proposed to acquire a strip of land to be used as a drain.

- (vi) *The Kollegal Silk Filatures, Ltd., Kollegal.*—The terms under which the Government took shares in the company were fulfilled. The company was registered on 10th November 1937 and manufacturing operations commenced on 30th November 1937 with 40 silk reeling basins in Kollegal. Arrangements were thereafter made for the transfer to Kollegal of 36 basins from Bangalore and for their erection. The construction of the buildings was completed during the year and 76 basins were in commission from September 1938. In order to complete the original scheme under which it was decided to raise the total number of basins to 150, orders were placed for the supply of 74 additional basins and these were received in January 1939. The first report on the working of the company, which is for the period of seventeen months ending 30th April 1939, shows that though the gross profit amounted to Rupees 16,136-14-4, the net result of working during the period covered by the report was a loss of Rs. 6,544-1-11. The loss was due to the inadequate supply of cocoons during part of the year owing to unfavourable seasonal conditions and to the restricted output which resulted from the delay in obtaining delivery of the additional basins. When the new basins are installed and the output is increased, improved results should be forthcoming.
- (vii) *The Button Manufacturers' Co-operative Production and Sale Society, Ltd., Tiruppanangadu, North Arcot district.*—The society fulfilled the terms of the grant of the subsidy. As the capital outlay of the society is less than Rs. 500, it is exempt from insurance under rule 24 (d) of the rules under the Act. The working of the concern for the year 1937-38 resulted in a net profit of Rs. 106-1-0.
- (viii) *Sri K. Subbarayudu, Toy-maker, Kondapalli, Kistna district.*—The loan was utilized for the purpose for which it was granted. The working of the industry for 1937-38 resulted in a profit of Rs. 167 8-6. The first instalment of the loan was due on 15th March 1939 but was recovered with penalty shortly after the close of the year. The applicant was exempted by the Government from insuring his toy business and other assets, against loss or damage by fire.
- (ix) *Sri M. Raghurama Raju, Apiary, Courtallam, Tinnevely district.*—The report on the working of the concern has not yet been received. During his recent inspection of the apiary, the Assistant Industrial Engineer ascertained that 19 hives were functioning and that another eight hives had been lent by the applicant to other persons. The hives put up on the hills, did not thrive. Even the 19 hives had poor attendance owing to unusual drought in and around the area. Sri Raghurama Raju expects better results in the next season. The borrower was exempted by the Government from insuring his apiary against loss or damage by fire.

- (x) *The East Coast Ceramic Industries, Ltd., Vizagapatam.*—The company was registered on 4th December 1937 and soon after, issued its prospectus to the public and invited subscriptions for shares of the value of Rs. 4 lakhs. Owing, however, to adverse market conditions and the financial stringency resulting from the closure of an important bank at the time, the company was unable to raise more than about one lakh of rupees. It was therefore decided to restrict the company's programme for the present and to launch on the first stage of the original plan with the capital of one lakh and when market conditions improved, to enter the market for further capital and carry on the second and third stages of the programme. In the first stage, the company proposes to manufacture fire-bricks, fire-clay, roofing tiles, drainage pipes, pickle and acid jars. The construction of the kilns and buildings on the site acquired in Rajahmundry was commenced and machinery for the manufacture of tiles and drainage pipes ordered. The buildings were nearing completion at the close of the year under report. While the construction was proceeding, experiments in regard to the manufacture of fire-bricks, fire-clay, stone-ware pipes and tiles were carried out, and the results were satisfactory. It is proposed to proceed with the production of these articles shortly. As stated already, the amount of share capital subscribed by the Government has not yet been disbursed.
- (xi) *The India Canning Industries, Ltd., Bezwada.*—The company was registered on 22nd December 1937 for the purpose of canning fruits, vegetables, fish, etc. The necessary plant was set up and the factory started manufacturing operations in June 1938.
- (xii) *Messrs. K. V. Ratnam and Bros., Fountain-pen manufacturers, Rajahmundry.*—The conditions of the grant of the loan were fulfilled. The first instalment of the loan was repaid on the due date and the insurance renewed. The working of the concern during the period 1st April 1937 to 31st December 1937 resulted in a net profit of Rs. 1,323-9-0. The audit report for the year 1938 has not yet been received.

14. Industrial credit is required not only to assist in the establishment of small, medium, and large industries, but also for the development of some of the existing ones. The needs of the small industries are provided for by the State Aid to Industries Act, but it must necessarily be difficult for Government to provide any very considerable amount of capital for a number of large-scale industries, and what seems to be required in India to-day is the formation of a strong Industrial Credit Corporation for providing financial assistance to industries on a considerable scale. A bank undertaking industrial finance must embark on a policy of

judicious distribution of risks over wide tracts and branches of production embracing a large variety of clients, and one strong industrial bank for the whole of India with branches and local boards in the various provinces would seem preferable to a number of isolated provincial industrial banks. The establishment of such a central industrial credit institution might be rendered possible by the participation of the leading commercial banks and industrialists acting in co-operation, the aim being to achieve decentralization in the giving of credit and centralization in the obtaining of long-term credit, or in other words, industrial banking should be organized on an extensive scale and should be linked up with the general banking system of the country. It is doubtful whether an industrial bank for financing large-scale industries would at present be feasible in Madras as there is not a sufficient diversification of industry. The provision of industrial credit is undoubtedly a problem at the present time and there is little doubt that the creation of some instrument will be found necessary for financing industry in accordance with the requirements of a national industrial plan.

GENERAL ASSISTANCE TO TRADE AND INDUSTRY.

15. The Department of Industries and Commerce is the special organ of Government charged with the oversight of trade and industry, and the work of providing general and statistical information on industrial and commercial subjects is carried on in the Bureau of Industrial and Commercial Information, the scope and organization of which have been fully detailed in previous administration reports. The Bureau, in effect, functions as the central correspondence section of the headquarters office and a considerable proportion of the departmental correspondence with the general public is dealt with in it. The activities of the Bureau have increased to a marked extent during the last few years, whilst the range of work handled by it has widened and become increasingly complicated as a result not only of the development of particular subjects, but also of the great increase of public interest in industrial and commercial questions of all kinds. 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 wish 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, which embodies a commentary month by month on the world economic position, and this report was reproduced in the *Fort St. George Gazette* and the local newspapers. In connexion with the Ottawa preferences, the Government continued to be supplied with quarterly reports in respect of magnesite and cotton manufacturers, 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 Indian Mines Act. The annual return of large industrial establishments in the Madras Province coming under the operation of the Indian Factories Act, 1934, was, as usual compiled. Summaries on the subjects of manufactures, and mines and quarries were also prepared for inclusion in the administration report of the Province. A number of important reports were submitted to Government during the year.

16. A very considerable number of enquiries were received and answered during the course of the year. It is not possible to detail in a few paragraphs the range and variety of the work carried on by the Bureau, but the following examples of measures taken to assist firms or individuals may serve to illustrate the ways in which the Bureau is of assistance in supplying information and advice on industrial and commercial subjects to inquirers :—

- (i) The Director-General of Commercial Intelligence and Statistics was supplied with a list of the principal mica miners in the Province suitable for introduction to overseas buyers.
- (ii) Information in regard to the production, and quantity exported, of mawha seeds in the Province was communicated to an inquirer.
- (iii) An influential gentleman in Madras was supplied with a note in regard to the manufacture of pottery and porcelain.
- (iv) Information in regard to the preparation and refining of palmyra jaggery was supplied to an enquirer in Tuticorin.
- (v) The Director, Geological Survey of India, was supplied with information as to the manner in which waste mica is disposed of in Nellore.
- (vi) A member of the Legislative Assembly was supplied with an estimate for a bonemeal factory in the Circars.
- (vii) An enquirer in Coimbatore was supplied with the names of importers of betel nuts in South Africa.
- (viii) Information in regard to the products that can be manufactured from groundnut, gingelly, niger and other oils was supplied to a member of the Legislative Council.
- (ix) An enquirer in Kumbakonam was supplied with details of the manufacture of jaggery from coconut juice.
- (x) An enquirer in Bangalore was supplied with the names of importers of coconut shell charcoal in the United Kingdom and France.

- (xi) An industrial organization in the Salem district was supplied with the names of suppliers of steel drums in India.
- (xii) An enquirer in Madras was supplied with the names of owners of mines containing beryl in Nellore district.
- (xiii) An enquirer in Calcutta was supplied with the names of manufacturers of Malabar towels, South Indian dhoties with silk and lace borders and pure silk upper cloths with gold-thread borders.
- (xiv) A London enquirer was supplied with the names of manufacturers of woven material suitable for the manufacture of beach dresses and beach bags.
- (xv) An industrial concern in Madras was supplied with the names of manufacturers of epsom salt in India.
- (xvi) An enquirer was supplied with estimates for starting a tannery and a bonemeal factory.
- (xvii) Information as to the source of supply of tung oil seeds was communicated to an industrial association.
- (xviii) Information in regard to importers of barley, oats and coffee in Hyderabad was supplied to an enquirer in Madras.
- (xix) An industrialist in Guntur was supplied with an estimate for a soap factory with a capital of Rs. 36,000.
- (xx) The Director-General of Commercial Intelligence and Statistics, Calcutta, was supplied with the names of producers of asbestos in this Province for communication to a Canadian enquirer.
- (xxi) The names of a number of resin and essential oil-yielding plants available in the forests of the Province were communicated to a professor of Organic Chemistry.
- (xxii) An enquirer in Ramnad was supplied with information in regard to the curing of arecanuts.
- (xxiii) A swadeshi league in the United Provinces was supplied with a list of products which could be exported from this Province and which should find a ready sale in the United Provinces.
- (xxiv) Information in regard to the extraction of dye from annatto seeds and kamala powder was supplied to an enquirer in East Godavari district.
- (xxv) A company in Chittoor was supplied with information in regard to the installation of an oil-refining plant.
- (xxvi) An enquirer in Madras was supplied with information in regard to the manufacture of aluminous cement.
- (xxvii) A detailed estimate for a complete plant for the manufacture of 5,000 electric bulbs per day of eight hours was supplied to certain enquirers in different parts of the Province.

- (xxviii) An enquirer in Tuticorin was supplied with the names of manufacturers of galvanised iron pipes, galvanised iron buckets and cast iron pans in India.
- (xxix) An enquirer in Masulipatam was supplied with the names of manufacturers of plywood in India.
- (xxx) A Chamber of commerce in the Province was supplied with information in regard to the production of palmyra jaggery in Tinnevely and the exports from the district.
- (xxxi) An enquirer in Madras was supplied with information in regard to the users of sulphuric ether in this Province as also with the names of manufacturers in India.
- (xxxii) The Director-General of Commercial Intelligence and Statistics, Calcutta, was supplied with the names of persons who would be in a position to supply areca palm leaves in dried form to Canada.
- (xxxiii) An enquirer in Kistna district was supplied with information as to the processes involved in the preparation of different toilet articles.
- (xxxiv) The names of dealers in sooran (yam) and other fruits in Bellary were communicated to an inquirer in Malabar.

17. *General industrial development.*—The constantly increasing population and the growing pressure upon the land render the development of organized industry an imperative necessity to the economic future of India, and the advisability of encouraging in every way possible the expansion of existing industries and the development of new industries of basic and fundamental importance, of medium scale industries and of small scale and cottage industries in order to increase the sum-total of production and the national dividend of the country is not open to question. It is also generally recognized that the first step in this direction is to draw up a definite programme or plan for the development of industries on an All-India basis after taking stock of the national resources and conducting enquiries as to what industries of economic importance offer scope for development in the various provinces. As is well known the initiative in the matter was taken by the Hon'ble Minister for Industries and Labour, Madras, whose efforts resulted during the year in the setting up of a National Planning Committee, the first meeting of which was held at Bombay in December. A reference was made in last year's report to the achievements of the U.S.S.R. in the domain of industry which it was suggested afford a striking indication of what can be accomplished by an orderly system of planning. There are other countries which have derived benefit from organized planning of which mention may be made of Turkey. During the last fifteen years Turkey has carried out a programme of development which has come near to transforming her entire economy. For the carrying out of its programme of industrialization, the State has created several banking institutions, some specializing in various

branches of industrial activity and others in agriculture or commerce. Turkey's new four-year plan, which is now in progress, is the third project for the organization of that country's economic resources which has been undertaken. First came the five-year plan, a scheme which covered many undertakings which are now all but completed. Then last year, a plan was launched for the development of Turkey's mineral resources, whilst the new plan will cover port improvements, power works, reorganization of the mercantile marine, and the establishment of a variety of new industries. The problems involved in a national effort to develop the economic resources of India are so vast and complex that the more closely they are examined, the more evident does it become that a policy of mere *ad hoc* measures as opposed to central planning, if a policy of *laissez-faire* had been adopted, would have been bound to produce unsatisfactory results. In fact nothing short of centralized and comprehensive planning, entrusted to the best brains in the country, can ensure the maximization of national effort in all its aspects. Industries of national importance will no doubt have to be established in areas which possess superior resources in raw materials and command the largest markets, but it is very desirable that industrial development in India should be spread over as wide an area of the country as possible instead of being concentrated in a few large urban areas. In order that the resources of Madras should be kept prominently in view in drawing up schemes for the development of industries on an All-India basis, I drew up a note on the 'Economic resources of the Province of Madras and the possibilities of their development' before I proceeded on leave in December. This note contains a good deal of information in regard to the raw material resources of the Province and the scope which exists for the establishment of different industries. In this note it is suggested *inter alia* that, subject in some cases to more detailed investigation, there should be scope in this Province for establishing the following new industries: fertilizers with particular reference to ammonium sulphate, insecticides and fungicides, alloy steels from the Salem iron ores, magnesium metal, titanium oxide, aluminium (if the Kolab hydro-electric project is proceeded with), staple fibre, sisal fibre, spun silk from mulberry silk waste and eri cocoons, extraction of vegetable oils for export, preparation of hydrogenated products with the aid of the hydrogen which will be available as a by-product at Mettur when the alkali industry is established there, essential oil distillation, industrial alcohol, paints and varnishes, electric bulbs, rubber tyres and other rubber articles including surgical goods, agricultural and certain other implements and tools, picture frame mouldings, school and college requisites, sports goods, disinfectants, surgical wadding, surgical gut, tanning materials and extracts, biscuits, malted foods and similar products including milk powder, and egg powder, starch from tapioca, potatoes or spoiled rice, camphor, builders' hardware and domestic hardware, expanded metal, cement concrete products, such as tiles, slabs, balustrades, pipes, etc., asbestos cement

products, steel furniture, bolts and nuts, wire nails and screws, wire netting and fencing material, wood screws, buckets, brushes, mica products, lac products, metal polish, dry cells, crown corks for aerated water bottles, glass, paper, radio sets and components, cycle parts, leather pickers, bobbins, electric fittings and appliances, umbrella fittings, crackers and fireworks, and various stationery articles. There should also be scope for the expansion of some of the existing industries. For instance, the province imports about 120 million yards of cloth a year, taking figures for the five-year period ending 1937-38, out of an average consumption of 514 million yards. The province has therefore to fill up a deficit of 23 per cent of her consumption, and if regard be had to the quantity of cotton available in the Province (practically one-third of the cotton produced is exported by sea to foreign countries) and the market for cloth in it, there is still scope for the setting up of additional mills in some areas, especially for the spinning of finer counts of yarn for the production of some of the superior classes of bleached fabrics, or for increasing the production of handlooms provided that the cloth could be produced sufficiently cheaply to compete with the supply brought in from outside. The advent of power from the Papanasam hydro-electric project may stimulate the establishment of further cotton mills in the extreme south of the Province, especially as Egyptian and American cotton required for mixing in the production of finer counts of yarns and superior qualities of cloth could be imported through Tuticorin. There would seem to be scope for the setting up of more than one spinning mill in the Ceded districts as a considerable quantity of cotton suitable for the spinning of yarn of coarse and medium counts is grown in the area, whilst large quantities of yarn are imported into the Ceded districts from mills in other parts of the Province as well as from outside. The Famine Code Revision Committee have recommended that spinning mills should be set up in the Ceded districts, and since the close of the year, the possibilities of establishing mills of 12,000 and 24,000 spindles in the Ceded districts have been examined. Other existing industries which are susceptible of development are sugar, paper, finished leather goods, filature silk, fruit preservation and canning, oil extraction, slate manufacture, match manufacture (several lakhs of rupees worth of matches are still imported into the Madras Province from Burma), manufacture of flats, rounds, squares, and rods from steel scrap, glassware, earthenware and pottery, edge tools and cutlery, electro-plated articles, scientific instruments, fountain pens, toys, combs, and buttons. I have referred on many occasions to the fact that in considering the possibilities of development of industries, one is greatly handicapped by the lack of accurate knowledge of the geological and mineral resources of the Province. I have therefore stressed the advisability of attaching a mining geologist to the Department of Industries. The Government have fully realized the desirability of this, but owing to the financial position they

have been obliged to defer for the present the employment of a mining geologist. I would strongly urge that if the yield from the new taxes is sufficient to enable a portion to be made available for development purposes, one of the first steps to be taken should be the appointment, or the seconding from the Geological Survey of India, of a mining geologist to assist and advise in regard to the exploitation of our mineral resources.

18. *Alkali industry.*—In the report of the previous year reference was made to 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, bleaching powder, and hydrogen, and it was stated that the factory of the Corporation was under construction and it was anticipated that manufacturing operations would be commenced early in 1939. The construction of the factory was in progress during the greater part of the year, but it has not been possible for the Corporation to complete it and commence manufacturing operations owing to lack of capital. In order to complete the factory, about Rs. 5 lakhs would be required in addition to working capital. It would be advantageous for a hydrogenation plant for the manufacture of vegetable fats and hardened oils to be set up as an adjunct to the main alkali factory since in the production of caustic soda and bleaching powder or chlorine about 1,400 cubic metres of hydrogen a day will be available as a by-product and arrangements should be made for its utilization, as otherwise the benefit of the cheap electric energy available at Mettur will be offset by the loss of hydrogen, the generation of which in a separate undertaking would cost a good deal of money. The amount of hydrogen liberated, although quite insufficient for the requirements of an ammonium sulphate industry, could hydrogenate 16 tons of oil per day and as groundnut oil is available in the vicinity of Mettur, the advantages of establishing an hydrogenation plant in association with the alkali industry will be evident. In fact, Mettur offers unrivalled advantages for an hydrogenation factory which would involve a further capital expenditure of about Rs. 5 lakhs. It may also be found advisable to substitute the manufacture of liquid chlorine for bleaching powder and this may involve a modification of part of the plant. It is greatly to be hoped that the requisite finance for the completion of the construction of the alkali factory will be found without delay as the development of this industry is of national importance.

19. *Manufacture of fertilizers.*—It was stated in last year's report that the question of the manufacture of fertilizers had been investigated and a report on the subject was submitted to Government during the year. As the possibilities of developing the fertilizer industry may turn in no inconsiderable degree on the practicability of utilizing gypsum either for the manufacture of sulphuric acid or in the conversion of ammonia into ammonium sulphate, the first practical step should, I consider, be to arrange for an intensive survey and examination of the gypsum, which is known to occur along with the sedimentary rocks in the Trichinopoly

district, with a view to determining the quantity and quality of the mineral and its suitability for the purpose. A scheme has been drawn up for the manufacture of ammonium sulphate from by-product coke oven gas in Bihar and it is claimed that it would be possible to supply fertilizers to the whole of India, including Madras, at about Rs. 50 per ton against an estimated cost of manufacture at Mettur of Rs. 75 per ton. If, therefore, the Bihar claim is substantiated, the prospects of establishing an ammonium sulphate industry in Madras cannot be regarded as very promising.

20. *Manufacture of alloy steels from the Salem iron ores.*—The question of the further steps to be taken in regard to determining the grade of the Salem iron ores and also the quantity of charcoal that could be made available for reduction purposes and at what price it could be supplied was still under consideration at the end of the year. If the ammonium sulphate industry, referred to in the preceding paragraph, is to be established at Mettur, a block of 12,500 K.W. of electric energy at Rs. 40 per K.W. of demand will be required and a similar amount of power will be needed for a plant of a capacity of 100 tons of alloy steel per day. It now appears that it would not be possible, owing to the lack of sufficient cheap power, to establish both the ammonium sulphate and alloy steel industries and that a choice would have to be made between the two if further investigation went to show that their establishment would be a practical proposition.

21. *Production of power alcohol.*—A reference was also made in last year's report to the possibilities of producing power alcohol. A Committee was set up by Government during the year to examine the question of production of power alcohol from molasses, and to report on the best method of manufacture. The Committee considered that the mixture of alcohol with petrol for use in motor vehicles would be a practical proposition, that Government should take steps by legislation to render the use of such mixture compulsory, and that a beginning should be made in the areas suggested in the report. The report of the Committee was under the consideration of Government at the end of the year.

22. *Imports of oil-seeds into Germany from India.*—A report was sent to Government during the year in regard to this question in which it was pointed out that though there had not been any material diminution in the imports of oil-seeds into Germany from India, in the last few years, there had been in general a falling off in the imports of oils and oil-cakes, the reduction in the case of oil-cakes being particularly marked. The position will require careful watching, and it is very desirable that all possible steps should be taken to increase the internal consumption. Vegetable oils can be used in the manufacture of soap, vegetable ghee and vegetable fats and also as illuminants in the place of kerosene oil on the country side by evolving a suitable burner. The development of the oil crushing industry in India is also important from the point of view of an increase in the production of oil-cakes which have an inestimable value as fertilizers and cattle feeds.

23. *Miscellaneous industries.*—Notes on the possibilities of establishing the manufacture of (i) asbestos cement sheets and allied products, (ii) expanded metal sheets and (iii) school slates, were drawn up by the Inspector of Industrial Schools and shortly after the close of the year Government sanctioned their publication in leaflet form.

STATISTICAL SECTION.

24. *Staff.*—Sri N. K. Adyanthaya continued as Statistical Officer throughout the year. An Assistant to the Statistical Officer was appointed from 14th October 1938, and he underwent a course of training in statistical work for two months in the office of the Director-General of Commercial Intelligence and Statistics, Calcutta. A lower division clerk was appointed from 1st May 1938 to deal with (i) the compilation of a wholesale price index for Madras city and index numbers of import and export prices and (ii) the compilation of a cost of living index for Madras city.

25. *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. Five forecasts on the sowing and condition of Virginia and country tobacco during September to January in the districts of East Godavari, West Godavari, Kistna and Guntur and in the Kandukur taluk of the Nellore district were also issued during the year. Periodical reports in regard to the harvesting, curing and sale of Virginia tobacco were also sent to the High Commissioner for India, London. Fifteen intermediate crop reports were in addition issued on the condition of paddy, sugarcane, groundnut, gingelly, cotton, senna, and tobacco. The areas estimated in 1937-38 differed from the actuals in the Season and Crop Report by 0.05 per cent in the case of ginger, 0.46 per cent in the case of sugarcane, 0.88 per cent in the case of pepper, 0.97 per cent in the case of paddy, 1.88 per cent in the case of cotton, 1.92 per cent in the case of senna, 1.99 per cent in the case of groundnut, 2.40 per cent in the case of castor, 2.45 per cent in the case of gingelly, 3.18 per cent in the case of greengram, 4.06 per cent in the case of cumbu, 4.08 per cent in the case of horsegram, 5.61 per cent in the case of ragi, 5.71 per cent in the case of korra, 6.24 per cent in the case of redgram, 6.58 per cent in the case of cholam, 8.51 per cent in the case of samai, 14.11 per cent in the case of blackgram and 18.34 per cent in the case of varagu. The relatively large difference in the case of millets and pulses, especially blackgram and varagu, is due to the fact that forecast reports on these crops were instituted for the first time in 1937-38. Very few reports were received from Tahsildars and many of the reports received had been incorrectly prepared. In consequence the estimates had to be based on very imperfect material. It is, however, hoped that in course of time the forecast reports on millets and pulses will attain the degree of accuracy revealed in the reports

on other crops. To this end the Board of Revenue, at my instance, has issued instructions to Collectors to forward to me every year by the 15th August statements showing talukwar figures of area under (i) the two varieties of tobacco and (ii) korra, varagu, samai, horsegram, greengram, redgram and blackgram.

26. *Crop-cutting experiments.*—Government ordered that the results of the crop-cutting experiments conducted in 1937-38 should be ignored as they were not conducted in some districts owing to the late receipt of orders and as even in the districts where they were conducted, they were not conducted on certain crops. They sanctioned the continuance of the experiments for the determination of the normal yield of food crops and sugarcane during 1938-39 and 1939-40. At the instance of the Secretary, Indian Central Cotton Committee, the Director of Agriculture drew up proposals for the conduct of crop-cutting experiments on cotton in the Bellary district and they were under the consideration of the Indian Central Cotton Committee at the close of the year.

27. *Village Manual of Accounts.*—As the instructions for the recording of the sowings of sugarcane, groundnut, etc., in village statement No. 1 were anomalous inasmuch as they were likely to lead to the sowings during the period from 1st January to 31st March of a year being included in the accounts of two crop years, steps were taken in consultation with the Board of Revenue to issue the necessary amendments to the Village Accounts, general and special.

28. *Taluk Manual of Accounts.*—The Board of Revenue has at my instance issued suitable amendments to the Manual of Taluk Accounts, General, for the recording of the area separately under irrigated and unirrigated tobacco in the taluk returns.

29. *Prices.*—The half-yearly and monthly reports on prices referred to in the administration report of the previous year were submitted to Government. A concise report on the prices of food grains and commercial crops in the Province for the nine months ending December 1938 was also submitted to Government. In the weekly season reports relating to the Malabar district wholesale prices of both husked and unhusked coconuts used to be reported from seven stations, namely, Ponnani, Chowghat, Tirur, Tirurangadi, Calicut, Kuttuparamba and Chirakkal and the retail prices of both the varieties from only two stations, i.e., Kottayam and Cochin. The average price for the district used, however, to be struck on the basis of figures reported for all the stations in the district with the result that the average prices of coconut unhusked appeared to be lower than those of coconut husked in a large number of cases, though this phenomenon is contrary to reasonable expectations. In order to eliminate this anomaly, the Board of Revenue ordered at my instance that, with reference to the wholesale prices reported under the two varieties from the seven stations mentioned above an average wholesale price for the district in respect of each variety should be struck in future and with reference to the two stations for which retail prices of both the varieties are

reported, an average retail price should be calculated for each variety. In view of the existence of discrepancies between the wholesale prices of commodities reported by the Agents of the Imperial Bank of India and the corresponding retail prices reported by Tahsildars in their returns for the last week of each month, I suggested to the Board of Revenue the desirability of instituting a half-yearly return of verification by the Revenue Divisional Officers of the prices reported by Tahsildars with reference to the prices reported by the Agents of the Imperial Bank of India. The Board of Revenue issued the necessary instructions to Collectors. The first check was ordered to be made by the Revenue Divisional Officers immediately the instructions were received and the second check at the end of the period of six months. The scheme of verification will be adopted permanently if the verification is proved to have had any practical result in eliminating discrepancies and if the Revenue Divisional Officers do not find any great difficulty in carrying out the verification.

30. *Prices publication scheme.*—The prices publication scheme has now been working for more than two years and a half. Proposals have been submitted to Government in regard to the stations and commodities which can conveniently be added to or omitted from the present list of stations and commodities and in regard to the question of improving the scheme in such a way as to enhance its usefulness to the public. In addition to the preparation of the statement of wholesale prices each week for publication in the *Fort St. George Gazette*, the wholesale prices in terms of local units of transaction of the main commodities at certain selected stations in the Province prevailing on Monday each week are at present being tabulated on Tuesday and sent that very day to the Station Directors, All-India Radio, Madras and Trichinopoly, for inclusion in the broadcast of special rural programme. The question of sending to the Station Directors, All-India Radio, Madras and Trichinopoly, a daily statement of wholesale prices for inclusion in "Market rates and announcements" was under consideration at the end of the year. The value of the publication of prices will be considerably enhanced if weights and measures are standardized. Now that the Central Government have enacted the Standards of Weight Act 1939 (IX of 1939), it may not be long before the Provincial Government introduces a Weights and Measures Bill in the legislatures.

31. *Prices of food grains.*—Statistics of prices of the staple food grains in the several districts of the Madras Province from the earliest year for which figures are available up to 1875-76, compiled for the Madras Estates Land Act Committee, were checked and revised wherever necessary under the orders of Government. Statistics of prices were also compiled for all the districts for the years 1876-77 to 1935-36 so far as information was available and submitted to Government.

32. *Value of agricultural produce in 1937-38.*—An estimate of the value of the production of crops in this Province was made on

the basis of the statistics of the yields of crops in 1937-38 and the average wholesale prices for the different crops during the same year and communicated to Government. The relevant figures are extracted below :—

Crop.				Gross value of production in the Province in 1937-38.
(1)				(2)
				RS.
Rice	..	..	..	48,40,64,000
Cholam	..	..	..	7,28,59,000
Cumbu	..	..	..	4,16,73,000
Ragi	..	..	..	4,59,68,000
Other cereals	..	..	..	2,97,65,000
Total, Cereals				67,43,29,000
Pulses	..	..	..	1,52,09,000
Chillies	..	..	..	5,58,55,000
Other condiments and spices	..	..	..	2,69,18,000
Total, Condiments and spices				8,27,73,000
Sugar, mainly sugarcane	..	..	..	3,38,39,000
Mangoes	..	..	..	4,81,30,000
Plantains	..	..	..	5,53,92,000
Other fruits and vegetables including root crops	..	..	..	6,24,75,000
Total, Fruits and vegetables including root crops				16,59,97,000
Miscellaneous food-crops	..	..	..	79,60,000
Total, Food-crops				98,00,98,000
Groundnut	..	..	..	17,44,77,000
Coconut (copra and oil)	..	..	..	4,10,46,000
Other oil seeds	..	..	..	1,64,80,000
Total, Oil seeds				23,20,03,000

Crop.	Gross value of production in the Province in 1937-38.			
(1)	(2)			
	RS.			
Cotton	..	..	..	5,10,93,000
Other fibres	..	..	..	2,37,46,000
Total, Fibres ..				7,48,39,000
Tobacco	..	..	..	5,58,08,000
Tea	..	..	..	1,74,50,000
Coffee	..	..	..	23,76,000
Other drugs and narcotics	..	..	..	4,46,35,000
Total, Drugs and narcotics ..				12,02,69,000
Babul trees, casuarinas, thatching grass, etc.	..	..	..	1,44,84,000
Other non-food-crops	..	..	..	72,97,000
Total, Miscellaneous non-food-crops ..				2,17,81,000
Total, Non-food-crops ..				44,88,92,000
Total of all crops, food and non-food ..				1,42,89,90,000

From the above table it would appear that food-crops accounted for 68.59 per cent of the value of all crops in 1937-38 and non-food-crops for the remaining 31.41 per cent. Of the food-crops, rice accounted for 49.39 per cent of the value of all food-crops, cholam for 7.43 per cent, cumbu for 4.25 per cent, ragi for 4.69 per cent, chillies for 5.70 per cent, sugar for 3.45 per cent, mangoes for 4.91 per cent, plantains for 5.65 per cent, other fruits and vegetables, including root crops, for 6.37 per cent. The most important non-food-crop is groundnut which accounted for 38.87 per cent of the value of all non-food-crops. Next in importance are tobacco (12.43 per cent), cotton (11.38 per cent), coconut (9.14 per cent) and tea (3.89 per cent).

33. *Consumption of tea.*—An estimate of the consumption of tea in the Province was drawn up. The annual capita consumption of tea in the Madras Province worked out to 0.158 lb. as against 0.262 lb. for India. This is only natural, for as is well known the consumption of tea is more widely prevalent in the North than in the South.

34. *Production and requirements.*—The following table comparing the requirements of a well-balanced diet according to the scale laid down by Dr. Aykroyd with the quantity available per adult out of the production in 1937-38 was prepared during the year :—

Article of diet.				Requirements of a well- balanced diet per day per adult male.	Corresponding production in 1937-38.
(1)				(2)	(3)
				oz.	oz.
Rice	..	..	..	10	12.25
Millets	..	..	..	5	6.68
Pulses	..	..	..	3	0.33
Milk	..	..	..	8	2.15
<i>Fats and oils—</i>					
Ghee	..	..	..	2	0.09
Gingelly	..	..	..		0.08
Groundnut	..	..	..		1.56
Fruits	..	..	..	2*	} Not available.
Vegetables	..	..	..	10*	

* Production on this basis for the entire population will be possible only if the yield of fruits is as high as 1.33 tons per acre and the yield of vegetables as much as 40.9 tons per acre. It is doubtful whether the actual yield of vegetables in Madras would be so high, though it is possible that this Province is not deficient in its fruit production. It will be noted from the table above that Madras is very deficient in its production of pulses and milk, though its production of rice and millets is somewhat above the requirements.

35. *Inland trade statistics.*—The report of the Committee on the amplification of inland trade statistics was discussed at the Industries' Conference held at Bombay in January 1939 which was attended by the officiating Director. The Committee accepted the suggestion of the Statistical Officer in regard to suitable territorial blocks for the recording of inland trade statistics relating to this Province.

36. *Season and Crop Report.*—Government accepted my suggestion that the average wholesale prices of forecast crops printed in Appendix X to the Season and Crop Report should be based on

the wholesale prices of the different crops at the different centres published each week in the *Fort St. George Gazette* during the period of harvest months for the crops to be reported to me each year by the Director of Agriculture.

37. *Imports of paddy and rice.*—Quarterly reports on the imports of paddy, rice and broken rice into this Province were submitted to Government. Imports of broken rice, rice and paddy in terms of rice into the Madras Province in 1938-39 totalled 633,906 tons, recording a rise of 14.5 per cent over the imports in 1937-38. Of the imports in 1938-39, 131,935 tons or 20.8 per cent comprised the imports by rail and the remaining 501,971 tons or 79.2 per cent the imports by sea. An analysis of the imports in terms of rice by rail according to the main places of origin reveals that in 1938-39, 64,467 tons or 48.9 per cent originated from the Central Provinces and Berar, 53,901 tons or 40.8 per cent from Orissa, 5,708 tons or 4.3 per cent from Bengal and 5,508 tons or 4.2 per cent from Bihar. The percentage share of these provinces in the previous year was respectively 39.6 per cent, 48.4 per cent, 8.5 per cent and 1.4 per cent. As regards imports by sea, Burma accounted for 468,743 tons or 93.4 per cent of the imports in 1938-39, Indo-China for 10,664 tons or 2.1 per cent, Bombay for 5,711 tons or 1.1 per cent and Siam for 5,041 tons or 1.0 per cent. The share of Burma was 97.4 per cent in 1937-38. A feature of the imports of paddy and rice in the last quarter of 1938-39 was a recrudescence of the imports from Siam (7,142 tons of paddy and 65 tons of rice) and Indo-China (15,226 tons of paddy and 463 tons of rice) after a break of nearly two years during which there were practically no imports worth the name from these countries. Owing to the failure of the north-east monsoon during 1938-39 and the expected short crop in this Province, the imports from Siam and Indo-China have received an impetus. There were no imports of broken rice from these countries during the last quarter of the year owing no doubt to the duty on this product which still continues in force.

38. *Fodder supply.*—The method of arriving at an estimate of the resources of fodder available in the Province was elaborated in a note which was sent to the Director of Agriculture and statements were prepared accordingly. It was seen therefrom that the estimated fodder resources of the Deccan were greater than those of the rest of the Province by 31.6 per cent during the two years ending 1934-35 and by 33.9 per cent during the three years ending 1937-38. This is due to the fact that, though there is very little green fodder and rice bran in the Deccan, the available supply of fodder under other heads is greater in the Deccan than in the rest of the Province owing mainly (1) to the abundance of cholam straw, korra straw, groundnut haulms, groundnut cake, cotton cake and cotton seed in the Deccan as compared with the rest of the Province and (2) the relatively smaller number of cattle in the Deccan.

39. *Cost of living index numbers.*—The working class cost of living index number for Madras City was initiated during the year under review. It is now being published every month in the *Fort St. George Gazette*, and the principal Madras newspapers and is also being sent for publication to the *Bombay Labour Gazette* and the *Monthly Survey of Business Conditions in India*. The index number is computed on lines similar to the Bombay cost of living index which in its turn is modelled on the index published periodically by the British Ministry of Labour. Weights have been assigned to all the items included in the index in proportion to their relative importance in an average Madras worker's family budget on the basis of the data available in the report on the enquiry into the family budgets of industrial workers in Madras City conducted during 1935-36 by the Statistical Officer. The list of commodities included in the index has been made as comprehensive as possible. The price data for almost all these commodities are collected by an investigating clerk twice a week from selected retail shops in five representative market centres in the city.

40. *Wholesale price index.*—The indirect system of weighting was decided upon in the construction of index numbers of wholesale prices for Madras City. Before determining the commodities, the price relatives of which will form the components of the index, it became necessary to determine the value of trade in Madras City in a larger and more comprehensive list of commodities. It was decided to take the trade figures for the three years ending 1937-38. Accordingly, the figures relating to the foreign sea-borne trade and the coastal trade registered at the port of Madras were collected from the office of the Collector of Customs, Madras. The statistics of inland trade in some articles of major importance in respect of the City of Madras were also collected from the weekly statements of arrivals and despatches by railway give in the issues of the "Indian Trade Journal" for the three years ending 1937-38. As these statements give only the quantities of imports and exports, their values have to be estimated for the different commodities before they are added on to the sea-borne trade figures. This work was in progress at the end of the year.

41. *Statistics of wages paid to handloom weavers.*—Statements and graphs presenting an analysis of the wages paid to weavers in the handloom industry in different places in the Province with a statistical interpretation of the data were submitted to Government. A statistical examination of the figures showed that in all localities in the Province except the West Coast and the Carnatic, the standard of wages having once been fixed for a specified texture of cloth was thereafter regulated almost exclusively according to the counts of warp and weft of the goods woven. The highest wages were found to be paid in the Deccan. The rate of increase in wages for an increase in the counts was also found to be highest in the Deccan. The rate of increase in wages for an increase in the counts was indicated in the graphs of the regression lines.

42. *Turnover of sales.*—In connexion with the Sales Tax Bill, an estimate of the total turnover of taxable sales per annum in the Madras Province was made on the basis of the available statistics of production, imports and exports. For the purpose of the estimate, the trade of the Province was divided into (i) internal trade and (ii) external trade. Internal trade was taken to relate to the produce and manufactures of this Province traded within its borders and excluded from its purview, the part of the production or manufactures consumed in the villages or smaller towns without passing through the hands of dealers with a turnover of Rs. 10,000 and over per annum. External trade was taken to comprise imports and exports both by sea and rail. The total turnover of sales was estimated by taking twice the total value of the internal and external trade on the assumption that the commodities traded in pass on the average through two hands who are liable to be taxed. Due allowance was made for goods exempt from the tax.

43. *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 11th July 1938. A note on the varietal examination of the Madras cotton forecasts for the season ending 31st January 1938 was prepared and submitted to the Committee.

(ii) *Mileage of railways.*—At the instance of the Finance Department, the total mileage of railways in this Province was worked out and supplied to Government. The total calculated railway mileage in the Province is 4,828 miles comprising 2,508 miles of the South Indian Railway, 2,036 miles of the Madras and Southern Mahratta Railway, 246 miles of the Bengal-Nagpur Railway and 38 miles of His Exalted Highness the Nizam's State Railway.

(iii) Information in regard to the average net income per acre from coffee and tea was supplied to Government.

(iv) A note on the method of estimating crop forecasts was communicated to the Director of Agriculture, Central Provinces and Berar.

(v) A statement was compiled showing the foreign imports and exports, coastwise imports and exports, re-exports, and inland imports and exports relating to the Province of Madras for the year 1937-38 in all the different commodities enumerated in the accounts relating to the Sea-borne Trade and Navigation of British India. The figures were collected from the office of the Collector of Customs and the monthly volumes of "Accounts relating to the Inland Trade of India." With reference to the available figures of production for some of the commodities, estimates of consumption were struck as far as possible, in making use of the trade figures relating to such commodities.

COTTAGE INDUSTRIES.

44. The peculiar feature of the agricultural industry of the country which provides employment for only a part of the year, the low standard of living of the great majority of the people and the fact that most of the people live in villages, all indicate that cottage industries which would provide employment for the agriculturist during the periods of his enforced idleness must receive prominent attention in the evolution of our economic policies. It is at least as necessary to devote as much attention to the worker in the countryside as to the worker in the town and despite the steady increase in the population which has come to regard industry as its life occupation, it is still probably true to say that the majority of workers are village-minded and would prefer to live in the countryside if they could be assured reasonable conditions of life. The development of rural industries throughout the Province is part of the Government's declared industrial policy and some such expansion of rural employment will become even more vitally necessary if any considerable number of Indians is repatriated from countries such as Burma and Ceylon. It is generally recognized that one of the main difficulties under which the cottage industrialists labour is in regard to the marketing of their finished products. Industrial museums may be expected to be of great benefit to cottage industrialists by bringing them into touch with buyers who might otherwise be unaware of their existence. It is gratifying therefore to be able to record that, owing to the initiative of the Hon'ble Minister for Industries and Labour, district museums were set up during the year or were under contemplation in the West Godavari, East Godavari, Cuddapah, Guntur, South Kanara, Tinnevely and North Arcot districts, and it is probably now only a question of time for each district to have a museum of its own. A central industrial museum, to which the district museums will be linked, has also been established at Madras since the close of the year under review and this should prove of considerable assistance to the cottage industrialists. In considering the industries which could suitably be introduced in different areas of the Province, the desirability of bringing the people up to the minimum nutritional standard should be kept prominently in view. For example, as is well-known, rice may or may not be deficient in Vitamin B according as the rice used is milled and polished, hand pounded or parboiled. The outer layers of the grain are richer in protein than the inner kernel and when rice is highly milled there is a loss of protein as well as of vitamins and mineral salts. It is very necessary, therefore, that hand-pounding with the improved departmental hand machine should be widely introduced in the place of rice milled by machinery not only for the employment which hand-pounding would provide, but also in the interests of the health of the people. If oil and oil-cake could be locally manufactured in some areas the oil would add an important

source of fat to the peasants, dietary and support the soap manufacturing and other industries, whilst the residue could be utilized as a fertilizer or as a cattle feed. Soap manufacture and the process of refining vegetable oils on a cottage industry scale as evolved in the Kerala Soap Institute, Calicut, is a suitable rural industry, since most of the raw materials are available in the Province, and the processes involved are fairly simple, whilst plant of the cheapest description may be employed. Some of the vegetable oils extracted in the villages could be utilized for the manufacture by the villagers of cheap washing soaps which could be sold at low prices, thus bringing soaps within the reach of people who are not at present able to use them at all. The refined oil could also be stored and transported to other areas if necessary, whilst subject to further investigation, it may be possible to use vegetable oils for illuminating purposes in place of kerosene oil. There would seem to be considerable scope for the development of the village tanning industry. Tanning was one of the earliest industries other than agriculture, which developed in India and tanning and leather working were originally village industries. If the quality of the leather produced in the villages could be improved and better quality leather articles produced, there seems no reason why the leather and leather articles required for the villagers should not be produced in the villages as in former days. There would seem to be considerable scope for the formation of co-operative societies in some areas for the manufacture of improved palmyra jaggery. The hand-ginning of cotton with the aid of the departmental hand gin may also be introduced. Another small industry is clay goods, including pots which may replace metal utensils to some extent, and bricks. The match industry may be further developed as a cottage industry in some areas as we still import several lakhs of rupees worth of matches from Burma. In some areas the coir industry may be developed as a cottage industry. Home canning, the preparation of pine-apple and other juices in small hand-worked presses and the distillation of essential oils are other small industries, which offer possibilities of development. Other industries which may be introduced or developed are the manufacture of glass bangles, light metal casting work and metal hollow ware, mixed paints for household use, sericulture and ericulture, and horticulture (fruit and vegetable products). Poultry farming, dairy farming, rabbit and goat breeding and bee-keeping should also receive attention in any comprehensive programme of rural development. Dairy farming and fruit culture should be encouraged for milk and milk products are important sources of protein and of calcium, whilst some fruits are a rich source of vitamin A. The industries to be introduced in particular areas will require to be examined with reference to local conditions and circumstances; but paddy husking, oil-crushing and refining and soap manufacture, tanning and leather goods manufacture, light metal casting work, pottery and handmade paper, amongst others, will generally be found to be suitable in different districts.

45. Although every attempt should be made to revive and resuscitate the existing cottage and small scale industries, it will probably be found almost as necessary to introduce and develop new cottage industries as to find an extended market for the products of the existing ones. In last year's report, mention was made of the fact that with a view especially to studying the development of industrial education in the Punjab and the United Provinces in the direction of providing more specialized courses of training in the industrial schools for the manufacture of particular articles such as would enable students to set up small establishments of their own on the completion of their training, arrangements had been made to depute Sri V. R. Chitra of the School of Arts and Crafts to visit various centres in Northern India. Sri Chitra's report was under consideration at the close of the year, and as a first step it is proposed to introduce instruction in picture frame moulding at the School of Arts and Crafts, Madras. I have 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, the Government decided shortly before the end of the period under review to depute Sri V. R. Chitra to Japan for the purpose. Sri Chitra has left for Japan since the close of the year, and it is hoped that on his return, it will be possible to draw up proposals for the resuscitation and development of several cottage and small scale industries.

46. *Handspinning and khadi manufacture.*—A provision of Rs. 2,00,000 was made in the budget for 1938-39 for the development of the handspinning and khadi industry. Government approved the proposals of the All-India Spinners Association, Ahmedabad, for the utilization of an amount of Rs. 90,162 by the branches of the Association in this Province for the Tamil Nadu (Tiruppur), Kerala (Payyanur) and Andhra (Masulipatam), in order 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 workers and their employment as instructors in the villages with a view to increasing the efficiency of the artisans and the implements used. Government also sanctioned a subsidy up to a maximum of Rs. 1,00,257 to cover possible losses caused by inexperienced workers and to enable adequate wages to be given to the spinners and other artisans, based on the actual increase in the production of khadi during the year, calculated at the rate of one anna per square yard of increase. In regard to the famine areas, a grant of Rs. 8,913 including a subsidy of Rs. 2,500 calculated at the rate of annas eight per viss of yarn produced, was sanctioned in respect of schemes for development in Adoni taluk of the Bellary district and in Kurnool taluk of the Kurnool district. The Govern-

ment also sanctioned the grant of an advance of Rs. 100, free of interest to each of two families in the village of Marikala in Nugur taluk, East Godavari district for reviving the silk spinning and weaving industry in that area. Grants of Rs. 87,185-14-0 under non-famine areas and Rs. 6,684-6-0 under famine areas were drawn and disbursed in advance to the All-India Spinners Association. An amount of Rs. 57,112-7-7 was actually spent during the year by the several branches of the Association in this Province, for the purposes for which the grant was sanctioned. A further provision of Rs. 2,00,000 has been made in the budget for 1939-40 for the continuance of the development of the handspinning and khadi manufacture movement.

47. *Coir working class.*—The second demonstration class was started on the 1st of May at Beypore and twelve students underwent training during the year in the various processes of coir manufacture such as beating and cleaning of fibre, spinning of coir yarn and weaving of mats and other articles. In the preparation of fibre, the students were shown how superior qualities could be produced by removing the outer skin and stumps before the husks are beaten to remove the pith, and how to sort the fibre according to colour before it is allowed to dry. The advantages of willowing fibre in the wet state soon after it is beaten and cleaned and the disadvantages of doing it after imperfect cleaning and drying were demonstrated to the students. In regard to spinning, the object is to enable the students to produce yarn comparable in quality to that of the reputed brands prepared by experienced workers in Anjengo and other localities in Travancore and elsewhere, and many of the students can now prepare coir yarn of fairly uniform thickness and twist approaching the ordinary Anjengo quality. Training in weaving and in the manufacture of ropes, brushes, brooms, etc., was also imparted. A co-operative inspector was deputed to undergo training in the coir working class in order to acquaint himself with the technique of the industry and he also visited coir factories and coir working centres in Cochin and Travancore to study the methods in vogue there. Subsequently, he was instrumental in starting a coir co-operative society in Pavaratti in Ponnani taluk which is a large coconut centre. The output of the coir school during the year comprised 1,000 feet of coir matting and belting, 50 cwt. of coir yarn and ropes and 300 brooms and brushes. The sale-proceeds amounted to Rs. 529.

48. *Demonstration of the manufacture of date palm jaggery in Cuddapah district.*—When prohibition was introduced into the Cuddapah district, employment had to be found for the former fermented toddy tappers and in view of the considerable acreage under date palm in the district, jaggery making from date palm juice suggested itself as a suitable occupation for them. Accordingly Government sanctioned the staging of a demonstration at Kesapuram in Royachoti taluk. The demonstration was commenced on 22nd February and was in progress at the close of the year. The jaggery produced was disposed of for edible purposes

and also for the curing of tobacco, whilst it was also found to be suitable for refining purposes. The price realized for the jaggery was Rs. 30 per candy. The technical results of the demonstration were satisfactory and a report embodying the conclusions arrived at was under preparation at the end of the year. The question of establishing a centre for tapping the sweet juice of the palmyras in the Idupulapaya reserve in the Vempalle range, North Cuddapah Forest Division, which is a remnant of an old natural forest, was under consideration during the year, and it is hoped that it will be possible to stage a demonstration of palmyra jaggery manufacture in the area during 1939-40.

49. *Handmade paper.*—The possibilities of developing a handmade paper and straw-board industry in some areas of the Province would appear to be reasonably promising in view of the fact that grasses such as Botha (*Cymbopogon Coloratus*) and leaves of certain plants which are available in plenty and have hitherto been regarded as of little economic value could be employed as raw material for the production of pulp. With a view to assisting the development of village industries, the All-India Village Industries Association at Wardha provides special short courses of instruction in paper manufacture, amongst other industries. Ten candidates were deputed by Government in June 1938 for training at Wardha in the hand made paper industry, each candidate being paid a stipend of Rs. 15 per mensem during his training in addition to railway fare to and fro. The first batch of students returned from Wardha in December 1938. Government also sanctioned the opening of two training centres in paper making, one each for the Tamil and Telugu areas, the classes being attached to recognized industrial schools namely, the Harijan Industrial School, Kodambakkam near Madras and the Bharadwaj Ashram, Peddakadubur, Bellary district. These centres were given a special grant by Government to meet the expenditure involved and the classes were placed in charge of men who had recently completed their training at Wardha. Two other industrial schools, one at Rajahmundry, and one in Malabar, have on their own initiative started courses in hand made paper employing the services of men trained at Wardha.

50. *Training in oil pressing.*—The Government deputed eight students for training in the oil pressing industry from December 1938 for a period of five months at the All-India Village Industries Association training school at Wardha and the candidates selected were under training at the close of the year.

51. *Sand paper.*—The possibilities of introducing the manufacture of sand paper as a cottage industry were examined during the year, and it was found that in order to ensure uniformity and evenness of the paper, an even application of the glue and sprinkling of the powder with the aid of hand worked rollers would be necessary, and that this would involve a certain amount of

preliminary experimental work with a view to evolving suitable machines in the departmental workshops. Accordingly proposals were submitted to Government for the experimental manufacture of a suitable glueing roller, handworked grader and sprinkler for the production of sand paper on a cottage industry basis and these were sanctioned by Government shortly after the close of the year under review.

52. *Preparation of malted foods.*—With a view to evolving a small scale plant for the preparation of malted foods from cholam and other cereals untouched by hand, the Government sanctioned shortly before the close of the year, the construction at the Industrial Engineering Workshop, Madras, of an apparatus for soaking, drying and couching, and machines for husking, grinding and roasting cholam. The plant when constructed will be placed at the disposal of the Government Agricultural Chemist, Coimbatore for carrying out experiments in the preparation of malted foods. Consideration of the question of setting up an experimental malting factory cum laboratory will await the results of these experiments.

53. *Cane splitting machine.*—In Madras City, there is a considerable manufacture of cane furniture of various kinds, the principal raw material employed being rattan cane imported from Singapore, whilst a fair amount of Malabar cane is also used in the rougher types of cane chairs. Even with the Singapore cane, which is admittedly of superior quality, it has been found impossible under local conditions to produce manufactured articles of the finish attained by European manufacturers. This is due to the fact that locally the cane is split or rounded by hand with the result that lengths of cane, whether in round or flat form, are very irregular and it is not possible with such material to obtain that smooth and regular finish which is so noticeable in the imported article. In order therefore to overcome these defects and to demonstrate that rattan cane of the required smoothness and finish could be made if rattan cane is prepared by machine, a cane splitting machine was purchased a few years ago and installed at the Government School of Technology, Madras. It was decided shortly before the close of the year to set up the cane splitting machine in the Rattan Bazaar area and split cane there for the conservative rattan workers at a low rate in order to bring home to them the advantages of using centre cane.

54. *Agent in London for the sale of Madras Industrial products.*—In 1934-35, the Government accepted an offer of the Council of the Victoria Technical Institute to arrange for the sale of Madras cottage industrial products in the European markets through an agent in London and sanctioned a grant of Rs. 3,000 per annum to the Institute for a period of three years from 1934-35. When the grant was renewed for 1937-38, the Government stated that further assistance in this direction could only be

justified on the result of the working of the agency during that year. As there was no marked improvement in the turnover of the agency, the grant to the Victoria Technical Institute for the purpose has been discontinued.

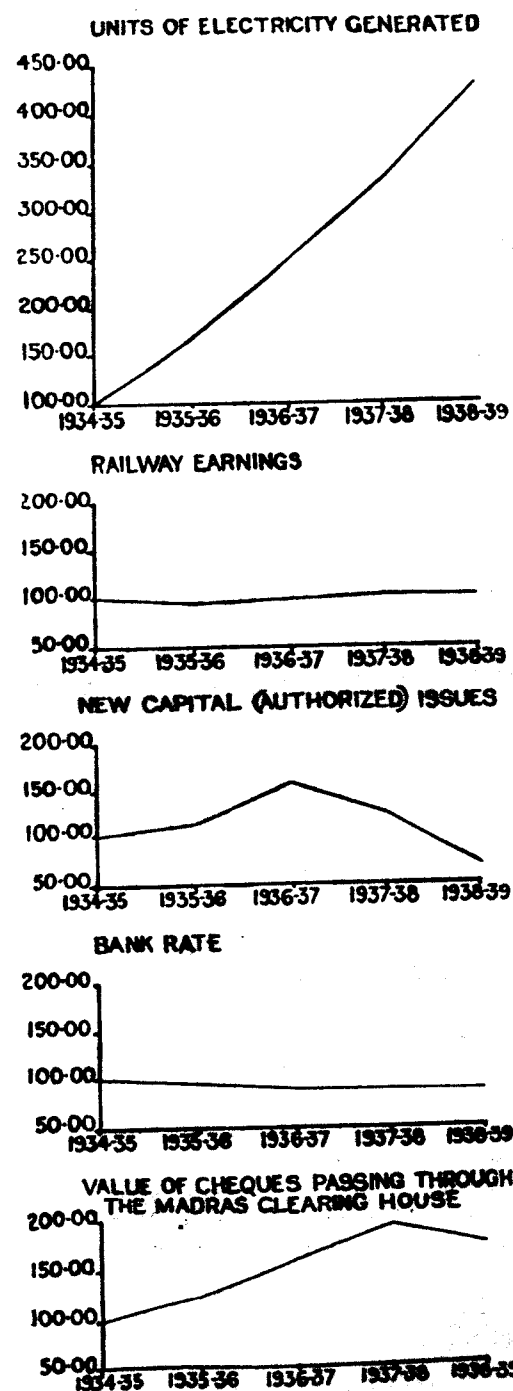
GENERAL REVIEW OF COMMERCIAL AND INDUSTRIAL CONDITIONS.

55. *World conditions.*—At the end of the previous year, indications were not wanting that the confidence which had carried the world through five years of recovery was on the wane, and a decline in activity in the United States, coupled with a fall in the prices of certain important commodities, had awakened some fears of a downward movement in the trade cycle. These apprehensions proved to be not unjustified, for the year under review was one of economic recession, the decrease in the value of Madras exports, which will be referred to later, reflecting not only lower average commodity values, but also a smaller demand for Indian produce even at lower prices. For the greater part of the year, the deterioration in international political relations and the course of activity in the United States were the dominating factors. The weakening of the commodity markets during the year had a severely depressing influence on the trade of the primary producing countries, including India, which all showed substantial declines in exports, though their imports did not decline at an equal rate. Exceptionally, however, the imports into Madras showed a greater percentage reduction as compared with the previous year than did the exports from this Province. In the first quarter of the year, the depression in the United States continued, and caused a slow downward movement in the world as a whole, the effect of the American depression being transmitted to the rest of the world through the commodity markets. In the next six months a sharp recovery in the United States found the rest of the world drifting further, partly under the delayed action of the American depression and partly under the weight of the growing political tension in Europe and the result was an uncertain movement on a very slightly rising trend. The Munich Agreement in September was followed by a short lived rebound both in general activity and in some commodity prices, but in November came a fresh set back due to a new wave of distrust in the political outlook, and during the remainder of the year developments in the economic position were dominated by the international situation. In India, quiet trading conditions prevailed during most of the year consequent on the fluctuations in commodity prices, but although industrial activity showed remarkable steadiness, prices of manufactured goods (with the notable exception of sugar) declined largely in sympathy with the fall in international prices of similar goods. The 'Statist' index of the general price level of wholesale commodities which was 94.2 in March 1938 fell to 89.0 in March 1939, or by 5.59 per cent. The Calcutta index number of wholesale prices (July 1914=100) was 96 in March 1939, i.e., at the same level as in

March of the previous year. The Karachi index number also stood at the same level in March 1939 as in March 1938, i.e., 104. The Bombay index number fell from 100 to 99 or by one per cent. If average monthly numbers were taken, however, these indices would no doubt have shown a definite fall in each case. From the point of view of international trade the principal achievement of the year was the conclusion of a trade agreement between the United Kingdom and the United States. These two countries together are responsible for more than a quarter of the world's imports and exports and any arrangement calculated to promote the freer movement of goods between them must necessarily have a pronounced influence favourable to the development of world trade as a whole. In the year under review economic activity was so completely subservient to political and military demands that it was extremely difficult to distinguish economic trends from their political background and still more difficult to form any opinion as to what the future held in store. At the close of the year the economic outlook was still overshadowed by international anxieties, but the view was widely held that if there should be a sudden change for the better in international affairs, there would be a marked recovery of business during the ensuing year. In considering the future course of world trade, it is only possible to adopt a short-term view in the face of international uncertainties. Given normal conditions, the guiding factors are price tendencies, stocks of goods, for consumption, and general demand. Stocks of consumption goods which both in the United States and the United Kingdom showed a rising tendency for the most part during 1937, had been substantially reduced by the end of the period under review so that on the score of stocks and prices, which seemed to be on a firmer basis, there appeared to be some justification for the view that the situation was more favourable than it was a year previously, when stocks were accumulating and prices were still falling. Clearly, however, the course of economic activity must depend largely upon the imponderables of the international political situation.

56. *Economic conditions in Madras.*—There was no change in the Bank rate which has remained at 3 per cent since November 1935. The deterioration in the economic position was reflected in the value of cheques passing through the Madras Clearing House which declined from Rs. 1,09,89,54,282 in the year ended 31st March 1938 to Rs. 98,90,74,934 in the year under review. South India experienced a minor banking crisis in June and succeeding months following the suspension of payment by a scheduled bank with many branches in the Province and the failure of one or two smaller institutions. The gross earnings of the Madras and Southern Mahratta Railway Co., Ltd., increased from Rs. 749.33 lakhs in 1937-38 to Rs. 754.44 lakhs in 1938-39, the improvement being attributable to increased goods traffic. On the other hand, the gross earnings of the South Indian Railway declined from Rs. 559.85 lakhs in 1937-38 to Rs. 546.74 lakhs in

INDEX NUMBERS SHOWING THE VARIATIONS IN INTERNAL ACTIVITY WITH 1934-35 AS BASE OR 100.



1938-39, coaching earnings decreased owing to the adverse economic conditions brought about by the failure of the North-east monsoon which affected travel generally, whilst in the period under review there were no special festivals similar to those which occurred in the previous year. Goods earnings also declined as a result of the failure of the groundnut crop in the Salem area due to untimely rains and of the falling off in the movement of sugar from Northern India. The total value of the sea-borne trade of the Madras Province—(both foreign and coastwise)—including trade with Burma, decreased by Rs. 945.25 lakhs or by about 10.68 per cent to Rs. 7,903.81 lakhs. The foreign trade, excluding Government transactions and excluding Burma, decreased in value from Rs. 5,428.17 lakhs to Rs. 4,931.36 lakhs, Burma accounting for another Rs. 1,178.53 lakhs. The coasting trade also declined from Rs. 2,037.45 lakhs to Rs. 1,748.29 lakhs (excluding Burma). In the case of private merchandise, imports from foreign countries (excluding Burma) declined from Rs. 1,798.74 lakhs to Rs. 1,537.04 lakhs or by 14.55 per cent, imports from Burma declining from Rs. 1,086.35 lakhs to Rs. 924.39 lakhs. Imports of machinery and mill-work, instruments, apparatus and appliances, manures, tobacco, tea-chests, grain, pulse and flour, building and engineering materials and sugar registered increases, whilst imports of oils, metals and ores, vehicles, cotton manufactures, cotton twist and yarn, dyeing and tanning substances, paper and paste-board, provisions and oilman stores, chemicals, drugs and medicines, hardware, spices, rubber, liquors, glass and glass-ware, silk raw and manufactured, artificial silk, stationery (excluding paper), postal articles not specified, wood and timber, soap and 'other articles not listed' showed decreases. Exports of Indian produce to foreign countries (excluding Burma) declined by Rs. 258.82 lakhs from Rs. 3,565.00 lakhs to Rs. 3,306.18 lakhs or by 7.26 per cent. It is noteworthy that, contrary to the experience of practically every primary producing country, the exports from Madras declined to a smaller extent than the imports. Exports of seeds, tea, tobacco raw and manufactured, grain pulse and flour, oil-cakes, coffee and postal articles increased, whilst exports of leather, fruits and vegetables, cotton manufactured, cotton raw, coir raw and manufactured rubber, metals and ores, spices, fish, hides and skins raw, fibre for brushes and brooms, oils and 'other articles not listed' declined. A glance at the table of prices of commodities which is printed on page 43 will show that the average of the monthly average values of the listed commodities were, with the solitary exception of sugar, lower during the year under review than in the previous year. Values of cotton, groundnuts, pepper, paddy and rice, coir yarn, copra, coconut oil, tobacco, myrobalans, castor oil, castor seed, tanned goat skins, and tanned sheep skins, were lower in March 1939 than in the corresponding month of the previous year, and amongst the listed commodities only jute, sugar and tanned cow hides were standing at higher levels.

Average monthly wholesale prices of some of the principal Madras commodities during the year 1938-39.

Commodity.	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.	Rs. A. P.
Cotton (Cambodia), per candy of 520 lb.	150 11 2	151 10 0	140 10 0	141 2 2	141 8 0	137 12 10	138 6 0
Cotton (Karunganni), per candy of 520 lb.	148 0 0	123 0 0	118 12 0	122 11 2	121 8 0	120 2 2	116 4 0
Groundnuts (Mandya), per candy of 531 lb.	19 10 0	21 8 0	21 6 6	22 11 7	21 13 3	20 2 4	19 14 0
Groundnuts (Coimbatore), per candy of 531 lb.	..	..	..	..	21 7 0	20 11 7	20 12 0
Pepper, per cwt.	17 0 0	17 12 0	17 6 0	18 0 0	18 8 0	18 6 6	17 14 8
Paddy, per bag of 164 lb.	4 6 6	4 8 0	4 5 10	4 4 11	4 4 5	4 3 11	4 7 11
Rice do.	7 0 0	6 11 6	6 11 6	5 14 0	5 14 0	5 14 0	6 2 0
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	66 4 0
Copra, per candy of 655 lb.	40 9 7	42 4 0	40 4 0	42 3 0	40 12 0	41 0 0	43 4 0
Coconut oil, per candy of 655 lb.	62 4 10	64 0 0	62 12 0	64 9 7	63 14 0	62 12 10	64 4 0
Jute, per candy of 500 lb.	28 8 5	28 0 0	31 0 0	32 6 5	36 8 0	36 12 10	37 0 0
Tobacco, per maund of 22 lb.	5 10 5	4 8 0	4 8 0	4 4 5	4 0 0	4 0 0	4 0 0
Myrobalans, per bag of 164 lb.	3 0 0	3 0 0	2 10 0	2 8 0	2 10 0	2 10 0	2 8 0
Castor oil, per candy of 500 lb.	61 10 0	60 2 0	60 6 0	63 2 0	62 15 4	61 2 0	60 10 0
Castor seed, per bag of 164 lb.	8 15 0	9 0 0	8 14 0	8 14 6	8 14 10	8 4 0	8 6 0
Nellikuppam sugar, per cwt.	..	..	..	..	12 4 0	13 4 0	13 10 7
Channai sugar, per cwt.	..	..	..	..	12 2 0	13 1 0	13 9 6
Tanned cow hides—	..	..	..	..	..	..	..
Bangalore 8-84 lb. per lb.	0 8 10	0 8 8	0 8 8	0 8 8	0 8 4	0 9 9	0 9 11
Up-country 8-84 lb. per lb.	0 8 8	0 8 6	0 8 6	0 8 6	0 9 0	0 9 6	0 9 4
Coats 7-7½ lb. per lb.	0 9 4	0 9 4	0 9 2	0 9 2	0 9 9	0 10 3	0 10 1
Tanned goat skins—	..	..	..	..	..	..	..
Good, per lb.	1 8 4	1 6 3	1 5 4	1 4 2	1 5 2	1 5 11	1 5 9
Fair, per lb.	1 7 5	1 5 4	1 4 3	1 3 2	1 3 7	1 4 6	1 4 6
Common, per lb.	1 6 3	1 4 4	1 2 11	1 2 3	1 2 11	1 3 7	1 3 6
Tanned sheep skins—	..	..	..	..	..	..	..
Good, per lb.	1 8 6	1 8 4	1 6 3	1 5 11	1 5 12	1 7 5	1 6 9
Fair, per lb.	1 7 5	1 6 1	1 4 6	1 4 10	1 5 8	1 4 10	1 4 0
Common, per lb.	1 6 3	1 5 2	1 2 3	1 1 11	1 1 11	1 2 7	1 2 7

Commodity.	November.	December.	January.	February.	March.	Average of the monthly prices for 1937-38.	Average of the monthly prices for 1938-39.
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Rs. A. P.	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.	149 6 0	163 8 0	163 8 0	157 12 0	160 8 0	174 2 0	148 11 6
Cotton (Karunganni), per candy of 520 lb.	122 12 0	131 12 0	131 6 0	133 6 0	134 11 2	165 12 6	125 5 10
Groundnuts (Mandya), per candy of 531 lb.	19 8 9	20 8 9	20 12 0	20 15 6	20 15 7	26 12 5	20 12 10
Groundnuts (Coimbatore), per candy of 531 lb.	20 8 0	22 8 0	22 0 0	..	..	24 1 7	21 7 9
Pepper, per cwt.	17 12 0	17 12 0	17 9 0	17 12 0	17 4 8	18 8 5	17 12 0
Paddy, per bag of 164 lb.	4 10 0	4 13 2	4 4 5	4 4 8	4 4 8	4 8 9	4 6 4
Rice do.	6 50 10	7 1 6	6 5 9	6 5 10	6 6 0	6 14 0	6 6 10
Coir yarn, per candy of 672 lb.	65 0 0	65 0 0	65 0 0	63 12 0	65 0 0	70 0 0	66 12 0
Copra, per candy of 655 lb.	42 4 0	44 8 0	42 8 0	40 8 0	39 0 0	46 2 9	41 9 1
Coconut oil, per candy of 655 lb.	65 8 0	66 8 0	63 8 0	61 1 0	60 8 0	65 3 3	66 7 7
Jute, per candy of 500 lb.	28 8 0	34 2 0	35 5 0	30 4 0	42 2 2	26 5 10	25 8 8
Tobacco, per maund of 22 lb.	4 0 0	4 0 0	4 0 0	4 0 0	4 2 6	4 8 5	4 2 10
Myrobalans, per bag of 164 lb.	2 8 0	2 8 0	..	2 4 6	2 4 0	3 12 2	2 9 4
Castor oil, per candy of 500 lb.	60 2 0	61 6 0	60 2 0	62 6 0	62 6 0	71 2 1	60 11 11
Castor seed, per bag of 164 lb.	8 4 0	8 10 0	8 6 10	8 0 6	8 1 0	10 6 1	8 6 10
Nellikuppam sugar, per cwt.	12 12 7	14 7 2	14 6 9	14 13 6	15 8 2	19 2 7	12 15 10
Channai sugar, per cwt.	12 12 0	16 7 2	14 5 9	..	..	9 15 2	12 9 0
Tanned cow hides—	..	..	..	..	..	..	..
Bangalore 8-84 lb. per lb.	0 9 11	0 9 11	0 9 11	0 10 1	0 9 11	0 9 9	0 9 6
Up-country 8-84 lb. per lb.	0 9 8	0 9 8	0 9 7	0 9 9	0 9 7	0 9 5	0 9 2
Coats 7-7½ lb. per lb.	0 10 5	0 10 5	0 10 3	0 10 3	0 10 3	0 10 4	0 9 11
Tanned goat skins—	..	..	..	..	..	..	..
Good, per lb.	1 5 6	1 7 2	1 8 8	1 9 0	1 9 0	1 14 11	1 8 9
Fair, per lb.	1 4 6	1 5 7	1 6 11	1 7 5	1 7 5	1 10 5	1 6 5
Common, per lb.	1 3 6	1 4 2	1 5 6	1 5 9	1 5 11	1 10 5	1 4 3
Tanned sheep skins—	..	..	..	..	..	..	..
Good, per lb.	1 6 7	1 6 9	1 7 1	1 6 11	1 5 12	2 0 8	1 6 11
Fair, per lb.	1 4 6	1 4 6	1 4 6	1 4 6	1 4 6	2 0 10	1 6 9
Common, per lb.	1 2 9	1 3 9	1 2 11	1 2 7	1 1 7	1 7 4	1 2 11

57. *Inter-Empire and foreign trade.*—The trade with the British Empire (including Burma) represented 66.14 per cent of the total foreign trade of the Province compared with 64.60 per cent in the previous year. Imports declined by Rs. 259.83 lakhs to Rs. 1,735.39 lakhs or by 13.02 per cent and exports by 91.30 lakhs to Rs. 2,252.54 lakhs or 3.90 per cent. Imports from the United Kingdom declined by Rs. 78.37 lakhs to Rs. 655.92 lakhs, whilst exports to that country declined by Rs. 61.20 lakhs to Rs. 1,440.25 lakhs. The percentage of the trade with the United Kingdom to the total foreign trade of the Province advanced, however, from 33.29 to 34.77. The trade with Burma is of importance to the Province, the imports from that country being the largest from any single foreign country, including the United Kingdom, and exceeding in value the value of the imports from all countries outside the Empire put together. Imports from Burma declined from Rs. 1,086.35 lakhs to Rs. 924.39 lakhs, whilst exports advanced slightly from Rs. 252.09 lakhs to Rs. 252.61 lakhs, the percentage of the total trade with Burma to the total foreign trade declining from 19.92 to 19.53. The principal imports from Burma were rice, kerosene, petroleum, teakwood, pulses, paddy and matches, and the principal exports, cotton manufactures (piecegoods coloured and grey), vegetable oils, cigarettes, cotton twist and yarn, fish—dry unsalted, fruits and vegetables and groundnuts. Imports from Ceylon amounted to Rs. 30.92 lakhs in value, whilst exports from Madras were Rs. 367.65 lakhs, the total trade with Ceylon representing 6.61 per cent of the total foreign trade of the Province. The trade with countries outside the British Empire declined from 35.40 per cent to 33.86 per cent of the total foreign trade of the Province (including that with Burma). Imports declined by Rs. 63.83 lakhs to Rs. 726.04 lakhs and exports by Rs. 172.59 lakhs to Rs. 1,315.56 lakhs. Imports from European countries declined from Rs. 368.82 lakhs to Rs. 354.20 lakhs, but exports advanced from Rs. 949.20 lakhs to Rs. 977.70 lakhs. The percentage of the total trade with European countries to the total foreign trade of the Province advanced from 19.62 per cent to 22.09 per cent. As regards Asiatic countries, imports declined from Rs. 343.19 lakhs to Rs. 238.81 lakhs and exports from Rs. 212.85 lakhs to Rs. 104.72 lakhs, imports from Japan declining by Rs. 86.96 lakhs to Rs. 123.85 lakhs and exports to that country by Rs. 113.18 lakhs to Rs. 71.41 lakhs. The percentage of the trade with Asiatic countries to the total foreign trade declined from 8.28 per cent to 5.70 per cent. Both imports from and exports to America and Africa declined in value, but the percentage of the trade with them to the total foreign trade increased slightly.

58. *New industrial undertakings.*—Two hundred and two companies were registered during the year of which three were

without share capital. The authorized capital of the 199 companies registered with capital amounted to Rs. 307.84 lakhs, the subscribed capital to Rs. 33.94 lakhs and the paid up capital to Rs. 3.31 lakhs. Of the new registrations, with share capital, 82 were trading and manufacturing concerns, 48 transit and transport companies, 38 hotels, theatres and entertainment enterprises, 15 mills and presses, seven banking, loan and insurance companies, four tea and other planting companies, two mining and quarrying and three others. The companies floated with the largest capital were:—Commercial Credit Bank, Ltd., Madras (Rs. 15 lakhs); Real Madras Handkerchief Manufacturers, Ltd., Madras (Rs. 11 lakhs); Cape Comorin Railway and Transport Co., Ltd., Madras, Sri Minambika Mills, Ltd., Madras, Coimbatore Kuver-Raj Mills, Ltd., Coimbatore, Theni Mills, Ltd., Theni and Oucherlony Valley Estates (1938), Ltd., Calicut (Rs. 10 lakhs each); Bhagyalakshmi Mills, Ltd., Pollachi (Rs. 9 lakhs); Stoneware Pipes (Madras), Ltd., Madras and Standard Tile and Clay Works, Ltd., Madras (Rs. 7.5 lakhs each); Overseas Commercial Corporation, Ltd. (Rs. 5.5 lakhs); Famous Studios, Ltd., Berwada, New Madras Talkies, Ltd., Madras, Planting Investment Trust, Ltd., Madras, Presidency Transports, Ltd., Madras, National Chemical and Pharmaceutical Works, Ltd., Rajahmundry, Premier Indian Scientific Company, Ltd., Madras, Simpson and General Finance, Ltd., Madras, Amalgamation, Ltd., Madras, Madras Finance Corporation, Ltd., Madras and Emdeeyes and Sons, Madras (Rs. 5 lakhs each), South Indian Bus Transport, Ltd., Guindy (Rs. 4 lakhs), Industrial Trust, Ltd., Madras, Oil Products Corporation, Ltd., Cuddalore, Trichendur Light Railway, Ltd., Madras, Kottagudi Plantation, Ltd., Bodinayakanur, Radhakrishna Hoseries and Textiles, Ltd., Madras, Surgical Cotton Mills, Ltd., Madras and Canara Sales Corporation, Ltd., Mangalore (Rs. 3 lakhs each), Presidency Radios, Ltd., Madras, Mountania Tea Co., Ltd., Coonoor and Hire Purchase Trading Co., Ltd., Madras (Rs. 2.5 lakhs each), South Indian Gold Prospecting Co., Ltd., Trichinopoly (Rs. 2.4 lakhs), United Motor Service, Ltd., Calicut, Wrenn Bennett and Co. (India), Ltd., Madras, Andhra Provincial Potteries, Ltd., Tadepalli, Guntur district, Madras Central Funds, Ltd., Madras, Kovvur Electric Supply Corporation, Ltd., Tanuku, Prakijyoti Films, Ltd., Madras, Salur Parvatipur Electricity Distribution Co., Ltd., Madras, P. Sowriah Bros., Ltd., Madras, Amalapuram Electric Supply Corporation, Ltd., Madras, Vasantha Films, Ltd., Madras, Indo Ceylon Dental and Surgical Co., Ltd., Madras, Waterproof Industries (India), Ltd., Madras, Indo Coromandel Shipping Co., Ltd., Masulipatam, Twin Electric Supply Co., Ltd., Madras, New India Trading Co., Ltd., Chidambaram, Oriental Pictures, Ltd., Masulipatam, Provincial Transports, Ltd., Madras and Sri Ramakrishna Mining Syndicate, Ltd., Nellore (Rs. 2 lakhs each).

59. *Mining operations.*—The following prospecting licences and mining leases were granted during the calendar year 1938 :—

	ACS.
Nineteen prospecting licences for prospecting for barytes over an area of	1,971.05
Eight prospecting licences for prospecting for mica over an area of	262.03
Four prospecting licences for prospecting for iron ore over an area of	577.40
Three prospecting licences for prospecting for diamonds over an area of	1,021.12
Two prospecting licences for prospecting for gold over an area of	7,562.40
Two prospecting licences for prospecting for mica, beryl and rock crystal	21.49
One prospecting licence for prospecting for manganese over an area of	15.00
One prospecting licence for prospecting for galena over an area of	34.00
One prospecting licence for prospecting for oxide of iron over an area of	51.00
One prospecting licence for prospecting for garnet over an area of	40.05
One prospecting licence for prospecting for black sand, ilmenite, monazite, zircon, mellite and garnet over an area of	283.97
Twenty-five mining leases for working mica over an area of	989.56
Four mining leases for working barytes over an area of	184.72
One mining lease for working steatite over an area of	40.00
One mining lease for working limestone over an area of	197.63
One mining lease for working iron ore and manganese over an area of	77.60
One mining lease for working lead, silver and zinc over an area of	162.00

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

60. *Manganese.*—The mining of manganese was carried on in the district of Vizagapatam only, the production in that district advancing from 20,509 tons to 31,813 tons or by 55.1 per cent. Exports of manganese ore declined from 631,404 tons valued at Rs. 128.22 lakhs to 256,540 tons valued at Rs. 61.59 lakhs. Of this quantity, Japan took 74,750 tons valued at Rs. 15.11 lakhs, France 65,795 tons valued at Rs. 14.44 lakhs and Italy 47,639 tons valued at Rs. 16.11 lakhs.

61. *Magnesite.*—The output of magnesite declined slightly from 23,782 tons to 23,052 tons. Exports of magnesite declined from 171,610 cwts. valued at Rs. 8.33 lakhs to 147,302 cwts. valued at Rs. 4.46 lakhs. Of this quantity, the United Kingdom took 124,871 cwts valued at Rs. 3.90 lakhs and the United States of America 9,900 cwts. valued at Rs. 0.25 lakhs.

62. *Mica.*—The production of mica increased from 684 tons to 693 tons of which the Nellore district accounted for 657 tons, Salem 32 tons and the Nilgiris the balance of four tons. The output of waste mica rose from 1,984 tons to 3,029 tons. Exports of mica fell from 32,166 cwts. valued at Rs. 20.24 lakhs to 26,634 cwts. valued at Rs. 15.18 lakhs, of which the United Kingdom took 16,403 cwts. valued at Rs. 11.03 lakhs.

63. *Other minerals.*—The production of barytes increased from 9,056 tons to 9,516 tons, Cuddapah contributing 6,885 tons, Anantapur 2,431 tons and Kurnool the balance of 200 tons. The production of steatite fell from 150 tons to 25 tons and of phosphatic nodules from 166 tons to 23 tons, but that of gypsum increased from 1,597 tons to 9,381 tons. An output of half a ton of corundum and of 24 tons of asbestos was also recorded during the year under review.

64. *Cotton.*—The area under cotton in the Province in 1938-39 was estimated at 1,957,600 acres as against 2,556,100 acres for the corresponding period of the previous year, representing a decrease of 23.9 per cent as compared with the finally recorded area of 2,572,024 acres in 1937-38. The yield was estimated at 388,900 bales of 400 lb. lint as against 504,510 bales in the previous year, representing a decrease of 22.9 per cent. Exports of raw cotton declined from 28,901 tons valued at Rs. 207.87 lakhs to 19,625 tons valued at Rs. 107.58 lakhs, representing a decrease of 32.10 per cent in quantity and 48.12 per cent in value. Of the quantity of cotton exported from the Province, Japan took 8,089 tons valued at Rs. 40.45 lakhs, the United Kingdom 3,636 tons valued at Rs. 21.07 lakhs, Belgium 2,406

tons valued at Rs. 13.26 lakhs, France 1,696 tons valued at Rs. 9.52 lakhs, Germany 1,166 tons valued at Rs. 7.56 lakhs and the Netherlands 1,048 tons valued at Rs. 5.85 lakhs. Prices of cotton fluctuated during the year, but rose from October onwards though the average of the monthly average prices was lower in 1938-39 than in the previous year.

65. *Cotton spinning and weaving mills.*—There were 55 cotton mills at work in the Madras Province with 1,319,254 spindles and 6,322 looms. The mill production of yarn during the year amounted to 168.80 million lb. against 136.40 million lb. in the previous year. The mill production of cotton piecegoods during the year declined in yardage from 86.12 million yards to 72.46 million yards and in weight from 23.15 million lb. to 21.87 million lb. The production of higher count yarns, i.e., 40 s. and above increased from 32.96 million lb. to 43.34 million lb. Exports of cotton piecegoods by sea to foreign countries (excluding Burma) fell from 38.78 million yards valued at Rs. 136.77 lakhs to 27.52 million yards valued at Rs. 102.40 lakhs. Exports to Burma amounted to 20.46 million yards valued at Rs. 87.55 lakhs, coloured piecegoods accounting for 18.92 million yards valued at Rs. 80.12 lakhs. At the commencement of the year there was a shortage of yarn stocks in relation to demand and consequently prices were at a remunerative level. As the demand became satisfied, when mills which had been closed down owing to labour troubles, resumed work, business fell away to some extent and prices tended to decrease. The resumption of imports of Chinese and Japanese yarns on a considerable scale further depressed the market, and prices were lower at the close of the period under review than at the end of the previous year. On the whole, however, the year was a fairly remunerative one for spinning mills. The weaving mills experienced an unsatisfactory year and in the absence of demand prices were cut in an effort to unload goods on to an unwilling market.

66. *Hosiery.*—There were ten organized factories coming under the Indian Factories Act at work. The production during the year increased from 1,269,425 lb. to 1,394,744 lb. The slight improvement in the industry noticed in the previous year was not maintained, and competition was very keen.

67. *Madras Handkerchiefs and lungis.*—Exports of Madras handkerchiefs declined in value from Rs. 51.31 lakhs to Rs. 18.13 lakhs. The industry passed through a period of severe depression during the year owing to accumulation of stocks on the West-Coast of Africa and prices fell to below the cost of production. Exports of lungis and sarees decreased in value from Rs. 118.74 lakhs to Rs. 112.95 lakhs. Business in lungis was steadier than in Madras handkerchiefs and at the end of the year appeared to be showing some improvement in quantity though not in price.

68. *Jute.*—The Nellimarla and Chittivalsa jute mills alone were in operation during the year and the number of looms and spindles in them was 805 and 21,664 respectively as in the previous year. Trading conditions were unsatisfactory during the year owing to over production of manufactured goods, as a result of the failure to establish agreement between association and non-association mills, in India, and values obtainable for manufactured hessains and gunnies did not cover the cost of raw material and manufacturing costs.

69. *Tanning industry—General.*—Exports of tanned hides declined from 16,534 tons valued at Rs. 313.35 lakhs to 14,381 tons valued at Rs. 220.37 lakhs. Exports of tanned skins also declined from 6,326 tons valued at Rs. 307.22 lakhs to 5,101 tons valued at Rs. 235.63 lakhs. Almost the entire quantity of tanned cow hides, tanned cow calf skins, tanned goat skins and tanned sheep skins, and by far the greater portion of the tanned buffalo hides, and tanned buff calf skins, exported went as usual to the United Kingdom, shipments to that country comprising chiefly, cow hides 11,919 tons valued at Rs. 175.47 lakhs, buff hides 717 tons valued at Rs. 8.67 lakhs, cow calf skins 798 tons valued at Rs. 19.97 lakhs, buff calf skins 471 tons valued at Rs. 9.22 lakhs, tanned goat skins 2,431 tons valued at Rs. 108.73 lakhs, and tanned sheep skins 2,258 tons valued at Rs. 110.03 lakhs.

70. *Tanned cow hides.*—In the first quarter of the year, prices and demand were comparatively poor and shipments were much smaller than in the corresponding period of the previous year which was one of speculative activity. There was no advance in prices until July when a rise of 5 to 10 per cent took place and the improvement in demand was reflected in the largest monthly shipment of the year. August, as is often the case, was a quiet month and in September the market was dominated by the European crisis which brought trade more or less to a standstill. The improved price level which developed in July was maintained until the end of September 1938, and after the Munich Settlement, trading was resumed with confidence and prices and demand increased. At the end of January 1939, the market sustained a setback after a period of active trading and during a quiet spell, prices dropped by about 6 per cent. Demand soon improved, however, and trade continued good, becoming very active in March. The improvement which occurred in the demand for leather in the United States assisted indirectly the demand from London for Madras light weight kips which are re-dressed there for re-export to America.

71. *Tanned goat skins.*—Business was dull in the first quarter of the year although stocks in Madras were soon cleared through shippers sending their goods on a consignment basis. In July it appeared that consumers would be willing to operate on a rather larger scale, provided prices were reduced, and at the end of the

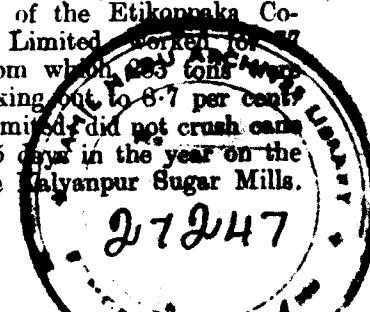
month when a decline of about 3d. to 4d. was registered at the London Public Auctions, some enquiries came through and small orders were placed. Business was steadier in July and shippers were able to sell all-round lots and several speculative purchases were made by United Kingdom factors. At the auctions in August, prices declined by as much as 6d. per lb. in the case of light weights, though heavy weights were competed for at firm prices. In September, business was at a standstill, but as a result of the increased confidence engendered by the Munich agreement, there was a return to practically normal conditions. In the first half of October, spot goods in London and Madras goods afloat which had not been previously sold were quickly absorbed at an advance in price of about two annas per lb. Business was on a better basis in November and December, especially for heavy weights of 11-12 lb. and 13-14 lb. and prices for these in Madras continued to increase by one to two annas per lb. though light weights showed a decrease. Improved conditions prevailed during the last quarter of the year and considerable forward purchases were made in January at increased prices.

72. *Tanned sheep skins*.—Prices were more stable in the tanned sheep skins market during the year though business was not so large as it might have been owing to losses sustained by the smaller tanners in the previous year. Values were steady at the May auctions in London and shipments from Madras were restricted. Markets were steady in June and July and in a few cases an increase in prices was recorded in the latter month. In the first quarter of the year, an increase in the Madras market of over two annas per lb. was realized. Conditions in August were satisfactory with a further one to two annas increase in prices with not very large stocks in the market. In September, the market turned dull owing to the international situation, but there was an improvement in October. Shipments from Madras in November showed a large increase over the previous month and this had a weakening effect on prices. There were more orders obtainable in December, but at the auctions during that month primes and middle class tannages sold at 2d. to 4d. below the previous prices. In January, shipments were still high, and though lower grade sheep skins found a fair market and prices were unchanged, prime tannages were weaker by 3d. to 6d. per lb. In February and March, business was steadier with middle class tannages in good demand.

73. *Sugar*.—The area planted with sugarcane up to 25th December 1938 was estimated at 96,930 acres as compared with 97,510 acres estimated for the corresponding period of the previous year, representing a decrease of 0.6 per cent. The estimate of the previous year fell short of the actual area by only 455 acres or 0.5 per cent. The yield was estimated at 261,130 tons of jaggery as against 266,630 tons estimated in January 1938, a decrease of 2.1 per cent, and as against 278,820 tons estimated in the Season and Crop Report of the previous year, the decrease in this case amounting to 6.3 per cent. Imports of sugar from overseas advanced

from 121 tons valued at Rs. 0.25 lakh to 5,010 tons valued at Rs. 5.70 lakhs. Coastwise imports of sugar declined from 7,525 tons valued at Rs. 14.53 lakhs to 5,837 tons valued at Rs. 14.02 lakhs. Sugar prices showed a steady improvement throughout the year. In August, prices rose sharply due to speculators endeavouring to corner stocks released by the Indian Sugar Syndicate, Limited. There was a further increase in prices in September due to the crisis in Europe. In November, the Governments of the United Provinces and Bihar announced their minimum cane prices for the ensuing season at Re. 0-6-9 a maund plus a cess of six pies. This announcement had little effect on sugar prices which had already hardened in anticipation of higher cane prices. It soon became apparent that the season in Northern India would be an exceptionally short one due to drought in some cases and excessive rain and floods in others. In addition, parts of the United Provinces suffered severely from red rot disease in the cane. The Indian Sugar Syndicate, Limited, released large quotas at the beginning of the year in an effort to prevent importation of foreign sugar, but in spite of this, the Indian production during the year was not sufficient for domestic consumption and shipments of Java and British refined sugars began arriving in Madras and other South Indian ports in February and are likely to continue until the next crushing season in the North. The cost of Java sugar at the end of the year was below replacement cost of North Indian sugar.

74. Twelve sugar factories worked during the whole or part of the season, but of these four refined jaggery only. The factory of the Vuyyuru Co-operative Industrial and Credit Society, Limited, Vuyyuru, worked for 107 days. The total quantity of cane crushed was 46,587 tons from which 3,624 tons of sugar were obtained, representing a recovery of 7.83 per cent. The factory of the India Sugars and Refineries, Limited, Hospet, worked for 99 days and crushed 33,900 tons of cane from which 3,314 tons of sugar were produced, the percentage of sugar recovery on cane being 9.603. The Sri Rama Sugar Mills, Limited, Bobbili, worked for 105 days and crushed 15,441 tons of cane from which 1,596 tons of sugar were produced, the percentage of recovery on cane being 10.37. The Vizagapatam Sugars and Refinery, Limited, Thummapala, Vizagapatam, worked for 66 days and crushed 3,455 tons of cane from which 291 tons of sugar were produced, the recovery of sugar being 8.58 per cent. The Sri Ramakrishna Sugar Mills, Kirlampudi, worked for 72 days and crushed 4,421 tons of cane from which 370 tons of sugar were obtained, the yield of sugar on cane being 8.36 per cent. The factory of the Etikoppaka Co-operative Industrial and Credit Society, Limited, Etikoppaka, worked for 77 days and crushed 3,248 tons of cane from which 293 tons of sugar were obtained, the yield of sugar on cane working out to 8.7 per cent. The Coimbatore Lakshmi Sugar Mills, Limited, did not crush cane during the year, but was engaged for 155 days in the year on the melting of jaggery and jelly sugar. The Chayampur Sugar Mills.



Limited, Kallianpur, also did not crush cane, but converted into sugar the jelly massecuite left over from the previous year. The factory of the Madras Sugars, Limited, Mailpatti, was not in operation during the year under review. The erection of the 200-ton factory of the Southern India Sugar Company, Limited, Pugalur, Karur taluk, was not completed during the year, but manufacture is expected to commence in July 1939.

75. *Oil-seeds—Groundnut.*—The area sown with groundnut in the Province in 1938 was estimated at 3,835,300 acres against 4,564,800 acres in the previous year, a decrease of 16 per cent. The yield (in unshelled nuts) has been estimated at 1,448,500 tons against 2,059,270 tons in the previous year. Exports of groundnut to foreign countries advanced from 559,441 tons valued at Rs. 793.54 lakhs to 753,853 tons valued at Rs. 879.72 lakhs. Of the quantity exported, France took 144,235 tons valued at Rs. 165.99 lakhs, Netherlands 144,164 tons valued at Rs. 170.40 lakhs, the United Kingdom 109,653 tons valued at Rs. 126.52 lakhs, Belgium 103,402 tons valued at Rs. 120.61 lakhs, Germany 90,913 tons valued at Rs. 106.78 lakhs, and Italy 30,165 tons valued at Rs. 35.49 lakhs. Exports to Italy declined by about 75 per cent as compared with the previous year. The level of prices was lower than in the previous year to the extent of about 25 per cent owing to the availability of an adequate supply of substitutes for groundnut such as copra and whale oil and to the large stocks of the 1937-38 crop which were available for export early in the year under review. Values in Europe at the commencement of the year for June-July shipments stood at shillings 200 per ton, c.i.f., while April shipments were quoted as low as shillings 190. Prices underwent some fluctuations and by the end of April, May shipment was quoted at shillings 203-9. By the middle of May, June shipments touched a figure of shillings 210, thereafter a reaction set in and during the early part of June there was a drop to shillings 203-9. As a result of a small summer crop and a better demand from Europe, values advanced to shillings 220 for August shipments, but later reacted to shillings 200 in September. It was anticipated that owing to favourable conditions at the time of sowing, the winter crop of 1938-39 would be a large one, but lack of rains in some districts as the crops were approaching maturity and excess rains in other districts caused considerable damage and the previous estimations of the crop were reduced by some 250,000 tons. Although the crop of the winter season was smaller than originally anticipated, consequent on lack of demand in Europe, prices fell considerably and December shipments were quoted early in November at shillings 193-9. A better demand was in evidence in the European market at the end of March and prices advanced to shillings 205. Stocks at the end of the year estimated to be available for export were in the region of 50,000 to 60,000 tons as against 150,000 tons available at the corresponding time last year.

76. *Castor.*—The area sown with castor up to 25th November 1938 was estimated at 256,000 acres as against 240,800 acres estimated for the corresponding period of the previous year, an increase of 6.3 per cent. The yield has been estimated at 25,700 tons as against 24,000 tons estimated for the corresponding period of last year. Exports of castor seed by sea to foreign countries declined from 16,962 tons valued at Rs. 25.40 lakhs to 5,051 tons valued at Rs. 6.24 lakhs. Germany took 1,110 tons valued at Rs. 1.48 lakhs and the United Kingdom 1,014 tons valued at Rs. 1.24 lakhs. The average prices of castor seed and castor oil were lower than in the previous year.

77. *Oil-milling.*—Imports of copra declined from 5,704 tons valued at Rs. 10.32 lakhs to 555 tons valued at Rs. 0.68 lakh, Ceylon supplying 543 tons valued at Rs. 0.63 lakh. Imports of coconut oil advanced from 303,655 gallons valued at Rs. 3.90 lakhs to 428,933 gallons valued at Rs. 3.97 lakhs, Ceylon supplying 428,694 gallons valued at Rs. 3.97 lakhs. Coastwise exports of coconut oil amounted to 2,965,839 gallons valued at Rs. 28.08 lakhs. Exports of groundnut cake advanced from 81,974 tons valued at Rs. 52.52 lakhs to 126,993 tons valued at Rs. 81.90 lakhs, the United Kingdom taking 50,108 tons valued at Rs. 33.32 lakhs and Germany 27,500 tons valued at Rs. 17.46 lakhs. The price of coconut oil showed a downward trend. The decrease in the import of copra from Ceylon was due to the fact that the price of copra was high in Ceylon whereas the price of oil on the West Coast was low so that it did not pay millers to import copra for crushing. The ex-mill prices for expeller groundnut oil at Madras fluctuated throughout the year within narrow limits, the highest and lowest rates being Rs. 44 and Rs. 42.80 per candy of 500 lb. Groundnut oil cake prices were not also subjected to any great fluctuations, the prices obtainable ranging between Rs. 57 and Rs. 65 per ton loose. Owing to the difficulties in disposing of the oil locally at remunerative prices, an endeavour was made by a mill in Madras to create new export outlets for the oil without much success although it is interesting to record that about 75 tons of groundnut oil were exported to Europe during the year. The output of groundnut oil in the Province is increasing and appears to exceed the local consumption so that the question of finding an export outlet is becoming of increasing importance. Little progress can be expected in this direction, however, until greater facilities for shipment in bulk are afforded and containers are available at cheaper rates.

78. *Soap industry.*—Imports of all classes of soaps declined further from 331 tons valued at Rs. 4.72 lakhs to 313 tons valued at Rs. 4.61 lakhs. The value of imports of household and laundry soaps advanced from Rs. 0.06 lakh to Rs. 0.10 lakh, but that of toilet soaps declined from Rs. 4.59 lakhs to 4.42 lakhs. The turnover and profits of soap-manufacturing concerns in the Province declined as compared with the previous year. Over a period, there should still be scope for the further development of the soap industry

in this country as the consumption of soap per head of the population is only half a pound per annum, the lowest of any country in the world except China as compared with a consumption of 23.8 lb. per head in some countries of Europe.

79. *Cashewnuts*.—Exports of cashewnut kernels advanced from 11,892 tons to 12,330 tons in quantity, but declined from Rs. 120.63 lakhs to Rs. 119.60 lakhs in value. Of the quantity exported, the United States of America took 10,069 tons valued at Rs. 99.35 lakhs and the United Kingdom 711 tons valued at Rs. 6.80 lakhs. The division of the industry between the Madras Province and Travancore remained almost unchanged, two-thirds of the exports emanating from Travancore. Prices fluctuated widely during the year from a minimum of shillings 60 in February to a maximum of shillings 97, c.i.f., New York in September for standard wholes. It is estimated that the Indian crop of 1938-39 will turn out about the same as the previous crop. Cashew kernel prices for new crop during the last quarter of the period under review fluctuated within narrow limits from shillings 80 to shillings 85, c.i.f., New York for standard wholes and a considerable proportion of the total crop had been sold forward for shipment at these prices.

80. *Coir*.—The total exports of coir manufactures increased slightly in quantity from 681,247 cwts. to 689,446 cwts., but declined in value from Rs. 103.47 lakhs to Rs. 95.20 lakhs. The series of international crises caused dislocation of markets and coupled with a falling off in Eastern and Indian demand resulted in a decline in prices to levels which had not been reached for a very long time. Conditions in the coir mat and matting industry showed little improvement and prices continued unsatisfactory, although discussions took place during the year with a view to rationalising this section of the industry.

81. *Manures*.—Imports of manures (excluding oil cakes) increased in value from Rs. 44.29 lakhs to Rs. 51.65 lakhs. Owing to the continued low prices for coffee, the demand for manures from coffee estates fell off considerably and many estates now confine themselves to spraying only. Tea plantations continued to use a fairly large quantity of fertilizers for the maintenance of their estates in good condition, but as long as there is restriction of exports and production, the offtake of fertilizers for this crop will necessarily be limited. Many Southern India rubber estates are now replanting with proved clones of budded rubber and the replanted acreage is being manured in order to bring rubber into bearing quicker. But owing to the continued imports of Burma rubber into India, the local price remains so low that planters are not inclined to produce more for the local market and there is therefore no manuring of old seed rubber as is the case in other rubber producing countries. Few cultivators of coconuts manured their trees owing to the low price of coconut products. Despite the adverse seasonal conditions, the demand for fertilizers for ryots' crops, especially for paddy, sugarcane and tobacco, continued to increase.

82. *Chemicals*.—Imports under the head 'Chemicals and Chemical preparations' declined from Rs. 52.99 lakhs to Rs. 47.62 lakhs. Imports of dyeing and tanning substances declined from Rs. 64.77 lakhs to Rs. 51.75 lakhs, of which barks for tanning (wattle bark) accounted for Rs. 22.07 lakhs. There was a normal demand for locally manufactured chemicals, but competition from Japan and the Continent had an adverse effect on prices which were lower during the second half of the year.

83. *Match industry*.—Imports of matches amounted to 632,708 gross valued at Rs. 12.72 lakhs, the whole quantity, with the exception of 50 gross valued at Rs. 160, coming from Burma. There was a slight decline of about 2½ per cent in the production of cottage matches, owing to the cancellation of licences of some factories. Prices, especially for cottage matches, remained very low. The total demand for matches during the year has been estimated to be about 4 per cent less than in the previous year.

84. *Pepper*.—Exports of pepper declined from 16,148 cwt., valued at Rs. 3.58 lakhs to 15,237 cwts. valued at Rs. 2.99 lakhs. Prices remained at a very low level throughout the year and the margin of fluctuation was small. Economic conditions and heavy stocks of Lampong prevented a revival of export business with Europe and America.

85. *Tea*.—Exports of tea advanced from 51.41 million pounds, valued at Rs. 453.26 lakhs to 56.29 million lb., valued at Rs. 491.59 lakhs. The United Kingdom took 51.6 million lb., valued at Rs. 458.20 lakhs and Ceylon 3.93 million lb. valued at Rs. 26.19 lakhs. The year under review was the first year of the renewed scheme for the regulation of exports which expires in 1943. United Kingdom stocks in March 1939 were 204½ million lb. as compared with 188½ million lb. in March 1938 and the comparative prices on the corresponding dates were 1s. 2.55 d. and 1s. 4.11 d. As regards sales of tea in India, a new voluntary scheme was entered into in 1938 for the regulation of production and marketing of tea in India. This scheme, which will continue in force until 1943, exercises a large measure of control over the quantity of tea placed on the Indian market. There was some delay in concluding this voluntary arrangement, a delay which affected the market adversely and little recovery was seen in prices during the year.

86. *Coffee*.—Exports of coffee advanced from 133,163 cwt., valued at Rs. 53.86 lakhs to 180,274 cwt. valued at Rs. 73.58 lakhs. Of the quantity exported, the United Kingdom took 69,905 cwt. valued at Rs. 33.87 lakhs, France 37,926 cwt. valued at Rs. 11.98 lakhs and Norway 22,501 cwt. valued at Rs. 8.25 lakhs. The East Indian crop as a whole was substantially larger than the previous crop. The industry remained in an unsatisfactory condition. Prices in London were unremunerative except for those who own estates which produce coffee of exceptional quality. For some years past prices have been and still are below an economic level from the producers point of view and the outlook for the

industry seems critical as unless prices rise, it is apprehended that a number of estates will have to cease operations. The internal market for coffee improved slightly during the year but the consumption in India is considerably less than production with the result that the growers are not able to secure remunerative prices.

87. *Rubber*.—Exports of rubber raw declined from 17.75 million lb. valued at Rs. 83.83 lakhs to 17.21 million lb. valued at Rupees 71.56 lakhs. Of the quantity exported, the United Kingdom took 8.23 million lb. valued at Rs. 35.95 lakhs, the United States of America 2.89 million lb. valued at Rs. 11.13 lakhs. Germany 2.15 million lb. valued at Rs. 8.11 lakhs and Ceylon 1.78 million lb. valued at Rs. 8.18 lakhs. Most estates tapped all out during the year and crops on the whole were larger than in 1937-38. Exports of rubber are controlled under the International Rubber Regulation Scheme and the international quota for the calendar year 1938 was 55 per cent; India's estate quota was 50 per cent. Prices in India were very low and below cost of production throughout the year. World prices were as low as 5d. per lb. in March 1938, but subsequently there was a gradual improvement in spite of the international uncertainties, and the price at the end of the year was about 8d. per pound.

88. *Miscellaneous*.—Exports of sandalwood oil declined from 2,650 gallons valued at Rs. 2.64 lakhs to 454 gallons valued at Rs. 0.49 lakh. The price of the oil showed some decline owing to a falling off in the foreign demand, especially from Japan, on the other hand the Indian demand is improving owing to the increased requirements of soap factories and perfumers. Exports of lemon grass oil increased in quantity from 90,112 gallons to 97,920 gallons but declined in value from Rs. 7.23 lakhs to Rs. 7.13 lakhs. Prices did not show any substantial change as compared with the previous year. The export of ginger increased considerably during the year, but the price declined to the extremely low level of Rs. 10 per cwt. Shoals of sardines appeared in West Coast waters in very small quantities and very little guano and oil were manufactured. Prices for guano and oil ruled high at the commencement of the season and large supplies were not available. The small quantities manufactured on the West Coast were mostly sold for local consumption. The tile industry in Malabar was fairly active during the year though the demand for roofing tiles was affected owing to the failure of the monsoon in some areas. Exports to the Straits, Rangoon and Ceylon were maintained. Prices remained at a low level despite an increase in the cost of raw materials. The position of the tile industry in South Kanara underwent little change, decreased orders from within India being offset by an increased demand from overseas so that the production of the previous year was maintained. The demand for edge tools and cutlery manufactured on the West Coast is reported to have been maintained. The progress of the slate manufacturing industry continued to be satisfactory and the volume of production expanded. Plywood to

the value of about Rs. 1 lakh was manufactured and sold by the Kallai Factory, most of which was consumed in the Madras Province, though small quantities were exported to Calcutta, Bombay and Rangoon. The operations of the Indian Steel Rolling Mills, Limited, Negapatam, were suspended during the greater part of the year on account of the erection of the new rolling mill and electric smelting furnaces. When the new machinery has been erected, the capacity of the mills will be about 24,000 tons of steel products per annum. It was an unsatisfactory year for the aluminium and brassware utensil industries which were affected by the reduced purchasing power of the public and the increase in manufacturing costs. Imports of cement declined from 13,058 tons in 1937-38 to 10,175 tons in the year under review. The construction of the new factory of the Andhra Cement Company, Limited, at Bezwada was completed shortly after the close of the year and manufacturing operations are expected to commence by about the 15th June 1939. The construction of the new factory of the Dalmia Cement Company, Limited, near Pullambadi in the Trichinopoly district was in progress during the year and it is expected that manufacturing operations will commence in September or October 1939. The demand for stoneware pottery was not up to that of recent years, prices were maintained at low levels to stimulate demand and towards the end of the year some slight improvement was becoming evident. The factory of the East Coast Ceramic Industries, Ltd., Rajahmundry, which has been formed for the purpose of manufacturing stoneware pipes, tiles and other ceramic goods was under construction during the year. The Indian Canning Industries, Limited, Bezwada commenced in June, the canning of mangoes and prawns and the preparation of various jams, crushes, squashes, chutneys and sauces. The Madras Chemical Industry, Limited, commenced during the year, the manufacture of pharmaceutical drugs, tablets, pills and allied products.

KERALA SOAP INSTITUTE, CALICUT.

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

90. *Production and accounts*.—The total production of soap increased from 201 tons in the previous year to 217 tons in the year under review. For the first time for several years, there was a fall in the sales from Rs. 1,96,545 to Rs. 1,76,094. The result of the year's working, subject to audit, was a net profit of Rs. 19,069 as compared with Rs. 22,719 in the previous year. The decline in the profit was attributable to the credit stringency resulting from the minor banking crisis which occurred during the year, to the reduced purchasing power of the people consequent on the failure of the monsoon in some districts and floods in others, and to the failure of one of the institute's agents in Northern India. Considering the very difficult conditions which prevailed during the year, the profit earned may be regarded as not unsatisfactory, and it is hoped that it will not be long before profits are restored to the level attained in the previous year.

91. *Agencies.*—The total volume of business introduced by the agents and stockists decreased as compared with the previous year. The agencies at Karachi, Hyderabad, Trichur and Cuddapah were terminated during the year. South Arcot district was deleted from the jurisdiction of the Madras agent and added to that of the Tanjore agent, whilst the Bellary agent was permitted to include Cuddapah town in his territorial jurisdiction. Towards the end of the year, the Nizam's Dominions were handed over to the Bezwada agent and a new agent was appointed for the Cochin State. Pending the appointment of a new agent at Karachi, a few firms have been appointed as chief stockists at some centres in Northern India. The West Coast agent again introduced the largest volume of business, the Madras agent coming next as in the previous year. The Madura agent increased his sales, whilst small increases were recorded by the Bellary and Tanjore agents and the Salem stockists of the institute. The Colombo agents maintained their sales in spite of severe competition in that difficult market. The Bombay, Central Provinces, Burma and Travancore agents were not so successful, their turnover with the institute showing a decline as compared with the previous year. An experimental batch of medicated iodine soap was made and samples distributed for trial, whilst experiments were undertaken in regard to the preparation of transparent soaps which are in good demand in the markets. The problem here was to secure a special quality of denatured spirit, and as the institute has since been permitted the use of a proper quality, it is hoped that it will soon be possible to place transparent soaps on the market. Cheap washing soaps, special laundry flakes, etc., were manufactured for hospitals, as also special tablets of vegetol and coaltar carbolic soap for the Borstal and Certified schools. Experiments were conducted with new samples of abrasive clay in the manufacture of Deepa brand soap to compete with the well-known Monkey brand soap. A special kind of soft soap was supplied to a few hair dressing establishments, whilst an order for about 13½ tons of soft soap was executed for the Madras and Southern Mahratta Railway during the year.

92. *Visits to important markets.*—During the year the Superintendent was on tour for 83 days and visited Alleppey, Adoni, Bellary, Bangalore, Bezwada, Coonoor, Chowghat, Cochin, Cuddapah, Chatrapur, Chittoor, Engandiyur, Ernakulam, Gudalur, Guntakal, Hyderabad, Kotagiri, Kodaikanal, Kurnool, Kadalundi, Lovedale, Mangalore, Madras, Madura, Nagercoil, Olavakode, Ootacamund, Pattambi, Ponnani, Quilon, Salem, Tamarassery, Trichur, Trivandrum, Tanjore, Vadanapalli, Valapad, Yercaud and Waltair. In the course of these tours, the Superintendent not only studied the market conditions in respect of raw materials and soap and discussed outstanding business questions with the agents and dealers, but also inspected a number of private factories and advised the owners how to improve their methods and products. The ex-students of the institute, who have established small concerns of their own, look forward to the visits of the Superintendent in order to obtain

his advice as to how to overcome difficulties which have cropped up in manufacture and how to improve their products.

93. *Training of apprentices.*—Eleven students underwent training in the institute during the year, nine in the ordinary course, one in the advanced course and one in the short course. Of these, eight were from the Madras Province, and one each from Assam, Orissa and the Punjab. In addition to these students, two ex-students were allowed to work for some time in the institute in order to bring their knowledge up to date. As stated in my administration report of last year 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 work and send their products for inspection and advice as to how their quality may be improved. Close contact is maintained with the ex-students and those who do not intend to set up establishments of their own are assisted to secure employment with private organizations.

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 570 samples were analysed in the laboratory, of which 400 were of raw materials and soaps in different stages of manufacture and the remainder were soaps and allied products received from ex-students and other members of the public, agents and stockists, or collected by the Superintendent in the course of his tours. Certificates of analysis were issued in respect of three products (two of sandalwood oil and one of scented hair oil) on payment of the prescribed fee. The students continued to receive training in the laboratory in the practical testing of soaps and oils for twelve hours a week.

94. *Preparation of creams, brilliantines and other toilet articles.*—A reference to the preliminary experiments on the preparation of hair oils, brilliantines and vanishing creams was made in the report of the previous year. The necessary mixing, filling and closing machines were installed during the year and a supply of bottles and collapsible metal tubes of attractive patterns obtained. A shed costing about Rs. 1,500 was also constructed in order to carry on the experimental work. Experimental batches of hair oils, brilliantines, snow and dental creams were made and samples distributed to traders and members of the public for trial, and the preparations have been well received. At the All-India Khadi and Industrial Exhibition held at Calicut in December 1938, a gold medal was awarded for the excellence of the cosmetic articles manufactured at the institute, and some sales of these products were effected at the Calicut and Madras exhibitions. Before placing the products on the market it will be necessary to give careful attention to their packing and get up, whilst considerable advertisement and propaganda will be necessary to make them known to the public. The preliminary experiments in regard to the preparation of dental creams having proved successful, it is proposed shortly to place

them on the market. The students who underwent training at the institute during the year evinced keen interest in the manufacture of these products and every assistance was given to enable them to prepare small batches of toilet articles with a view to their acquiring the necessary manipulative skill and knowledge. There should be a big future in India for the development of industries connected with the production of cosmetic and toilet articles, the import of which from foreign countries amounts to a considerable figure.

95. *Experimental manufacture of insecticides, fungicides and sprayers*—The conduct of the experimental work which was initiated in the previous year was continued during the period under report. The tree banding compound, Leechex and crude oil emulsion preparations which were introduced last year have met with some demand, whilst the following new products prepared during the year under review are under trial on estates, farms and fruit gardens: (i) Lime sulphur, (ii) Calcium arsenate, (iii) Calcium sulpho-arsenate. *Lime sulphur* is recommended as a fungicide and is available (a) as a clear solution 29° to 30° B and (b) as a dust 80 per cent soluble in water. The former is used as a spray diluted with 30 to 50 times its volume of water, and the latter as a dusting powder (or spread on fields) admixed with sand, ashes, etc., or dissolved in water and used in a similar manner to liquid lime sulphur. *Calcium arsenate and sulpho-arsenate* are being tried in powder form by the Agricultural Department as wormicides in different fields infested by the paddy pest on the West Coast. Experiments with a view to the preparation of nicotine concentrates and nicotine pure, were in progress at the close of the year. The gums and resins received last year were tested, but the samples received were so small and the quality so indifferent that it was not found possible to use them in insecticidal or cosmetic preparations. The importance of collecting them more carefully and regularly has been brought to the notice of the Forest Department.

96. *Essential oils*.—The distillation and extraction apparatus ordered from England was put into commission during the year under review and a series of experiments were conducted on the estimation of the essential oil content of the following materials available in the Province: vetivert root, lemon grass, zedoary, orange peel, cedar wood, cedar leaf, Cinnamon bark, leaf and buds, cloves, ginger, 'appa' plant, basil herb, geranium, artemesia, vulgaris, pacha, sage, rue, pachouli, kewda, lantana, ajowan, kasturi manjal, trijata (Sanskrit) or manambhotam in the vernacular. The economic possibilities of these oils were under investigation during the year with special reference to the availability of the raw materials, the best and cheapest method of extracting the odorous matter, and the purposes for which they can be used and the price that can be realized for them. Since most of the raw materials are found abundantly in forest areas and out of the way places, it will be necessary to conduct operations *in situ* so that unnecessary expense in the transport of bulky material may be avoided. But though the oils thus produced can be sold as such,

in certain cases it may be necessary to improve the crude oils by rectification, etc., and this can be done only in a properly equipped factory under trained chemists. Small cottage stills and accessories suitable for handling the raw materials available in rural areas are being made locally, and the efficiency of such units is being tested and compared with that of modern plant. A still for dealing with flowers and another one for treating bulky materials such as roots, grasses, leaves, etc., were made, and it has been found that working with these cheap stills, about 85 per cent yield can be obtained as compared with the most improved type of imported stills.

The following is a brief account of the experiments on the distillation of essential oils conducted during the year:—

Lemon-grass.—Thirty-nine batches were tried with the leaves of two different kinds in varying stages of maturity, grown in different kinds of soils, and it was found that the yield varied from 0.04 per cent to 0.33 per cent. Further distillations under standard conditions will be carried out in 1939-40. The grass which grows profusely along canal bunds can be cultivated on waste lands, and three crops can be gathered per annum. The distillation of lemon grass is an established occupation in rural areas in Travancore, Cochin and some parts of Malabar, but the price realized for the oil is in some cases too low to render it a profitable one. If, however, the quality of the oil can be improved better prices should be forthcoming.

Vetivert root.—Two different specimens are termed vetivert in commerce. It is a grass mainly cultivated in sandy tracts along the banks of tanks and canals, in Malabar, Godavari, Vizagapatam and other districts, and in different places it is known as khus-khus, ramacham, or vilamachaver. It requires plenty of water and the yield of the root and the intensity of the fragrance depends upon proper manuring. The yellow dried roots commonly used for making khus-khus chicks yield from 0.4 per cent to 1.3 per cent of a viscous aromatic oil much valued in perfumery. Only the proper quality should be used for distillation purposes, as otherwise the cost of the oil will be excessive and the product rendered unsaleable. There seems to be great scope for increasing the area of this valuable crop in the Province. The other variety is a plant grown in waterlogged areas and wet gardens in South Arcot and Tanjore districts with thin hairy black roots possessing a delicate scent, used in flower garlands to decorate idols in Hindu temples. This variety gives an yield of 0.4 per cent, but though the odour is not appreciably different from that of ramacham the cost is prohibitive. Unless the plant is grown extensively and made available at cheap rates it cannot achieve any commercial or economic importance.

Orange.—There are different varieties of orange, sweet, bitter, sour, etc. The peel or rind forms 12 to 18 per cent of the whole fruit and contains one to two per cent of oil and on dry peels the yield is about 5 per cent. The oils prepared in the Institute were tested and found satisfactory for flavouring drinks such as orange crush, and the quality is reported to be as good as the imported article. The peels from 1,000 fruits yield from two to three lb. of oil which may realize from Rs. 3 to Rs. 6-8-0 per lb. according to quality. There are in this Province about 20,000 acres under citrus fruits of which oranges account for nearly 11,000 acres with an estimated yield of 465,000 railway maunds. The preparation of cattle food from the pressed pulp and distilled peels, and the conversion of the sweet orange juice into syrup and of the acid juices into citrate of calcium, etc., have also been attempted on a small scale. There would seem to be a good prospect for the establishment of small factories to deal with the citrus fruits in this manner in centres such as Yercaud, Wynaad, Guntur, Godavari and Madura. The possibilities of extracting lemon oil from the ordinary varieties of lemons will shortly be taken up.

Zedoary.—This root is of value for cosmetic purposes and contains a good fragrant oil forming two or three per cent of the dry weight. It grows wild in some parts of Malabar and Travancore and is also cultivated in some localities. The oil realizes from 12 to 15 shillings per lb. in the European market. This root, the oil of which has been tried in some blends of soap perfumes with success, appears to offer great possibilities of commercial exploitation.

Curcuma aromatica is a type of wild turmeric and yields on distillation six per cent of fragrant oil. The uses of the oil are under investigation.

Cinnamon (leaf, bark, etc.).—There are several varieties of this tree growing in the forests, the leaves and barks of some yielding a high percentage of oil, whilst in the case of other varieties the yield is almost negligible. Selective cultivation and improved methods of pruning and skinning the bark would improve the yield to an extent which would enable the entire requirements of this Province to be met, whilst the cinnamon leaf oil can form a useful article of export as in Ceylon and the Seychelles Islands. The possibilities of exploitation of the tree have been brought to the notice of the Forest Department. Further distillation experiments are planned for next year. Cinnamon bud is also a rich source of a valuable oil containing similar properties to clove oil, but the local samples so far tested have not given satisfactory results. Evidently the cultivators will have to be educated as to the best time for harvesting the buds so that they may yield the maximum percentage of oil.

Trijata (Sanskrit) or Manambhootam is a shrub found wild in various parts of Malabar, South Kanara and Travancore. The leaves contain 0.4 per cent of essential oil and the flowers 0.7 to 1.3 per cent of the wet weight. The oil can be used as an ingredient in perfumery for soaps and cosmetics in place of patchouli oil which is now largely imported and the cultivation of this shrub on an extensive scale should prove profitable. The extraction of essential oils from flowers has not yet been tried on a large scale owing to the difficulty of getting them fresh regularly and in appreciable quantities.

Floral waters.—The water extracts of cloves, cinnamon, vetiver, and lemon-grass were supplied free to the local Municipal Ayurvedic Dispensary for trial and each of these has been found useful as a diluent for medicinal preparations prescribed for various ailments. The demand for these extracts can be improved by propaganda. There is still a large range of essential oil yielding plants, roots and flowers available in rural parts and forest areas awaiting investigation and the matter has been taken up with the Forest Department.

97. *Miscellaneous research and experimental work*.—The oil refining plant continued in operation for experimental and demonstrational purposes and a few experiments in the refining and reconditioning of oils were conducted during the year. One and a half tons of groundnut oil received from Messrs. The Vegetable Soap Works, Calicut, were refined for them. The usual supply of refined coconut oil to the hospitals in Madras was continued. Merchants at Madura, Mangalore, Cuddalore and Bezwada endeavoured to develop a market for the refined oils at a reasonable price, but the prevailing low prices of ordinary coconut oil and groundnut oil combined with the depressed condition of the markets rendered their efforts largely fruitless. The Forest Utilization Officer sent several samples of oil bearing fruits (such as *dichopsis elliptica* and *garcenia morella*) and some of them were found to contain a high oil content. The trees are met with in Malabar and Coimbatore Forests, although scattered. It would seem worth while to make an organized attempt to collect such oleaginous fruits and nuts, as the oils and fats derived from them can be used in soap making and allied industries replacing tallow and other imported fats. The samples of *Indian ginger* prepared in the Institute by the Jamaican method were examined by the Pharmacopea Commission, London, and on the advice of an expert sub-committee, including members with an intimate knowledge of the subject extending over many years, they decided finally to adhere to the present position that Jamaican ginger shall be the only variety to be recognized in the Pharmacopea. The decision to exclude Indian ginger was taken by these experts on the ground of flavour and of the odour of the volatile oil. The only course left open is for the Agricultural Department to introduce the Jamaican variety of ginger in all the ginger growing areas in the Province and to extend its cultivation.

The utilization of the *cashew shell oil* in the preparation of insecticides, paints, varnishes, etc., engaged the attention of the Institute during the year, but little progress had been made by the end of the period under review.

98. *Survey of oil seed crushing industry.*—At the third session of the Industrial Research Council held at Bombay in July 1937, it was decided that certain major industries of the country should be selected for detailed industrial surveys and that these surveys should be conducted by the Provinces or States concerned and co-ordinated by the Industrial Research Bureau of the Government of India. It was decided that the survey of the oil seeds industry should be first taken up. The technical development and improvement of the oil seed crushing industry to a standard of efficiency comparable with that of the industry in the older industrial countries is a necessity if India is to derive the full economic benefit from her vast oil seed resources. The importance of the industry in Madras can be appreciated from the fact that Madras grows 47.7 per cent, 19.3 per cent and 15.2 per cent of the total area in India under groundnut, castor and gingelly respectively. Government sanctioned during the year a special staff consisting of a supervisor, clerk and peon for a period of one year to carry out the survey which was commenced in November 1938 under the supervision of the Superintendent, Kerala Soap Institute. By the close of the year, the survey of the districts of South Kanara, Malabar, Coimbatore, Salem, Chittoor and North Arcot has been completed. It is hoped that the information obtained by the survey will be of considerable assistance in drawing up plans for the further development of the oils and fats industry.

99. *General.*—The Institute participated in thirty exhibitions, as well as in the Health and Baby Week celebrations at fifty centres and secured a number of awards for the excellence of its products. A considerable number of enquiries in regard to the manufacture of soap and various problems connected with the oil and allied industries were received and answered during the year, but considerations of space preclude a reference to these. Several requisitions for information in regard to the establishment of oil refining factories were received and two gentlemen from Cuddalore and Bezwada visited the Institute and discussed matters fully with the Superintendent, one of them taking away with him detailed sketches and plans of the oil refining plant installed there with a view to setting up a similar unit at Bezwada. The Institute was as usual visited by a large number of people, including the Hon'ble the Prime Minister, as also by several parties of teachers and students from educational institutions. In fact, it seems to have become a rule for every visitor to Calicut to include a visit to the Kerala Soap Institute in his programme.

TEXTILE SECTION.

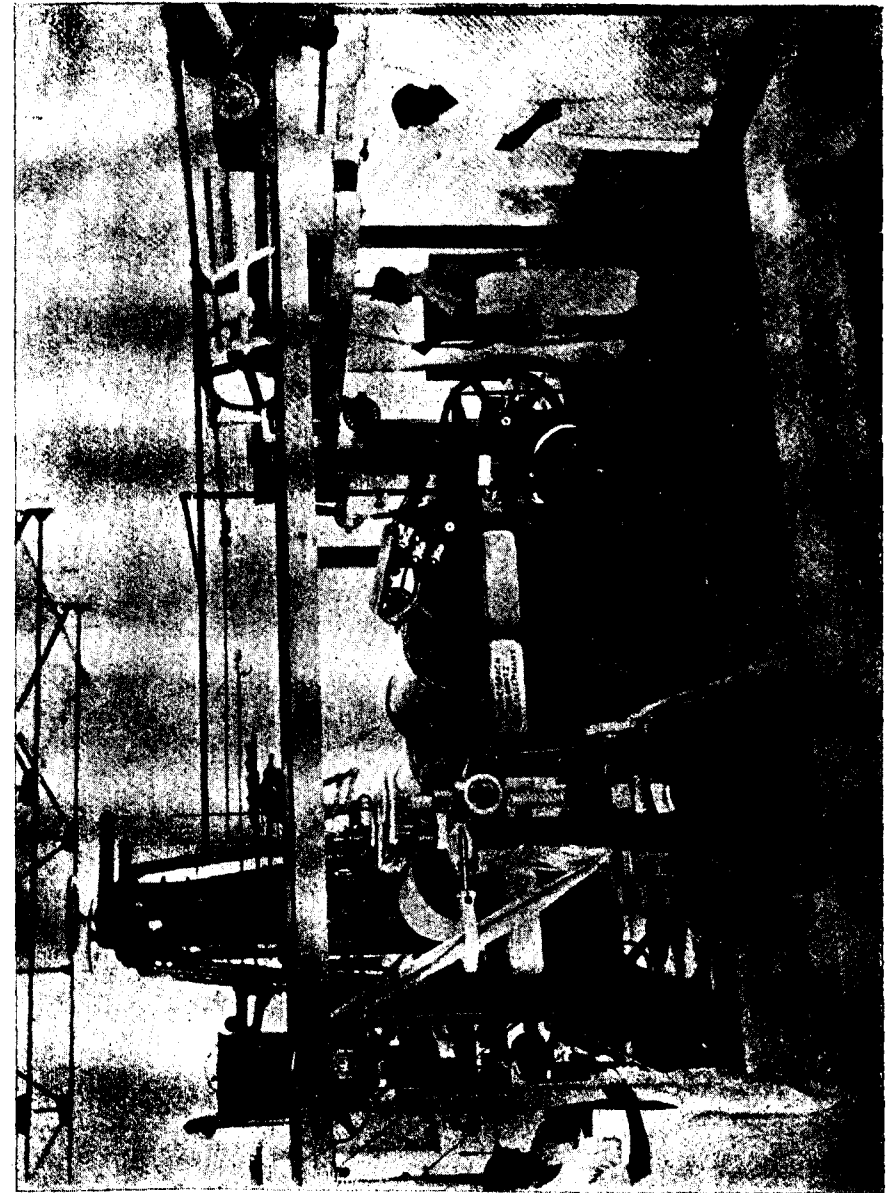
100. *Staff.*—Mr. D. M. Amalsad continued as Principal, Government Textile Institute, throughout the year. Mr. Amalsad continued to serve as a member of the Board of Directors and of

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.

101. *Grant-in-aid by the Government of India for the development of the handloom weaving industry.*—The administration and control of the grant-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 and Commerce is closely associated with the work of the Provincial Society, it will be appropriate in this section of the report to refer to the work of the Society during the year. The Government of India subvention during the year 1938-39 amounted to Rs. 68,800 which together with the unspent balance of the subsidy during the previous years of Rs. 76,617 was available for the expenditure during the year. An amount of Rs. 74,376 was drawn by the Society from the Government, of which Rs. 66,533 was expended. In the course of the year the Provincial Society collected a further share capital of Rs. 6,790 and on 31st March 1939; the number of members was 255, comprising 131 weavers' co-operative societies, 88 individuals, 27 central banks and co-operative institutions, and nine firms and the paid-up share capital was Rs. 37,835. The registration of weavers' co-operative societies and their affiliation to the Provincial Society were restricted during the year, preference being given to unrepresented areas. Thirty-nine new weavers' societies were affiliated during the year, whilst the share capital of one weavers' co-operative society was refunded as it went into liquidation. Forty additional societies were given subsidies ranging from Rs. 16 to Rs. 58 per mensem in order to meet their establishment charges and to buy appliances, and the total subsidy disbursed during the year amounted to Rs. 25,817. The policy of issuing cash credit loans, supplying yarn on the guarantee of the Provincial Society and advancing money on goods sent for sale by the primary societies was continued and the Provincial Society sanctioned cash credit loans to the extent of Rs. 96,350 and yarn guarantees of Rs. 55,463. Yarn to the value of Rs. 30,284 was supplied on the guarantee of the Provincial Society to the primary societies from the approved mills. The cash credit loans, yarn loans and advances against goods disbursed during the year amounted to Rs. 29,929, Rs. 22,045 and Rs. 9,882 respectively. The Registrar of Co-operative Societies arranged for the District Central Banks to grant cash credit accommodation to such of the societies as required loans of Rs. 2,000 and above leaving the smaller societies to be financed by the Provincial Society. The approved mills agreed to extend the period of credit from 30 to 60 days and this resulted in a large number of societies arranging for their yarn supply through the Provincial Society. The number of supervisors of production societies was raised to nine, a separate dyeing supervisor being sanctioned in order to

render technical assistance to weavers' societies in dyeing. A secretary of the grade of co-operative sub-registrar was attached to the Provincial Society in August. The post of marketing officer, whose jurisdiction extended to the whole of the Province, was abolished and four co-operative inspectors for four separate circles were appointed as executive officers with special instructions to devote particular attention to the marketing of hand-woven goods produced by the primary weavers' societies. The emporium at Madras and the sales depots at Bellary, Bezwada and Calicut continued in operation and new sales depots were opened during the year at Triplicane, Rajahmundry and Trichinopoly. Further, the sales depot at Coimbatore opened by the Devanga Weavers' Co-operative Society was granted a subsidy. Goods to the value of Rs. 1,04,635 were supplied to the depots by the production weavers' societies on consignment basis and sales to the extent of Rs. 86,623 were effected. The value of goods produced by the primary societies during the year was Rs. 6,21,020 of which goods to the value of Rs. 5,48,683 were sold. It was stated in last year's administration report that a second-hand calendering plant had been purchased for the use of the Provincial Society and during the year the necessary finishing machinery, comprising piece end sewing machine, spray damping machine, two bowl starch mangle, cylinder drying machine, rope squeezing machine, scutcher, boiler and five electric motors were ordered and received. The construction of the new building to house the calendering and finishing plant at the Government Textile Institute was sanctioned and the construction work was in progress at the end of the year. The Provincial Society will pay rent to Government for the use of the building. A second-hand three-bowl calendering machine was also acquired from Messrs. Binny and Company (Madras), Limited, on behalf of the Provincial Society and shortly before the close of the year it was disposed of to a person in Madura who is already running a power warp distribution factory there. The machine will be worked by the owner for the benefit of the handloom weavers' production societies in the area. The departmental hand-driven sizing machines, which were made available on loan to the Provincial Society, continued to be employed by the weavers' production societies at Melapalayam, Adoni and Kavandapadi. It will be seen that the Provincial Society made some progress during the year, but the promotion of sales of hand-woven cloth remains a formidable problem owing to the increasing competition of mill cloth and unless the handloom industry is protected in some way or other, the Provincial Society may not be able to make any great headway in the marketing of hand-woven fabrics. At the close of the year, the practicability of formulating measures to protect the handloom weaving industry was engaging the attention of Government in consultation with the Central Government and other Provincial Governments.

102. *Grant-in-aid by the Government of India for the development of the small-scale woollen industries of the Province.*—The scheme for the development of the cottage and small-scale woollen



SEVEN BOWL CALENDERING AND FINISHING MACHINERY INSTALLED AT THE
GOVERNMENT TEXTILE INSTITUTE.

industries of the province sanctioned by the Government of India continued in operation during the year. It was mentioned in last year's administration report that a central co-operative society of weavers engaged in the pile carpet industry at Ellore and four co-operative societies in the cumbly weaving areas had been established, and during the year under report, two additional cumbly societies were established. The amount of grant available for Madras for 1938-39 was Rs. 22,166 out of which Rs. 10,040 was expended during the year. The amount spent on the dye-house at Ellore and the cumbly weaving demonstrators from provincial funds was Rs. 2,668.

103. *Ellore Pile Carpet Weavers Society*.—The Society progressed satisfactorily during the year producing, under proper supervision and with the facilities afforded by a well-equipped dye-house, carpets of standard quality of various attractive designs and in fast colours. The membership of the society increased from 61 on the 31st March 1938 to 80 on the 31st March 1939 and the share capital from Rs. 600 to Rs. 956 during this period. 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. An additional working capital of Rs. 1,000 provided from the Government of India grant was disbursed to the Society during the year. At the end of the previous year, the Society held stocks of woollen, cotton, and jute yarns, dyes and chemicals to the value of Rs. 1,967 and about 200 square yards of carpets valued approximately at Rs. 900. During the year, the Society purchased 43,056 lb. of wool, cotton and jute yarns, dyes and chemicals to the value of Rs. 8,392 as against materials of the value of Rs. 4,434 in the previous year. The Society manufactured 3,420 square yards of carpets of different stitches ranging from four to nine of an aggregate value of Rs. 14,122 as compared with a value of Rupees 3,000 in the previous year. The sales effected by the Society increased from Rs. 2,300 to Rs. 12,684. At the end of the year, there was a stock of 1,084 square yards valued at Rs. 5,023 on hand. The Society disbursed an amount of Rs. 6,700 by way of wages to carpet-weavers, spinners, hankers, twistors and labourers employed in the dye-house. About 23,000 lb. of woollen yarn were scoured and about 19,000 lb. of wool and jute yarn were dyed in about 40 shades in the central dye-house. Owing to the increased output, the cost of scouring and dyeing was reduced from Re. 0-1-6 in 1937-38 to Re. 0-0-11-4 per lb. in the year under review. A willowing machine, and an additional dyeing vat of larger capacity were set up during the year. In addition to utilizing the working capital provided under the Government of India grant, the Society borrowed Rs. 13,500 from the Ellore Central Bank to finance its expanding operations. An overseas order for about one thousand square yards of carpet was executed by the Society. Arrangements for the appointment of sole agents for the sale of the Society's carpets in the United Kingdom and Bombay were in progress at the end of the year, whilst a few

samples of the carpets produced have been sent to America for exhibition at the World's Fair at New York.

104. *Cumbly Weaving Societies*.—In addition to the four cumbly weavers' societies referred to in the last year's report, a new society at Salkapuram in the Kurnool district and another at Doddhagatta in the Anantapur district were organized during the year. An additional working capital of Rs. 500 was sanctioned and disbursed to each of the four societies organized in the previous year. The activities of these six weaving societies will now be briefly referred to.

105. *Dharmajigudem Cumbly Weavers' Co-operative Purchase and Sale Society, Limited*.—The membership of this society and the share capital increased from 16 to 32 and Rs. 16 to Rs. 32 respectively. The organization of the society has revived to some extent the decaying cumbly weaving industry in the area. The society purchased 3,735 lb. of wool costing Rs. 307 for distribution to members for spinning, and 722 cumblies valued at Rs. 728 were purchased from members and 406 cumblies valued at Rs. 368 were disposed of locally, leaving a stock of 316 cumblies valued at Rs. 212 on hand on 31st March 1939. The society purchased about 950 lb. of woollen yarn valued at about Rs. 300 from spinners who were not members of the society and this assisted to find employment for the local spinners and weavers. The society has undertaken to spin and supply yarn to the Ellore Pile Carpet Society, and during the year about 10,000 lb. of wool supplied by the Ellore Pile Carpet Society was spun into yarn. An amount of Rs. 562 was distributed as wages to spinners and weavers in the Dharmajigudem area.

106. *Kanumolu Blanket Weavers' Co-operative Purchase and Sale Society*.—The membership and share capital of this society increased from 21 to 35 and from Rs. 21 to Rs. 77 respectively during the year under review. The society stocked 2,216 lb. of wool valued at Rs. 475 and took over from members 547 cumblies valued at Rs. 765. Of these, 354 cumblies valued at Rs. 577 were sold leaving a stock of 193 cumblies valued at Rs. 254 in hand at the end of the year. This society has introduced into the market cumblies with new designs which are superior to those woven at Dharmajigudem. The society participated in a few exhibitions in order to advertise its goods and effected sales to the extent of Rs. 140.

107. *Kuditini Cumbly Weavers' Co-operative Purchase and Sale Society, Limited*.—The membership of this society increased from 38 to 47 and its share capital from Rs. 76 to Rs. 94. The society stocked about 850 lb. of wool valued at Rs. 273-14-0 and distributed it amongst its members. Three hundred and seventeen cumblies valued at Rs. 893 were produced during the year. The society sent 354 cumblies valued at Rs. 1,026 to the sales depot at Bellary for disposal and a few cumblies were sold locally. The weavers earned about Rs. 740 as wages. At the end of the year there was a stock of 38 cumblies valued at Rs. 112-9-0 on hand.

108. *Bislahalli Weavers' Co-operative Purchase and Sale Society, Limited*.—The cumblies manufactured by this society are of a rather coarse variety compared to the Kuditini cumblies. During the year, the society purchased 10,100 lb. of wool valued at Rs. 2,634. A quantity of 1,000 lb. was utilized for distribution to members and the balance was disposed of. The society manufactured 921 cumblies valued at Rs. 1,047 and most of them were sent to the cumbly sales depot at Bellary for disposal. The society borrowed Rs. 2,500 from the Central Bank and repaid Rs. 2,000. The weavers earned Rs. 500 by way of wages. At the end of the year the society had 441 cumblies valued at Rs. 520 on hand.

109. *Doddagatta Cumbly Weavers' Co-operative Purchase and Sale Society*.—This society was registered on the 4th August and started work on the 4th October 1938. At the end of the year, there were 56 members on the rolls and the paid-up share capital was Rs. 655. The society invested Rs. 100 as share capital in the District Co-operative Bank at Anantapur and obtained cash credit accommodation to the amount of Rs. 2,000. About 35 looms are working for the society and the grey coarse cumblies required for the use of coolies in tea plantations are manufactured. The society took over 1,463 cumblies valued at Rs. 1,950 from its members and disposed of 1,314 cumblies for Rs. 1,788 leaving on hand at the end of the year 149 cumblies valued at Rs. 168.

110. *Salkapuram Cumbly Weavers' Co-operative Society*.—Salkapuram is a large village about five miles from Kurnool town. A credit society for the cumbly weavers of this centre had been registered in 1924 and credit loans to Kurabas from funds borrowed from the Kurnool Central Bank were made. At the end of the year, there were 21 members and the share capital of the society was Rs. 73-12-0. This existing society was selected for the grant of subsidy as there are within a radius of five miles, three other cumbly weaving centres with about 70 looms and 150 spinners. In Salkapuram alone there are 20 looms and 40 spinners. The society will specialize in the manufacture of felted cumblies. The bye-laws of the society will be amended so as to provide for the carrying on of non-credit work and the operations of the society will be extended so as to cover the adjoining cumbly weaving centres.

111. *Cumbly Sales Depot, Bellary*.—The cumblies sent to the depot by the cumbly weavers' societies are sold locally and are also supplied to some tea estates in South India. The depot received 1,350 cumblies valued at Rs. 2,175 and sold 1,059 cumblies valued at Rs. 1,928. The depot participated in the Indian Industries Fair held at Bombay where cumblies were displayed at a stall taken by the Ellore Pile Carpet Society.

112. *Famine relief for weavers*.—Owing to the famine conditions prevailing in Anantapur and Bellary districts, Government sanctioned special relief schemes for the weavers at Uravakonda and Yemmiganur. The relief schemes were in charge of the Revenue department and were in operation for some months. The famine relief

depots having been closed owing to the improvement in general conditions in the districts, proposals were submitted for the continuance of assistance to the weavers in those areas by arranging for a number of weavers who were receiving relief to be enrolled as members of co-operative societies, the societies being assisted with subsidy, loan and other facilities by the Madras Handloom Weavers' Provincial Co-operative Society. The provincial society granted a special subsidy of Rs. 40 to each of the societies and lent the services of two co-operative inspectors to serve as managers of the societies.

113. *Government Textile Institute.*—The institute continued to provide instruction in the supervisors course, power spinning and weaving (two years), supervisors course, dyeing and finishing (one year) and artisan courses (one year each) in handloom weaving, jacquard weaving, bleaching, dyeing and finishing, pile carpet weaving, knitting, sericulture and ericulture. In addition, part-time classes in spinning and weaving for mill apprentices, as well as the pupil teacher course were conducted. On the 31st March 1939, there were undergoing training in the Institute, 34 in the first year supervisor course, power spinning and weaving and 23 in the second year, and 16 in the supervisor course, dyeing and finishing. In the artisan course, there were 21 undergoing training in weaving, seven in bleaching, dyeing and finishing, four in jacquard weaving, two in knitting, one in pile carpet weaving, and one in sericulture and ericulture. There were twelve mill apprentices under training, seven in weaving first year, four in weaving second year, and one in spinning. Three pupils joined the pupil teachers' course and two were attached to the power spinning and weaving section and one to the dyeing and finishing section. The Government have sanctioned the levy with effect from 1939-40, of a fee of Rs. 2 per mensem from all candidates belonging to or domiciled in the Province who are admitted to the supervisor courses—power spinning and weaving and dyeing and finishing—at the Government Textile Institute. It is not possible to devote any considerable degree of attention to research work at the institute owing to lack of staff, but attempts were made during the year to adapt certain appliances in use in mills and factories to the requirements of cottage workers. The items of work undertaken and completed during the year included a single spindle sewing thread ball making machine suitable for subsidiary occupation; a winding wheel for preparing yarn from hank form into cones for feeding the above machine; a silk re-reeling machine for cleaning reeled silk; re-reeling arrangement for fitting to improved cottage reeling machine; improvements in the cottage sizing machine for securing increased production, and a multiple cotton tape loom constructed on rack and pinion principle.

114. *Experiments in gold thread manufacture.*—In the previous year, gold thread manufacture was undertaken in the Government Textile Institute from the stage of fine drawn wire obtained from Surat to the final process of gilding, and with the installation during the year under report of wire drawing machinery, comprising



HAND-SIZING MACHINE SPECIALLY CONSTRUCTED FOR WEAVING SCHOOLS FOR WOMEN.

taper cone pulley and three head vertical wire drawing machine with a set of dies, the drawing of medium to fine guage silver wire can be taken up at the Institute. Government sanctioned during the year the employment, for a short time, of a skilled supervisor from Surat for assisting the Institute staff in the initial working of the wire drawing machinery. Government also sanctioned the purchase of a muffle furnace for ascertaining the extent of electro-deposition of gold on silver thread and for the recovery of gold and silver from gold and silver thread waste. Already a few capitalists have evinced an interest in the experiments on gold thread manufacture conducted at the Institute and the proprietor of a gold thread concern at Kumbakonam has been benefited by the experimental work carried out. The proprietors of the Sree Lakshmi Silk Manufacturing Works, Peddapuram, one of the largest manufacturers in the Province of silk sarees, dhoties, pavadai cloth, etc., visited the Institute in order to study the working of the gold thread manufacturing section. They were impressed with the working of the appliances installed and expressed a desire to set up a gilding machine, in the first instance, in their factory. A small gilding machine with eight spindles was constructed on the model of the existing machine and supplied to the proprietors of the factory, one of whom was also trained in the technical process of gilding, as well as in the preliminary process of preparing gold solution. It is gratifying to record that the concern has been able to make considerable quantities of gold thread with silver thread obtained from Surat.

115. *Aided textile and needle-craft schools.*—These schools continued to be under the supervision of the Principal, Government Textile Institute, and, during the year, the regulations in regard to the minimum strength of the textile and needle-craft sections of combined aided schools and the age-limit for pupils admitted, were enforced. An amount of Rs. 18,714 was sanctioned as maintenance grant to the textile schools and a sum of Rs. 1,108 was distributed as capitation grant. Building and equipment grants were also given to the extent of Rs. 2,500 and Rs. 599 respectively.

116. *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. The Central Jails at Coimbatore and Bellary were visited by the Principal, whilst the Senior Certified School, Chingleput, was inspected by the Textile Inspector. Additional spinning machinery (ring frames) was installed in the Coimbatore Jail during the year.

117. *Short-reeling of yarn and short weight bundling.*—The question of taking measures to prevent the short-reeling of cotton yarn and the substitution of yarn of a coarser count than that marked on the bundle has been engaging the attention of the department for some years. As long ago as 1934, the Provincial Government issued a press communiqué, warning the trade that

those resorting to the malpractice would incur the risk of prosecution and similar warnings were repeated later. The last press communiqué on the subject was issued in August 1938. As mills in Bombay had also been resorting to these undesirable practices, the Madras Government approached the Bombay Government with a view to taking concerted action in the matter. The Government of India have also been addressed in regard to rendering uniform the provisions of the law throughout India. There is also the practice of odd weight bundling of yarn and making up of bundles. The Indian Merchandise Marks Manual does not prescribe any definite standards for weight of bundle (although a five- or ten-lb. bundle is referred to) with the result that it is at present permissible to market yarn bundles of any weight. In the bill for amending the Indian Merchandise Marks Act, provision has been made to ensure that the bundles should be conspicuously marked with an indication as to the weight of each bundle, and this is undoubtedly a considerable advance on the existing position. The attention of the Government of India has been drawn to the fact that it would further improve matters if it were prescribed that the bundle should be made up of weights of ten-lb. or five-lb. that it should contain as many knots as the number of its count, and that each knot should consist of ten hanks.

118. *Small-scale textile industries in the districts.*—The handloom weavers in the Province are taking to the manufacture of new styles of cloth to suit the changing demands of the market and small twisting machines with three or four spindles are now used for preparing twisted yarns of two colours for producing stripe effects. In various centres in the South, weavers are using steel reeds, and wire and varnished healds and are also adopting weavers' beams for winding warps so as to utilize the accommodation thus set free for installing additional looms in their houses. In Salem and Coimbatore districts, the sowcars dealing in handwoven cloth are distributing long wraps to handloom weavers in surrounding areas for producing striped shirtings and coatings. Lattice dobbies are also used for producing extra borders in cotton, spun silk and silk sarees. Under the Pykara and Mettur Hydro-Electric Projects, cheap electric power has been made available in many areas, and already in Erode, Komarapalayam, Salem and Trinopoly, power looms, swivel looms, twisting machines, braiding machines, knitting machines and jiggers (for dyeing cloth in full width) are being operated with electric motors. The setting up of electrically driven looms on a small-scale basis is likely to extend and develop in various areas of the Province, but unless some protection against the competition of the mill industry is afforded, the problem of marketing the accelerated production on electric driven looms set up by small capitalists will no doubt present itself in course of time. The Sri Lakshmi Silk Weaving Factory, Peddapuram, East Godavari district, has installed additional power-looms for the manufacture of silk sarees, dhoties, etc. A Sourashtra merchant in Madura has installed about 12 power-looms fitted with dobbies and the requisite preparatory machinery for manufacturing sarees with mercirized cotton yarn.

SERICULTURE.

119. *Staff.*—Sri K. T. Achaya continued as Sericultural Expert throughout the year. The Sericultural Expert toured for 260 days during the year and visited all the important sericulture centres in the Province. He gave oral evidence before the Sericultural Tariff Board at Bangalore on the 18th and 19th of August, and attended the conference of Directors of Industries and Sericultural Experts held by the Tariff Board at Calcutta on the 16th and 17th November 1938.

120. *Grant-in-aid by the Government of India for the development of the sericulture industry.*—The period under review was the third 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. As explained in last year's report, each of the moth testers is attached to certain rearing villages with his headquarters in a central village in order to maintain close contact with the rearers, and this system has worked extremely well. The total number of moths tested during the year by these moth testers was 1,638,875 as against 1,745,564 in the previous year. The amount provided for 1938-39 under the Government of India subvention scheme was Rs. 16,900, out of which Rs. 16,376-0-7 was expended by the end of the year.

121. *Aided grainages.*—Two more aided grainages were brought into operation during the year and they began to function from the 1st April 1938. The eight aided grainages have been established at the following important rearing villages in the Kollegal taluk, viz., Hosamalangi, Alahalli, Tagarapuram, Chilakvadi, Homderbalu, Singanallur, Kamakarai and Kongerhalli. The eight aided grainages tested and distributed 825,636 layings during the year as against 526,856 layings tested and distributed by the six grainages in the previous year. The grainages are performing their duties satisfactorily under the close supervision of the sericultural staff and the layings produced in them command the confidence of the rearers.

122. *Research on diseases of silk-worms.*—The more important items of research work which were undertaken and completed during the year comprised, the conduct of experimental rearings on the incidence of contamination and the effect of ventilation and other factors in relation to pebrine disease in the mulberry silk worms. One experiment showed that healthy worms could be safely reared in a highly infected room six months after the completion of the rearing of infected worms even without disinfection, the worms not being affected with pebrine. Further investigations are in progress in order to ascertain how long the infection exists

in a highly infected room. As a result of another experiment, it was found that healthy worms become infected with pebrine if reared in the same room where a pebrinized lot is reared. It was also noticed that tender worms catch infection much quicker than mature ones. A further experiment proved that contaminated feathers can infect a healthy batch when they are used for brushing tender worms. From a fourth experiment it was learnt that a broomstick used in an infected room can also act as a medium of infection if used for sweeping a room where the rearing of a healthy batch is undertaken. A further investigation confirmed the result of preliminary experiment conducted in the previous year which went to show that pebrinized male moths do not transfer the disease to the progeny of a healthy female moth, provided the eggs are washed with formalin solution. Three experiments bearing on the effect of ventilation were undertaken and it was found that pebrinized worms thrive better in a well-ventilated room than in an ill-ventilated one having no free access of air. Four sets of experiments on the effect of feeding pebrinized batches of worms with leaves sprayed with one per cent solution of formalin with a little ammonia added gave satisfactory results and have paved the way to stamp out the pebrine scourge which is highly infectious during the rearing stage itself. This innovation is likely to be of great benefit to the sericultural industry wherever it is carried on, and it will supplement the benefits already derived by the rearers by the use of cellular seeds which is of course only a preventive measure. Another experiment was under progress at the end of the year with a view to ascertaining whether the leaves obtained from mulberry plantations manured with pebrinized litter and excreta would bring on pebrine infection if fed to healthy worms.

123. *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 the Kollegal taluk. The party tested 2,755,949 moths during the year as against 3,043,395 moths in the previous year, in addition to their work of preparing and distributing cross-breed seeds on a commercial scale. On account of the total failure of rains during the year, except in the months of August and September 1938 when the taluk was subjected to an unusually heavy rainfall, the mulberry crop was adversely affected, the area under mulberry declining to 5,735 acres. The demand for seed naturally expands or contracts according to the increase or decrease in the acreage under mulberry so that the area under mulberry is the deciding factor in the amount of tested seeds distributed. Owing to the confidence created in the use of the tested seeds supplied by the department, some of the seed vendors who come from Mysore now get their seed cocoons tested in the Government grainages and take back the tested seeds for distribution in Kollegal villages as well as in the neighbouring rearing villages of the Mysore State. With the improvement of the seed supply,

the Kollegal rearers, especially in the vicinity of the Government silk farms and moth testing centres, now secure a yield which represents a substantial improvement over what they were getting in the past. As a result of the activities of the Sericultural section, the quality of the cocoons produced to-day is far superior to that of the cocoons produced in 1919, the normal yield now being 50 lb. of cocoons with cross-breeds and 35 lb. with pure Mysore variety for every 100 layings as against 25 lb. some years ago. The salient features of the seed campaign conducted by the department are (i) rearing of seed cocoons—pure Mysore and white—in the Government silk farms and by selected rearers in Kollegal taluk as well as at a few district centres under the supervision of the departmental staff, (ii) supply of cellular layings, both pure Mysore and white, to all rearers in Kollegal and the district centres from the Government silk farms and by purchasing seed cocoons from reputed seed cocoon centres in Kollegal and Mysore, (iii) preparation of cross-breed seeds and their distribution to rearers, (iv) careful supervision and control of the rearing operations, (v) selection of best seed cocoons for further propagation, (vi) introduction of aided grainages and supervision over their work, (vii) rearing chawki worms in the Government silk farms and aided grainages for supplying the rearers for producing seed cocoons, (viii) consideration of suitability of soil and climatic conditions in the selection of seed cocoons, (ix) use for seed purposes only of worms spun between 6 and 10 a.m., (x) elimination for seed purposes of cocoons spun on first and last days and on rainy and cloudy days, (xi) elimination of flimsy cocoons, (xii) disinfection of the rearing houses and appliances before the commencement of each rearing, (xiii) percentage selection of cocoons and rigid examination of pupæ and cent per cent testing of moths to produce cellular seeds, and (xiv) rearing of small batches of worms for seed purposes. A profit of Rs. 815 was realized by the sale of disease free-layings out of the purchased lot as against Rs. 645 in the previous year.

124. *Cross-breeding work*.—A reference was made in last year's report to the cross-breed work initiated with a view to the evolution of a hardier race of worms that would yield cocoons of a superior quality with an increased output of raw silk. Attention will now be concentrated on the production of cross-breed seeds which are proving very popular in Kollegal owing to the benefits derived by the rearers from their use. The Sericultural Tariff Board of 1938 laid great stress on the importance of accelerating the work of preparing and distributing cellular cross-breed seeds and it is probable that the recommendations of the Tariff Board in regard to the protection to be given to the sericulture industry will be based on the cost of production with cross-breed seeds, so that, it is very necessary that the preparation and distribution of cross-breed seed on an extended scale should be taken up in earnest. A programme has been drawn up under which it is hoped to supply cent per cent of the seed requirements of the Kollegal taluk in the form of cross-breed seed within a period of five years. An amount

of Rs. 5,118 for the new scheme for the production and distribution of cross-breed seed has been sanctioned from the Government of India grant for 1939-40. The production and distribution of cross-breed seed was first taken up by the department in 1935-36, and the total number distributed has advanced from 12,586 in that year to 394,127 in 1938-39. The highest yield so far obtained by the rearers for 100 layings of cross-breeds is 81½ lb. as against 52 lb. for 100 layings of pure Mysore. The present average yield is about 50 lb. for 100 layings of cross-breeds as against an average yield of 35 lb. with 100 layings of pure Mysore. In order to render Kollegal self-sufficient and to popularize the use of cellular cross-breed seeds, the problem of seed supply is being tackled by (i) production of white seed cocoons in the Government silk farms, (ii) purchase of pure Mysore seed cocoons from reputed seed cocoon areas and white cocoons from selected rearers, (iii) preparation and testing of cross-breed seeds in the Government grainages, and (iv) production and testing of cross-breed seeds in the aided grainages and farms.

125. *White races*.—The production of cross-breed seeds is conditioned by the number of white cocoons produced and the rearing of the white races requires a certain degree of intelligence and experience in the scientific methods of rearing, for all white races are not suitable for cross-breeding and so selection is necessary. Further, there are certain races suited to certain seasons and so all the farms are now concentrating their attention on the rearing of white races for cross-breeding purposes. The white cocoons are subjected to a percentage selection and a rigid examination of the pupae, whilst moths which emerge out of the selected cocoons are subjected to a further selection and only healthy cocoons showing no signs of disease are allowed to co-ovulate. After oviposition a cent per cent testing of moths is undertaken. It has been noticed for some time past that the univoltine and bivoltine seeds from Japan and China were degenerating by the constant in-breeding of the last three years, and endeavours were made to obtain fresh consignments from foreign countries in order to invigorate the acclimatized race. This, however, was not found possible, but some good white cocoons were secured out of the univoltine seeds—white brianzo variety—obtained from Kashmir in 1937-38, and the male moths of the fresh brianzo univoltine variety were crossed with the degenerated Japanese female moths to infuse fresh blood, with satisfactory results. The highest yield so far recorded for 100 layings of white is 77 lb. An electrolux refrigerator was installed in Kollegal during the year and this has greatly facilitated the conduct of the cross-breed work. It has been found from preliminary experiments that male moths of the white cocoons can be preserved in the refrigerator for about four to five days. This renders cross-breeding work easy even if the Mysore female moths do not emerge in time.

126. *Univoltine seeds*.—At the commencement of the year under review, there were 890 ounces of univoltine seeds received

from France and Kashmir in 1937-38 under hibernation in the King Institute, Guindy, and the Pasteur Institute, Coonoor, and small quantities of seed were released to selected rearers and at opportune periods. Unfortunately, these univoltine rearings had to be undertaken in a year when seasonal conditions were most unfavourable and the rearings were for the most part unsuccessful, although information of considerable scientific interest, which will be of value in the future development of the sericulture industry, was obtained and recorded.

127. *Coonoor silk farm*.—Five rearings of univoltine seeds received from Kashmir and four rearings of cross-breed seeds were undertaken during the year. All the univoltine rearings were unsuccessful due to adverse seasonal conditions, lack of suitable mulberry leaves and pebrine disease. The rearings of cross-breed seeds were fairly successful. This farm serves a useful purpose as an important centre for the distribution of eri seeds. Six rearings of eri worms were conducted with complete success with the eggs prepared in the farm itself and eri eggs were supplied to several centres in the Province. A number of manurial and cultural experiments in grafting, budding and cross-pollination were conducted. The manurial experiments conducted consisted of using hydrated lime at the rate of one ton per acre with farm yard manure and this has improved the garden a good deal. The plantation has been free from fungus and generally is in good condition. Six cross-pollinated plants (between the *moris indica* and *morus alba*) came up well and were under observation at the end of the year with a view to ascertaining whether the leaves would be suitable for the rearing of polyvoltine worms. It has been found by experiment that wherever exotic varieties are budded to the common bush variety, the stalks out of these seem to do very well on the farm.

128. *Palmaner silk farm*.—This farm is conducted in five acres of land leased for mulberry cultivation. Two thousand four hundred and fifty-six disease-free layings were reared with 12,059 lb. of leaves produced in the farm and supplemented by the purchase of 623 lb. of leaves. The farm harvested 580 lb. of white cocoons, 58 lb. of cross-breed cocoons and 38 lb. of Mysore cocoons thus making a total of 676 lb. The major portion of the white cocoons was used for cross-breeding purposes. The results of the cross-breeds produced with the white cocoons of this farm have given satisfactory results. As a result of the activities of the farm a certain amount of interest in sericulture has been created in the neighbouring villages, and over 10 acres of land have been brought under mulberry cultivation. Four hundred and forty pounds of cocoons were produced by the rearers and these were purchased by the department for cross-breeding and reeling purposes.

129. *Hosur silk farm*.—This farm has 13 acres of mulberry garden attached to it. The scanty rainfall during the year and the complete failure of the north-east monsoon in the latter part of the

year, resulting in a pronounced fall in the level of the Hosur tank, reduced the production of leaf to a marked extent. An experiment on mulberry was conducted by selecting about 25 of the local bush mulberry stalks and budding with the other varieties in the farm gardens. Three have taken up the foreign blood well and have profusely branched. Two ounces of tree mulberry seed were supplied to the Forest department for raising a nursery in the Gundel valley of the Kollegal taluk. Eight thousand nine hundred and fifty-two disease-free layings were reared in this farm with 52,154 lb. of leaves produced in the farm and supplemented by the purchase of 5,815 lb. of leaves. The farm produced 414 lb. of pure Mysore cocoons, 166 lb. of cross-breed cocoons, and 1,825 lb. of white cocoons, or a total of 2,705 lb. About 29,000 good mature univoltine and white worms were supplied for gut extraction. All the Mysore cocoons and a major portion of the white cocoons were used for cross-breeding and the rest were steamed and reeled. This farm established a record in the yield of white cocoons for 100 layings during the year, and the white cocoons reared in the farm have given very satisfactory results in cross-breeding. Pebrine, which was prevalent during the previous years, has been completely eradicated and all the cocoons produced in the farm have been absolutely pebrine-free. Three students underwent practical training in the farm during the year. About 73 bundles of mulberry cuttings were supplied from the farm to about five centres in the Province.

130. *Thadaguni farm*.—Up to the end of October, this farm had at its disposal 9.32 acres of leased land for mulberry cultivation and it was then extended to 12.32 acres by taking on lease three additional acres. The increase in the acreage will greatly reduce the necessity of purchasing mulberry leaves in the ensuing years. Since this farm is located in a dry area the plantation suffered a good deal from drought conditions owing to the complete absence of timely rains from October. From the manurial experiments conducted during the year it has been ascertained that horsegram green manure gives the best yield. Seven thousand and forty-five disease-free layings were reared with 20,961 lb. of leaves produced in the farm supplemented by the purchase 15,820 lb. of leaves. In addition to producing seed cocoons, the farm greatly facilitated the distribution of chakki worms by hatching and rearing them in the farm itself, and this contributed in no small measure to the success of the silk worm rearings since the rearers find it easier to rear worms of one brood rather than worms hatched on several days. Cross-breed and Mysore layings amounting to about 50,000 were converted into chakki for distribution to rearers by the purchase of 34,266 lb. of leaves. The farm harvested 198 lb. of Mysore cocoons, 279 lb. of cross-breed cocoons, and 1,584 lb. of white cocoons, making a total of 2,061 lb. In addition to cocoons, about 2,780 mature worms were supplied for gut extraction. The white cocoons have given satisfactory results in cross-breeding work. The farm serves as a useful demonstration farm for the benefit of the adjoining village rearers.

131. *District sericulture work*.—The five demonstrators of sericulture were stationed at (i) Kudligi in Bellary district, (ii) Berikai in Salem district, (iii) Pudupettai in North Arcot district, (iv) Vadakangulam in Tinnevely district and (v) Bezvada in Kistna district until October 1938 and thereafter Palmaner in Chittoor district. There are about 40 acres of land under mulberry cultivation in the several district centres. All the cocoons and raw silk produced in these areas are sent to Kollegal for disposal. The department is assisting the rearers and reelers in the marketing of their cocoons and silk. The cocoons produced at Pudupettai and Palmaner have been found suitable for seed purposes and the cross-breed layings produced from these cocoons have proved quite successful.

132. *Silk reeling*.—Ever since the opening of the Kollegal Silk Filatures, Ltd., the cocoon producers are finding a ready cash market for their cocoons without the intervention of brokers, but unfortunately the price of raw silk has declined considerably so that the position of the rearers has not improved in spite of the opening of the filatures as they have not been able to command good prices for their cocoons. Endeavours have been made to improve the cottage reeling machines by introducing improved reeling accessories such as buttons, pulleys, etc., for attaching to the existing country charkas, and some of the country reeling establishments which have taken to the improved accessories are reeling quality silk suitable for twisting in throwing mills. But owing to the low price of silk and consequently of cocoons, the necessary incentive for the charka reeler to go in for improvements is lacking. The Superintendent, Government Cinchona Plantations, at Naduvattam (Nilgiris), was supplied with one set of the improved Japanese foot-reeling and re-reeling machines.

133. *Silkworm guts*.—Experiments on silkworm guts were conducted with a view to ascertaining the best variety of worms for the production of guts of longer lengths and finish. It has been proved that univoltine worms alone can yield a gut of 12 inches to 16 inches in length and that cross-breed worms yield guts of from 7 inches to 13 inches only. The guts have been found to sterilise well in boiling alcohol. The Director of Medical Services in India is interested in the possibilities of developing the industry and of obtaining supplies from Kollegal owing to the difficulty which is now experienced in obtaining supplies of guts from Spain. Three sample consignments of guts have been sent to the Medical Store Depot, Madras, for test and it has been found that they do not require lengths in excess of 12 inches. The possibilities of development of the industry have therefore been considerably improved and the question was under consideration at the close of the year.

134. *Sericulture Tariff Board Enquiry*.—In April 1938, the Government of India referred to the Tariff Board for enquiry the question of whether the protection enjoyed by the sericultural

industry in India should be continued. In the memorandum which was drawn up for the Tariff Board the view was expressed that the levy of a specific protective duty of Rs. 3-10-0 per pound on all varieties of imported silk constitutes the minimum amount of protection necessary for the development of the sericultural industry, a corresponding increased duty being levied on imported silk manufactures sufficient to bring the price of these up to the level of the fair selling price of indigenous handloom products, and that if a lower rate of duty was levied, an import quota should be fixed for all foreign raw silks and for silk piecegoods also. It was recommended that the protection should be given in the form of a specific protective duty instead of an *ad valorem* duty in view of the difficulty of classification of different varieties of silk by the customs authorities. It was urged that the measure of protection asked for should be given for at least ten years.

135. *General.*—The rainfall in the Kollegal taluk was 32.43 inches as against 39.39 inches in the previous year and a normal rainfall of 40 inches. The seasonal conditions were most unfavourable and the mulberry crop was adversely affected in consequence. The adverse seasonal conditions, in conjunction with the low prices realized for cocoons, raw silk and silk waste, owing to the severe competition of imported foreign silks, had an adverse effect on the silk industry of Kollegal, and the crop under mulberry which was 7,060 acres in the previous year declined to 5,735 acres in the period under review. The average prices recorded per maund of 1,000 tolas during the year were, raw silk, first quality, Rs. 102-8-0 to Rs. 125; second quality, Rs. 70 to Rs. 90; third quality, Rs. 60 to Rs. 80; and silk waste, Rs. 5-4-0 to Rs. 10; and pierced cocoons Rs. 18 per maund of 45 seers.

ENGINEERING SECTION.

136. *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.

137. *Staff.*—Sri N. M. Adyanthayya continued as Industrial Engineer throughout the year. 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.

138. *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 1938.	Applications received during 1938-39.	Applications disposed of during 1938-39.	Applications pending on 1st April 1939.	Total number of feet bored.	Total number of borings put down.	Number of successful borings.
Bezwada	82	159	209	32	25,001	246	183
Tanjore	37	81	90	28	19,960	275	250
Coimbatore	52	49	79	22	10,401	186	150
Madras	8	30	25	13	2,886	52	29
Total	179	319	403	95	58,248	759	612

It will be seen that the total number of borings put down and the depth bored during the year, were 759 and 58,248 feet respectively as against 971 and 69,840 feet respectively in the previous year. There was a reduction in the number of borings put down and the depth bored in the Bezwada and Coimbatore divisions, and the Madras subdivision. These decreases were attributable to the not infrequent idleness of sets engaged on the conduct of borings under the rural water-supply scheme. These sets were lent to Collectors and worked under the orders of the revenue authorities and in some cases owing to want of timely instructions and lack of coolies or materials they were not operated continuously. Another circumstance which contributed to the idleness of some of the sets was the time taken in obtaining an analysis of the water, pending which the borings could not be continued or the sets removed to the next work spot. Although the total depth bored was lower, the percentage of successful borings increased from 69.31 in the previous year to 80.63 in the period under review. At the close of the year, 57 borings were engaged exclusively on operations in connexion with the ten years' rural water-supply scheme. In January 1939, Government sanctioned 15 additional boring sets and these were manufactured before the close of the year and distributed to various districts. Even with these additional sets, it is not possible to meet the demands from Collectors, district boards and panchayats, and it will be necessary to provide still more sets if the increasing demand is to be met. The amount expended on boring operations by the users of the departmental sets during the year is estimated at Rs. 1,72,049. Of the 759 borings put down, those for agricultural purposes numbered 340. The deepest of the borings completed during the year by a hand-boring set was 583 feet 6 inches and by a power drill was 896 feet.

139. *Artesian borings.*—At the close of the previous year, the department had to its credit 150 artisan boreholes. During the year under review, 26 fresh artesian springs were tapped. Of these, 15 were in the East and West Godavari districts, discharging fresh water at rates varying from 5 to 350 gallons per minute at ground level. Ten of the other artesian springs were tapped in South Arcot district and one in Tanjore district, and these are discharging water at rates varying from 1 to 600 gallons per minute, the height of discharge ranging up to 12 feet above ground level. Special mention may be made of the following successful artesian borings. An artesian boring tapped at Dwarapudi, Ramachandrapuram taluk, is discharging fresh water at 350 gallons per minute at ground level and has assisted to bring under cultivation a further area of 15 acres yielding an increased income of Rs. 1,500 per annum to the landholder. Two artesian borings discharging 600 and 320 gallons per minute were put down at Enamangalam village, South Arcot district.

140. *Sub-artesian borings.*—A few notable successes were achieved in areas notorious for scarcity of fresh water. Two borings, one at Borivenka and another at Makarampur in Sompeta taluk, are situated in the Uddanam area which though rich in fruit products, due to the moisture retaining quality of the red soil, was reputed to have no fresh water sources. One of the borings which was put down in an existing well to a depth of 153 feet, tapped a spring at 136 feet below ground level. The second boring at Makarampur was put down for the district board, and was taken to a depth of 95 feet, springs being tapped at 90 feet. This borehole yields five gallons per minute at a steady level of 60 feet below ground level. Another boring put down under the rural water-supply scheme at Dharmavaram in Srungavarapukota taluk, a centre notorious for scarcity of drinking water, was taken to a depth of 150 feet and fresh water springs were tapped at 102 feet and 120 feet rising to 14 feet from ground level and yielding a supply of four gallons per minute. With the exception of this new borewell, all the other wells in the village are reported to supply only brackish water. At Kurinchipadu, a thickly populated village in the South Arcot district, a ground boring four inches in diameter was put down to a depth of 392 feet from ground level for providing drinking water for the people. This boring, the site of which is about five miles from an artesian borehole at Uyyakondravi, is yielding a supply of about one gallon per minute at ground level. At Mayavaram, a boring was put down by a hand-boring set with a view to supplying water to the Adi-Dravida inhabitants. When the boring reached 115 feet a strong inflammable gas was encountered, the borehole was lined, and a strong sub-artesian spring was tapped at 214 feet below ground level. Under the auspices of the Panchayat Board, Allinagaram, Theni, Madurai district, five boreholes were put down for the benefit of the local inhabitants. These boreholes have solved the drinking water problem in this important trade centre which formerly had no source

of supply of good drinking water. The water scarcity at Valparai, Coimbatore district, was relieved by a boring which was put down for the panchayat board there. Twelve borings were put down during the year for the Poonamalle Health Unit, and of these ten proved successful. Among the more important agricultural borings put down during the year may be mentioned the following. A boring put down at Rajampeta tapped a fresh water spring at 75 feet below ground level which when tested gave a discharge of 30 gallons per minute at 30 feet below ground level, as a result of which the landholder expects to irrigate 3.15 cents and realize an additional income of Rs. 250 per annum. A six-inch boring, which was put down at Katteru, Rajahmundry taluk, tapped fresh water springs at 53 feet and 56 feet from ground level and yielded a supply of 10 gallons of water per minute. The landholder, who owns 10 acres of land around the boring, was not previously deriving any income from it, and he now proposes to irrigate three acres with garden crops from which an annual income of Rs. 400 is expected. A four-inch well boring which was conducted at Surya-raopet, Ellore taluk, was carried to a depth of 222 feet below ground level and tapped a fresh water spring. This will enable the landholder who was previously irrigating only two acres of land and obtaining an income of Rs. 150 to realize an additional income of about Rs. 700 per annum. A six-inch well boring conducted in the Chintalapudi taluk tapped a strong sub-artesian spring at 80 feet from ground level and yielded a supply of 40 gallons per minute. The landholder who was getting only Rs. 100 as grazing fees, now proposes to instal two mhotes over the well and to irrigate 10 acres of tobacco crop from which he expects to realize an income of Rs. 1,000 per annum.

141. *Work of the power drills.*—Considerations of space will admit only of a brief review of the work of the power drills. A six-inch boring was conducted to a depth of 112 feet at Simha-chalam, which is a pilgrim centre, and a spring was tapped at 69 feet below ground level which was found to yield 25 gallons per minute. The water obtained was pronounced to be excellent by the Guindy Institute and the borehole is meeting the entire needs of the pilgrims. Two borings were put down at Rajahmundry for agricultural purposes, one of which proved successful. A successful boring was put down for agricultural purposes at Sunnampadu, Bezvada taluk. A boring was put down for the Trichinopoly Cotton Mills, Ltd., and a fresh water spring was tapped at 123 feet below ground level yielding a supply of 25 gallons per minute. A boring was put down by the same drill for the Dalmia Cement Co., Ltd., and went to a depth of 646 feet, but though a supply of 10 gallons of water per minute was obtained, it was considered inadequate for the company's requirements. A six-inch boring which was conducted at the Imperial Sugarcane Station at Chettipalayam, encountered good springs yielding 75 gallons per minute at 51 feet from ground level. A boring which was put down by

the Electricity department at Tathayagarupalli, Cuddapah district, was carried to a depth of 368 feet and gave a discharge of three gallons per minute. A boring which was put down for the Tirumalai-Tirupati Devasthanam yielded a supply of 25 gallons per minute at 34 feet below ground level. Two borings were put down for the Tuberculosis Sanatorium, Perundurai, and both of these were successful.

142. *Torpedoing operations.*—There were at the beginning of the year eleven applications pending. Seventeen were received and 16 were disposed of during the year. In several of these cases the torpedoing operations were instrumental in increasing the supply of water from boreholes owing to the exposure of fissures. Sri R. Dorai, Supervisor, was deputed to the Pudukottah State for a short period during the year in order to train the engineering department of the State in blasting operations.

143. *Pumping sets.*—The department maintained 22 pumping sets 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 commencement of the year was seven. Forty-eight applications were received during the year and 49 were disposed of. A pumping set was employed continuously at the Central Jail, Trichinopoly, to pump out water from wells for the use of the prisoners in the jail. A pumping set was engaged for a period of two months by the Executive Engineer, Chingleput Division, for pumping out water in connexion with the construction of the canal at Arumbuliur anicut.

144. *New investigations.*—There were at the commencement of the year eleven pending applications for information and advice. Two hundred and fifty-seven applications were received and 251 were disposed of during the year.

145. *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 the machinery installed. The number of such plants erected during the year was as follows :—

Division.	Pending on 1st April 1938.	Received during the year 1938-39.	Disposed of during the year 1938-39.	Pending on 1st April 1939.	Remarks.
Bezwada	4	48	42	5	Thirty-two pumping Five agricultural Two industrial Three application refunded.
Tanjore	4	7	10	1	Nine pumping One industrial
Coimbatore	..	14	13	1	Twelve pumping One industrial
Madras	..	1	..	1	
	8	65	65	8	

The capital invested in the above plants, including the cost of buildings, amounted to Rs. 63,722. The horse-power of the largest and smallest plant erected during the year in each division was as follows :—

Division.	Largest plant B.H.P.	Smallest plant B.H.P.
Bezwada	26	3
Tanjore	17½	5
Coimbatore	15	1½
Madras	Nil.	Nil

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.
	ACS.	RS.
Bezwada	45½	3,550
Tanjore	13 *	300
Coimbatore	..	..
Madras	Nil.	Nil.

* Already under irrigation, but power pumping resorted to for the first time.

A noteworthy erection completed during the year was that for Messrs. P. Balasubba Chetty and Brothers at Kothur, Hospet taluk, consisting of a 26 B.H.P. steam engine and boiler, with an additional Lancashire boiler, 18 double roller gins, three groundnut decorticators, two seed cleaning machines, and one feed pump. A special feature of this plant is the use of ground husk for boiler fuel purposes.

146. *Compounding system.*—Under this system, the 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 458 as against 470 in 1937-38. 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	36	73	1	..	110
Tanjore	88	75	4	25	192
Coimbatore	14	92	14	..	120
Madras	3	17	16	..	36
Total	141	257	35	25	458

The compounding fee system has been extended to the maintenance of bore wells put down by the department, 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 receiving periodical inspection under this scheme.

147. *Sugarcane crushing mills.*—The department was in possession of nine power-driven sugarcane crushing mills, three with engines and six without engines. One of the mills was scrapped during the year. The remaining mills were fully engaged during the season. Eight applications were received during the year in the Bezwada division and all of these were disposed of. Three thousand nine hundred and ninety tons of cane were crushed, and about 34,654 maunds of jaggery and eight maunds of sugar were produced, the total amount realized by the owners therefrom being Rs. 61,450.

148. *Sugar manufacture.*—The department maintains two sugar centrifugals which are primarily intended for demonstration purposes. The demonstrations of sugar manufacture by the open pan system at Melupaka and Hospet, to which reference was made in the administration report of last year were brought to a close at the beginning of the period under review. These demonstrations have resulted in the receipt of a large number of applications for sugarcane mills in the Bezwada division.

149. *Services rendered to co-operative societies.*—The plants of the Kallakurichi, Rishivandam, Vadalur, Nangavaram, Pudur and Kalyanpur co-operative societies were under departmental supervision during the year. Valuations of machinery and plant were carried out for the Udupi Co-operative Agricultural and Industrial Society, Ltd., and the Protestant Co-operative Society, Ltd., Mangalore, at a nominal fee of Rs. 5 in each case.

150. *Services rendered to departments of Government.*—During the year under review, the value of services rendered to the Agricultural, Police, Revenue, Public Works, Jail, Forest, Judicial, Public Health and other departments in the various divisions amounted to Rs. 26,459-9-8 as shown below as against Rupees 19,124-15-0 in 1937-38:—

Division.	Value of services rendered.		
	RS.	A.	P.
Bezwada	13,190	6	0
Tanjore	6,728	6	6
Coimbatore	5,884	5	2
Madras subdivision	656	8	0
Total ..	26,459	9	8

151. *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 could be improved and his income increased, and where investigation has proved that the source of water-supply is unfailing. No loans were granted during the year owing partly to the scarcity of water in wells and partly to the low price of agricultural produce which in many cases renders lift irrigation by power uneconomical.

152. *Special investigations.*—The following special investigations were conducted by the Industrial Engineer during the year. The department was asked by the Inspector-General of Registration whether it could evolve a process for the recovery of the silver from spent hypo used in the photostat process which was going to waste. The Industrial Engineer conducted experiments at the Government School of Technology and with the co-operation of the Principal and the staff of the school, was successful in evolving a method by which a major portion of the silver could be recovered. The Government ordered an investigation to be carried out into the question of rice milling and polishing with a view to minimizing the loss of vitamins in rice. The Industrial Engineer conducted comparative tests on rice mills of various types and his report was submitted to Government with suitable recommendations during the year. Reference has been made elsewhere in this report to the experiments which are proposed to be conducted in regard to the evolution of suitable machinery for the manufacture of sand paper as a cottage industry and for the preparation of malted foods from cholam and other cereals. The question of collecting data of boring operations and incorporating them in district and taluk contour maps with a view to the mapping of underground water tables was taken up during the year.

153. *Industrial Engineering workshop.*—The total value of work orders executed in the workshop during the year under review was as follows:—

Head.	Amount realized.			
	1938-39.		1937-38.	
	RS.	A. P.	RS.	A. P.
i. Pumping and boring ..	63,949	4 0	62,339	2 0
ii. Inter-departmental ..	13	7 0	16	0 0
iii. Other Government department.	7,870	5 0	4,522	6 0
iv. Manufacture of 15 hand boring sets.	22,949	14 0	..	..
v. Private parties	3,710	11 0	296	13 0
vi. Value of work written off ..	..	..	72	6 0
Total ..	98,493	9 0	67,246	11 0

The working of the concern during the year resulted, subject to audit, in a net profit of about Rs. 5,378 as against a loss of Rs. 3,208-11-0 in the previous year. Special mention may be made of the manufacture of 15 hand-boring sets in connexion with the rural water-supply scheme and of six Pinto chekkus for the Triplicane Urban Co-operative Society, Madras. Several improvements in the design and manufacture of boring tools were carried out. A swivelled wire rope socket, and an improved type of paddy husking machine which were constructed, were under test at the close of the year. With a view to controlling more effectively the boring work in the districts and watching the progress of borings from week to week, a borehole indication board, which visually indicates in the Industrial Engineer's office, the progress of each borehole, was constructed.

INDUSTRIAL EDUCATION.

154. *Staff.*—Mr. W. Fyfe continued as Inspector of Industrial Schools throughout the year, except for a period of one month from 9th May 1938 when he was on leave and I held additional charge of the post. In G.O. No. 1345, Education, dated 14th June 1938, the Inspector of Industrial Schools was appointed a member of the Committee constituted by Government to examine the question of holding a special High School examination for Europeans and Anglo-Indians. In G.O. No. 1274, Development, dated 17th May 1938, the Inspector was appointed Secretary to the Technological Diploma Examination Board. The Inspector of Industrial Schools continued to act as an official visitor to eleven Central Jails and the Senior Certified School, Chingleput, and he also visited the Junior Certified Schools at Ranipet and Bellary.

155. *State Technical Scholarships.*—The following scholars who were under training in England returned to India during the year on the completion of their courses of study:—

Name.	Subject of study.	Date of return.
(i) Sri G. C. Arya	Aviation	April 1938.
(ii) „ B. Jagannatha Hedge.	Glass Technology	October 1938.
(iii) „ V. V. Lakshmana Rao.	Electrical Engineering with special reference to Broadcasting.	November 1938.

Sri V. G. Sundaram, whose scholarship was terminated in February 1938 owing to illness, was after his recovery, reawarded a scholarship to enable him to complete his studies. He left India early in October 1938 and resumed his studies in England towards the latter half of the same month, but after a few weeks' stay his health unfortunately broke down again and he had to return to India early in January 1939 on medical advice relinquishing his scholarship.

156. *Scholarship tenable at the Victoria Jubilee Technical Institute, Bombay.*—The number of scholarships tenable at a time at the 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. Of the two scholars under training at the institute, one completed the course during the year and in the vacancy a fresh candidate was nominated. A subsidy of Rs. 200 per annum was paid by Government to the institute on behalf of each student under training.

157. *Scholarships tenable at the Andhra University.*—The number of scholarships tenable at a time at the Andhra University is six of the value of Rs. 30 each per month, and they are available for the study of B.Sc. (Hons.) in Technology for a period not exceeding three years. There were six scholars under training during the year of whom five had completed their courses by the close of the year.

158. *Post-graduate scholarships tenable at the Indian Institute of Science, Bangalore.*—Three scholarships, which are now of the value of Rs. 45 each per mensem, are awarded to graduates in Chemistry or Physical Science for research in the various departments of study at the institute for a period of three years. Six new scholarships were awarded during the year, two in each of the departments of Bio-Chemistry, Electrical Technology and General and Organic Chemistry. There were twelve scholars under training at the institute during the year as shown below:—

Bio-Chemistry	..	..	..	..	5
General and Organic Chemistry	..	..	..	..	4
Electrical Technology	..	..	..	..	2
Physics..	..	..	..	..	1

159. *Scholarship for practical training in the manufacture of pharmaceutical products.*—Sri S. Ganapathy, who was awarded a scholarship of the value of Rs. 60 per mensem for nine months—six months at the Alembic Chemical Works, Baroda, and three months at the Medical Stores Depot, Madras, completed his training during the year. He has since secured an appointment in a factory in Travancore.

160. *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. 1-8-0 to Rs. 7-8-0 per mensem were, as usual, awarded with effect from 1st July 1938 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.

161. *Technological Diploma Examination Board.*—In G.O. No. 1274, Development, dated 17th May 1938, Government constituted a Board consisting of officials and non-officials with the Director of Industries and Commerce as Chairman and the Inspector of Industrial Schools as Secretary to control the conduct of examinations, the award of diplomas in engineering and other subjects and the conditions generally, under which young men aspiring for the diplomas are trained. The functions of the Board are—

- (i) to inspect institutions applying for affiliation and examine the system of training imparted in them with a view to deciding whether a particular institution is fit to be affiliated to the Board for purposes of the diploma,
- (ii) to issue affiliation certificates to such of the institutions as satisfy the conditions laid down by it,
- (iii) to inspect the affiliated institutions periodically in order to ensure that the standard laid down is maintained,
- (iv) to arrange for the conduct of common final examinations in the theoretical and practical subjects for all the institutions affiliated to it for the grant of diplomas, the examiners for the various subjects being appointed by the Board, and
- (v) to inspect and approve workshops and factories to which could be admitted students preparing for the diploma courses in the various institutions affiliated to the Board, and if necessary, lay down conditions, regulating the practical training given in the workshops.

The Board met thrice during the year and drew up rules for affiliation and for the conduct of diploma examinations for students in affiliated institutions. The members of the sub-committee appointed by the Board inspected the Government School of Technology, the Chengalvoraya Naicker's Technical Institute, and the Ramakrishna Mission Industrial School. The following institutions were affiliated to the Technological Diploma Examination Board during the year in the subjects shown against each:—

- (1) Government School of Technology, Madras—
Mechanical Engineering,
Electrical Engineering, and
Printing Technology.
- (2) Chengalvoraya Naicker's Technical Institute, Vepery:—
Mechanical Engineering.
Electrical Engineering.
- (3) Ramakrishna Mission Industrial School, Mylapore—
Automobile Engineering.

162. *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), plumbing (two years) and electric wiring (two years), as well as courses in mechanical drawing for woodworkers, metal workers, brick layers, masons and plumbers, each of two years' duration. Students who satisfactorily complete the mechanical and electrical engineering courses are awarded the L.M.E. and L.E.E. diplomas, respectively, while those who complete the printing course are awarded the L.P.T. diploma. The annual prize day was held on the 15th March 1939 when Sir Henry Howard, C.I.E., Chief Engineer for Electricity, presided and distributed the diplomas and prizes. In the course of an instructive address to the students he assured them that he would employ in the Electricity department as large a number of them as possible.

163. *Admissions.*—Admission to the various courses of study is restricted to bona fide apprentices and workmen who are actually engaged in the trade which they wish to learn. The number of new admission during the year was 341 as against 298 in the previous year, of which 93 were admitted to the electrical engineering course, 17 to the mechanical engineering course, 62 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 1939 was 883 as against 888 in the previous year. The average number of classes held during the week was 96 against 99 in the previous session.

164. *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. Meek, Engineer, the General Electric Company, Limited, respectively. Nineteen students qualified themselves for the L.M.E. diploma and 44 for the L.E.E. diploma. The electrical wiring competency examination was conducted jointly by Messrs. C. V. Krishnaswami Chetty, retired Electrical Engineer, Corporation of Madras, and K. Subrahmanyam of the Madras Port Trust. One hundred and sixty-three students, including 39 school candidates, appeared for the examination and 62 were awarded competency certificates, of whom 22 were school students. Sri V. Ganesa Ayyar of the Madras Corporation conducted the examinations in the plumbing and in the vernacular drawing classes, and 23 students who were declared to have passed the examinations were awarded certificates. The supplementary examinations in mechanical and electrical engineering were held in October 1938 and were conducted by Messrs. F. T. Rudd of the Beach Engineering Works and J. Meek of the General Electric Co., respectively. Eleven students were awarded the L.M.E. and 20 the L.E.E. diploma. Mr. J. A. Munro of the Madras Publishing House examined the Printing final year students and all the students that appeared

for the examination were declared eligible for the L.P.T. diploma. The school continued to be the centre for the Province for the City and Guilds of London Institute Technological examinations for which 319 candidates appeared for the various technological subjects and 163 came out successful. During the year the L.A.E. diploma examination was also held at the school for which five candidates from the Ramakrishna Mission Industrial School appeared and three of them were declared successful.

165. *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 two non-residential scholarships to students belonging to the depressed classes, while the Trustees of the Sri Venkateswara Hostel continued to award nine scholarships of the value of Rs. 8 each per mensem, during the year. The District Boards of Guntur and West Godavari continued each to award one scholarship of the value of Rs. 30 per month to the candidates nominated by them. The Council of the Victoria Technical Institute, Madras, awarded one scholarship of the value of Rs. 15 per mensem during the year to a student of the school. One fresh scholarship of the value of Rs. 12 per mensem from the Dr. S. Rangachari Endowment Fund was awarded to a student of the Electrical Engineering class, while 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, Orissa, was in receipt of a loan scholarship awarded by the Raja of Parlakimedi. The Mohamedan Educational Association of South India, Madras and the Reddi Mahajana Sangam, Chittoor, awarded also a few scholarships to students belonging to the Muslim and Reddi communities respectively studying in the school.

166. *Careers of ex-students.*—The Principal continued to maintain an employment bureau with a view to assisting passed students to secure suitable employment. The majority of the students who were apprentices in the larger workshops are reported to have been absorbed by them on the completion of their course of training. It is understood that the Electricity department has also absorbed in their works establishment some of the passed electrical engineering students and that several others have secured suitable employment in different engineering workshops, factories and mills.

167. *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 number of new admissions to this section during the year was 50 and its strength at the end of the year 123 as against 130 in the previous year. Thirty-six students who satisfactorily completed the course of training were awarded certificates.

168. *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 121 as against 108 in the previous year. The final year examinations were, as usual, conducted by the railway officials and 15 students who came out successful were awarded certificates.

169. *Sports.*—The school, which is a member of the Madras Collegiate Athletic Association, participated in the Inter-Collegiate tournaments and sports. During the year the school won for the second time the Professors' Cup for football conducted by the Presidency College, and the Stokes Shield in Hockey conducted by the Madras Collegiate Athletic Association.

170. *Casting and metal working class.*—The class, which was started in April 1937, continued during the year. The course of training extends to one year and students are given instruction in the preparation and manufacture of articles of brass and other metallic alloys using modern moulding processes. Eighteen students were admitted to the course, of whom fifteen completed their training satisfactorily and were awarded certificates. The retention of this class on a temporary basis was sanctioned up to the end of March 1940. The expenditure incurred on this class during the year was Rs. 2,794-10-0 and the receipts realized by the sale of articles manufactured by the students amounted to Rs. 376-7-0.

171. *Finance.*—The total expenditure on the School of Technology during the year was Rs. 83,892 and the receipts were Rs. 31,015-9-0 including the contribution made by the Madras and Southern Mahratta Railway Company, towards the cost of the teaching staff in respect of the Perambur Branch School. The net cost to Government of maintaining the school was Rs. 52,876-7-0 or Rs. 46-14-8 per student per year.

172. *Government Industrial School, Madura—Staff and General.*—Sri V. Raghava Ayyar continued as Superintendent during the year except for five weeks when he was on leave, during which period the Assistant Lecturer held additional charge of the post of Superintendent. This school which caters for the needs of the southern districts of the Province provides instruction in metal-working and wood-working trades extending over five years and also a course in electrical wiring which extends over two years.

173. *Admissions and withdrawals.*—During the year 164 candidates sought admission to the school, but only 53 actually joined—35 in the long courses and 18 in the short courses. There were sixteen withdrawals due chiefly to the inability of the parents or guardians of the apprentices to maintain them. The strength of the school at the end of the year was 109 as against 100 in the previous year.

174. *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 Trade School. Of the 17 final year students who presented themselves for the various examinations, 16 were declared to have passed—four in general mechanics, one in cabinet making and 11 in electric wiring. Of these, twelve are reported to have secured suitable employment in factories, mills and workshops.

175. *Equipment.*—A radial drilling machine and some electrical meters were purchased during the year at a cost of Rs. 3,884 in order to provide efficient practical instruction to the students.

176. *Hostel.*—The hostel attached to the school functioned satisfactorily. The vegetarian and non-vegetarian messes were efficiently managed by the students themselves.

177. *Financial position.*—The receipts and expenditure of the school for the year were Rs. 16,113 and Rs. 31,134 respectively. The latter figure includes an expenditure of Rs. 3,884 incurred during the year under capital account on the purchase of new machinery. The net cost to Government of maintaining the school was only Rs. 14,138 as against Rs. 17,500 fixed by the Retrenchment Committee in 1932 and accepted by Government as reasonable, and in spite of the fact that the electric wiring course—a recent addition to the sources of study at the school—accounted for an expenditure of Rs. 2,200. The average cost of training per pupil was Rs. 129-11-0 as against Rs. 113 in the previous year and Rs. 153 in 1936-37.

178. *Other Government Industrial and Trade Schools.*—The Government Industrial Schools at Calicut and Bellary and the Government Trade School at Mangalore continued to function satisfactorily during the year, their permanent retention having been sanctioned with effect from 1st April 1938. These schools provide instruction in the metal-working and wood-working trades, the courses extending over five years. A course in electric wiring extending over two years and another in casting and metal-work extending over one year, were introduced at the Government Industrial School, Calicut, during the year. Twenty pupils were admitted to the former and 12 to the latter course. In view of the fact that the majority of the pupils seeking admission to these schools are poor and that several of them drop out in the middle of their training owing to their inability to maintain themselves, proposals were submitted to Government during the year for the grant of wages to all the students admitted to the long courses in lieu of the scholarships which were paid only to a few. The orders of Government sanctioning the proposals were received shortly after the close of the year. The strength of these schools at the end of the year was 98 in Calicut, 74 in Bellary and 47 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 not connected

with the school. Nine students satisfactorily completed their courses of study at Bellary, four in Calicut, and nine in Mangalore and these were awarded certificates. Most of these are reported to have secured suitable employment. The Boards of Visitors and Selection Committees constituted for each school continued to function satisfactorily. The Madura, Calicut and Mangalore schools participated in the All-India Khadi and Swadeshi Exhibition held at Madras in December 1938. The hostel attached to the Bellary school functioned satisfactorily. The number of boarders in the hostel during the year was 26 and the mess rate per head per month averaged about Rs. 6.

The receipts and expenditure of these schools for the year were—

School.	Receipts.	Expenditure.		Net cost.
		Recurring.	Non-recurring.	
	RS.	RS.	RS.	RS.
Calicut	19,057	25,173	4,405	6,116
Bellary	16,336	24,683	5,466	8,347
Mangalore	3,390	11,899	500	8,509
Total	38,783	61,755	10,371	22,972

In spite of the fact that two new courses were introduced at the Calicut school, the net cost to Government of running these schools during the year was only Rs. 22,972 which is about half the amount fixed by the Retrenchment Committee in 1932 as reasonable.

179. *Aided industrial schools.*—The Inspector of Industrial Schools continued to supervise the non-textile schools and the Principal, Government Textile Institute, the textile schools. The recognition of three schools, viz., the Sri Ram Motor School at Madras, the Anbian Art Industrial School at Arumuganeri, Tinnevely district, and the London Mission Girls' School, Erode, was withdrawn during the year. Five new schools were recognized, namely, (i) V. S. Rajagopalan's Radio Institute, Madras, for instruction in radio servicing and maintenance, (ii) St. Joseph's Institute for Home Industries, Tuticorin, for wood-work, toy-making and tailoring, (iii) Sri Krishnasramam, Guntur, for cabinet making and cement concrete work, (iv) Bharadwaj Ashram, Peddakadubur, Bellary district, for paper making and (v) Village Industries Institute, Gopalapuram, Malabar district, for paper making. Additional courses of instruction were introduced in certain existing schools, namely, paper making in the Harijan Industrial School, Kodambakkam, and also in the National Industrial School, Rajahmundry; village tanning in the Methodist Mission Industrial School, Karur; and blacksmithy and fitting in the St. Joseph's Industrial School, Tindivanam. At the close of the year there were 75 recognized industrial schools, excluding those managed by Government direct. On the 31st March 1939, there were 8,055 pupils receiving instruction in these schools (including Government institutions) as against 7,885 in the

previous year. Of these, 2,650 were Indian Christians, 525 Muham-madans, 137 Europeans and Anglo-Indians, 724 Brahmans, 2,711 non-Brahman Hindus, 995 depressed classes, 71 criminal tribes, seven aboriginal and hill-tribes, two Buddhists, two Parsees, one Sikh and 229 others. An amount of Rs. 94,331 was distributed in the form of maintenance grant (including Rs. 2,908 capitation grant) representing an average of Rs. 21-9-0 per pupil per annum. A further grant of Rs. 10,662 was distributed as equipment grant and Rs. 8,739 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 needle-work and dress-making, continued to function satisfactorily during the year.

LEATHER TRADES INSTITUTE, MADRAS.

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

181. *Advice and assistance to tanners.*—The Tanning Expert visited a number of tanneries and demonstrated improved methods and process of tanning. At a tannery in Sembiam, a method for the prevention of stains on tanned skins was worked out. The presence of chips, was pointed out to the proprietor of a tannery at Dindigul and a method for remedying the defect was demonstrated. At another Dindigul tannery, were demonstrated (i) the method of manufacture of cheap chrome lining leather from rejected raw sheep skins, (ii) a way of improving the present class of bark tanned skins as produced in the tannery, (iii) a method of retanning discoloured bark tanned sheep skins, and (iv) the manufacture of sole leather from buff hides. At a tannery in Madhavaram, a demonstration of retanning of discoloured bark tanned skins was conducted, as also of the chrome tanning of sheep skins for lining, and of suitable methods of liming, deliming and tanning sheep skins for the export trade to suit the London market. A tanner at Trichinopoly was given technical information in regard to the manufacture of glace kid and velvet leathers. A number of tanners visited the institute at Madras in order to solve their practical difficulties or to obtain advice and assistance in regard to the problems which had arisen. These tanners were shown, among other things, (i) how to improve the colour of the tanned leather when using Konnam bark, (ii) the chrome tanning of buffalo hides for sole leather on a cottage basis, (iii) preparation of chrome liquor, (iv) tanning of hides with wattle bark so as to obtain a prime tannage, (v) proper method of soaking and liming dry hides, (vi) retanning of greasy Mutwada skins, (vii) pickling of hides and skins for the export trade, (viii) the use of babool bark as a tanning agent for producing heavy leather for soles, (ix) the manufacture of bark tanned sole

leather on a cottage basis, (x) a method of detecting adulterated leather with testing solution, (xi) the preparation of chrome tanned sheep skins for glove leather, (xii) the correction of the alkalinity of water for deliming and tanning purposes, (xiii) a method of avoiding stains in bark liquors, (xiv) liming with sharpened lime by using sodium sulphide in order to overcome the defect of improper plumping and loss of weight, (xv) a method of deliming with ammonium sulphate and oxalic acid before the skins enter into the tan liquors and (xvi) bark tanning of sheep skins in order to ensure the maximum spreadiness and softness of the tonnage. Various enquirers were supplied with information in regard to the tools and equipment necessary for manufacturing simple leather goods, the manner of using colours on leather for decorative work, a method of dyeing and finishing of skins by hand, the grading of raw hides and skins, organizing a village tanning industry, and the finishing of harness, boots, bags and belts. The Tanning Expert visited the Central Jail, Vellore, in order to select samples of leather for the jail and to suggest improvements in the manufacture of boots for the Police department. The Tanning Expert also inspected and passed the weekly consignments of leather sent to the Central Jail, Vellore, by the suppliers in Madras.

182. *Experiments and investigations.*—The experimental work referred to in the report of the previous year was continued and developed during the period under review. A feature of the investigations now carried out at the institute is that every one of them, after a certain stage has been reached, is scientifically controlled by analysis and experiment in the laboratory. The following is a brief summary of the experimental work carried on during the year:—

(i) *Pickling.*—Experiments on the pickling of hides and skins for the export trade were conducted on a large scale in the tannery. The dry pickled hides and skins were subsequently treated by different tannages in order to study the variations in the treated and untreated pelts. The experiments have been completed and a formula successfully worked out with the costings of the process. A detailed report in regard to the experiments was under preparation at the end of the year.

(ii) *Leather for water buckets.*—Experiments were conducted on a practical scale and a formula and costings worked out. Laboratory tests on the durability of the leather as compared with chrome and bark tanned leathers were conducted. A bucket made with this leather has been sent to the Deputy Director of Agriculture, Cuddapah, for comparative trial with other leathers as regards wear and tear when used with different kinds of water, and the results of the trials are awaited.

(iii) *Synthetic tans.*—A study of the proper use of synthetic tans, which are at present used as mere bleaching agents, was made by carrying out experiments on a practical scale

in the tannery at different stages of the tanning process and by analysing the leathers in the laboratory. The analysis of the resulting leather showed that a pre-tannage with synthetic tans and the use of these tans in tan liquors, produces a leather with a greater degree of tannage than the usual South Indian tanned leathers which are treated with synthetic tans after tannage for bleaching purposes. The leathers tanned by pre-tannage with synthetic tans are softer, have a finer grain and possess a fuller feel. The experiments so far conducted have been successful and the scientific control of this mode of tannage has now been taken up for study.

(iv) *Study of the South Indian tannage.*—As a result of the experiments conducted on a practical scale, it has been found that the method of liming at present carried out by the South Indian tanners yields a leather of a porous texture with a rough and tender grain due to the long liming carried out in order to overplump the pelts to facilitate easy and clean fleshing, i.e., removal of loose flesh. An improved method of liming with the aid of sharpening agents such as sodium sulphide, was worked out and the resultant leather was found to be free from the defects existing in the ordinary South Indian tanned leather. A satisfactory method of deliming which is quicker and cheaper than the long deliming was also worked out. The period of tanning was also reduced without any detriment to the quality of leather produced.

(v) *The use of indigenous tanning materials.*—(a) *Divi Divi.*—The chief defect of the liquors—fermentation—has been brought under control and a satisfactory hide leather produced, though in the case of skins, it was found that this material tends to give a firm tannage which is undesirable. Further experiments are in progress with a view to bringing up the colour to that of the usual South Indian tanned leathers. The speed of diffusion of the tanning with this material has been found to be quicker and the tannage to be free from the change in colour due to oxidation.

(b) *Terminalia Arjuna.*—The material suitable for tanning of leather having been determined in the laboratory, tannery experiments were undertaken. But the defects of the leather tanned with this material alone were studied. The resultant leather was found to be brittle and red in colour and the material is now being blended with other tanning materials in order to overcome the defects. The experience gained so far goes to show that the material is suitable for the tannage of sole leather only judging from the firm nature of the leather produced. Further experiments were in progress at the end of the year.

(c) *Myrobalans* have so far been used only as a bleaching agent in the South Indian tanneries and no attempt has been made to use the material as a tanning agent. The material which is very abundant in the forests of the Province, contains the highest percentage of tannin and the cost per unit of tannin is found to be the lowest of all the South Indian tanning materials. Yet no attempt has hitherto been made to utilize myrobalans as a main tanning material as distinct from its use as a bleaching agent in the final stages of the process of tanning. The view appears to have been held that leather tanned with this material is porous and rough and unsuitable for ordinary purposes; but the results of the preliminary experiments which are encouraging, throw much doubt on the correctness of this earlier conclusion.

(vi) Experiments on the curing of hides and skins with the aid of preservatives have been taken up, but no tangible results were forthcoming by the close of the year.

183. *Leather working class.*—There were the full number of 12 students under training in the leather working class during the year, of whom two were from the Trichinopoly, one from Coimbatore, one from Nellore, one from Guntur and one each from East Godavari and West Godavari districts, while the remainder were from Madras. Instruction was given in the manufacture of all classes of leather goods from wrist watch straps to footwear and suit cases. An amount of Rs. 420 was realized from sale of the leather goods produced against an estimated receipt of Rs. 350. At the end of the course an examination was held and certificates were awarded to the boys on the results of the examination. This class has been very successful. It was found in the light of experience that the students from the mufassal should be taught how to prepare the leather itself which is needed for the manufacture of leather goods, as otherwise the instruction imparted would not be complete, whilst if instruction in simple methods of tanning, dyeing and finishing of leathers was given it would be possible for the students when they settle down in their villages to produce the better class of leather needed from raw hides and to make articles of improved quality. Proposals were, therefore, submitted to Government to extend the period of the course for the leather working class from one to two years, and to increase the strength of the class from 12 to 24 students. These proposals have been approved and the new extended course commenced from the 1st of April 1939.

184. *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 work 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 jaggery from date palm juice in the Cuddapah district to which reference is made elsewhere in this report. Sixty

samples of tanning materials, water used in tanneries, chrome liquors, tan liquors, leathers and effluents, were analysed in the laboratory of the Institute during the year. The analyses of twelve samples of materials not pertaining to the sphere of leather chemistry such as jaggery, clay, starch, and lime, were also carried out. The results of the laboratory experiments on *Terminalia arjuna* are now ready, but the publication of these has been deferred until some further samples of tanned leathers have been analysed. The study of *Terminalia belerica* and *Terminalia tomentosa* as tanning materials is still in progress. The analysis of the last consignment of avaram bark from the plantations raised by the Forest Department was completed. Information in regard to the yield of bark per acre, the cost of the bark before peeling and after peeling, has been called for from the Forest Department and as soon as it is received, a detailed report will be drawn up by the Leather Research Chemist. The experimental work on the purification of effluents from tanneries to the standard laid down for sewage effluents was continued and a method was worked out. It was brought to notice during the year that there has been recently a tendency to adulterate leather with glucose, and experiments were started shortly before the close of the year with a view to evolving a method of determination of glucose in leather. Great interest is now being taken in the cultivation and production of wattle bark locally, and samples were received from different plantations for analysis. Twelve samples of locally grown wattle bark were analysed and found to be not inferior to the imported wattle bark. Hides were tanned with the locally grown wattle bark sent by the Forest Department and the South African bark and the hides were analysed. The hides were also exhibited at the All-India Khadi and Swadeshi Exhibition held at Madras in December.

SCHOOL OF ARTS AND CRAFTS.

185. *Staff*.—Sri D. P. Roy Choudhury, M.B.E., was in charge of the school throughout the year. The designation of Sri V. R. Chitra, Senior Teacher of the school was, in G.O. No. 876, Development, dated 31st March 1938, changed to Superintendent, Crafts Section. With a view to introducing more specialized courses of training in the industrial schools for the manufacture of particular articles, Sri V. R. Chitra was deputed to study the development of certain aspects of industrial education in Northern India. Sri Chitra left Madras for Northern India in the first week of August and returned to Madras at the end of October 1938.

186. *Strength and attendance*.—The number of students on the rolls on the 31st March 1939 was 258 as against 249 in the previous year. The average attendance was 207 against 195 and the percentage of attendance during the year was 80 as against 78 in the previous year.

187. *General*.—In G.O. No. 876, Development, dated 31st March 1938, Government sanctioned the conversion, with effect from the 1st May 1938, of the existing Pottery course in the school into a course in Ceramics. The new course extends over a period

of three years and forms part of the Craft Section of the school. Ten students were admitted to the course. Five stipends of annas four each per working day have been sanctioned to poor and deserving students in this class. The Government approved during the year the issue of a diploma to the students who satisfactorily complete their training and pass the examination held at the end of the course in Ceramics. Proposals were submitted during the year for the reorganization of the General Drawing and Design class of the Craft section of the school by attaching the general drawing class to the Fine Arts section and by including a course in leather crafts in the design class and renaming it the 'Designing Class.' In this new Designing Class, instruction will be given in cotton painting, printing and batik work, lacquer work, painting on wood, papier maché decoration, leather work and decoration on leather. The duration of the course will be three years and the strength of the section will be fixed at 12 each year. These proposals were sanctioned by Government on the 1st of April 1939. The number of articles manufactured in the school during the year was 820 valued at Rs. 7,311-5-0, and the value of the articles sold was Rs. 4,526-2-0. Repair work to the value of Rs. 607-10-0 was also executed.

188. *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.
1936-37	52	28	54
1937-38	27	16	59
1938-39	21	16	67

The annual school examinations were conducted in April and the students of the Arts and Craft sections who had completed their training and passed the examinations were awarded diplomas. The Cotton Memorial Prize—a gold medal—was awarded to D. Govindarajulu, a student of the Enamelling section, whilst the Rao Bahadur N. R. Balakrishna Mudaliyar's gold medals were awarded to K. Rajagopalan, a student of the Modelling class, and T. Anthony, a student of the Painting class.

189. *Stipends and scholarships*.—The number of scholarships and stipends awarded to students in the school from various sources was 50 as shown below:—

(i) Adi-Dravida Industrial scholarships	..	..	20
(ii) School stipends	..	..	15
(iii) Victoria Technical Institute scholarships	..	..	8
(iv) Dr. Rangachari's scholarships	..	..	3
(v) District Board scholarships	..	..	2
(vi) Sri Venkateswara scholarship	..	..	1
(vii) Bihar Government scholarship	..	..	1

The value of two stipends out of the five sanctioned for the Ceramic course was increased to Rs. 15 each per mensem and one of the enhanced stipends was given to a student from the clay workers community of Chirakkal and Kottayam taluks and the other to a student of the Andhra Nayar Samaj, Malabar. Stipends of Rs. 15 each per mensem were granted to two students undergoing training in the Ceramic section of the school by the District Boards of Guntur and Ellore.

190. *Finance*.—The expenditure for the year amounted to Rs. 54,561-6-7 as against Rs. 45,930-3-11 in the previous year. The net cost of the school was Rs. 45,670-5-7 as against Rupees 40,244-14-4, the increase being attributable mainly to the development of the Craft section of the school.

191. *Annual exhibition*.—The annual exhibition of the Fine Arts section of the School, including artistic crafts, was held in the school during the month of March. A considerable number of visitors attended the exhibition. The value of the articles sold at the exhibition was Rs. 1,000. The Craft section of the school participated in the All-India Swadeshi and Khadi Exhibition held at Madras in December and January, Practical demonstrations of enamelling, leather work, turned lacquer work and pottery were staged at this exhibition and articles to the value of Rs. 164 were sold.

PROGRAMME OF WORK FOR 1939-40.

192. I. *General*.—(a) Completion of the investigation in regard to the possibility of manufacturing steel from the Salem iron ores.

(b) Framing of schemes for the introduction of new cottage industries which will afford subsidiary occupations for the agriculturists on the return of Sri V. R. Chitra, Superintendent of Crafts section, School of Arts and Crafts, Madras, from his deputation to Japan to study the organization and technique of the cottage and small-scale industries in that country.

II. *Statistics*.—(a) Completion of the work connected with the initiation of a wholesale price index for Madras City.

(b) Compilation of index numbers of imports and export prices.

(c) Compilation of a quinquennial statistical abstract for the Madras Province.

(d) 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.

(e) Institution of arrangements for the broadcast of daily prices of important commodities at select centres in the Province through the All-India Radio at Madras and Trichinopoly.

(f) Statistical analysis and interpretation of the data relating to the purchase of stores by the several departments of Government.

III. *Engineering*.—(a) Manufacture of a small-scale malt preparation plant and the conduct of experiments with it.

(b) Conduct of further experiments with a view to improving the departmental hand-operated paddy husking machine.

(c) Evolution of experimental machines for manufacturing sand paper on a cottage industry basis.

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

(e) Mapping of underground water tables in certain districts.

(f) Manufacture of experimental verticality indicators for boreholes.

(g) Conduct of experiments on the use of strainers in boreholes with a view to preventing sand from blowing in and choking the bore.

IV. *Industrial Education*.—(a) Affiliation of certain new schools to the Technological Diploma Examination Board.

(b) Drawing up of proposals for the introduction in 1940-41 of courses in electric-wiring at the Government Industrial School, Bellary, and the Government Trade School, Mangalore, and for the introduction of casting and metal working classes at the Madura and Bellary Industrial Schools.

(c) Further examination of the possibility of providing more specialised courses of training in the Government Industrial Schools.

V. *Textiles*.—(a) Examination of the prospects of establishing cotton spinning mills in the Ceded districts.

(b) Framing of proposals for setting up a plant for the manufacture of spun silk from silk waste and eri cocoons.

(c) Erection and subsequent operation of the finishing and calendering plant for the Madras Handloom Weavers' Provincial Co-operative Society, Limited.

(d) Setting up and operating the bleaching apparatus in connexion with the finishing and calendering plant.

(e) Conduct of certain dyeing experiments for the benefit of the Ellore Pile Carpet Weavers' Co-operative Society.

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

(b) Organizing the supply of the full seed requirements of the Kollegal taluk with tested disease-free layings.

(c) Organizing the supply of 700,000 cross-breed layings.

(d) Conduct of further research on the diseases of silk-worms.

(e) Experiments on the refrigeration of cocoons and seeds.

(f) Experiments on the feeding of different varieties of silkworms with a view to improving the lengths of guts and arranging for their supply to the Indian Medical Department.

(g) Conduct of green manure experiments on mulberry.

(h) Conduct of experiments in regard to the raising of seedling plantations.

(i) 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.

(j) Conduct of further rearing of white univoltines and bivoltines at the Government silk farms.

VII. *Kerala Soap Institute, Calicut.*—(a) Continuance and development of the experiment on the preparation of dentifrices, toilet creams, brilliantines, hair oils and other similar articles and testing of the market with them.

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

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

VIII. *Leather Trades Institute, Madras.*—(a) Further study of Madras tannages with a view to shortening the period of the tanning process.

(b) Continuance of the investigation of the possibility of replacing the imported wattle bark by certain indigenous tanning materials.

(c) Continuance of the study of the possibility of utilizing to greater advantage the synthetic tans employed in Madras tannages.

(d) Examination of the results obtained from trials with the leather suitable for water buckets prepared in the institute.

(e) Continuance of the investigation in regard to improved methods of curing.

IX. *School of Arts and Crafts, Madras.*—Drawing up of proposals for introducing instruction in picture frame moulding.

RECEIPTS AND EXPENDITURE.

193. The following statement exhibits the receipts and expenditure of the department during the year 1938-39. Details are exhibited in Appendix I:—

Item.	1937-38.	1938-39.	Decrease — or Increase +.
	RS.	RS.	RS.
Expenditure	14,08,252	15,50,984	(+)
Receipts	5,20,272	5,72,315	(+)
Net cost ..	8,87,980	9,78,669	(+)

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 head Industrial Scholarships, School of Technology, Leather Trades Institute, Kerala Soap Institute, Miscellaneous experiments and grants-in-aid to Industrial Schools to the extent of Rs. 32,032 as compared with that of the previous year. On the other hand, there has been an increase in the expenditure under Direction, District Engineering, Industrial Schools, School of Arts and Crafts, Textile Institute, Sericulture, Experiments on oils and fats, etc., at the Kerala Soap Institute, Calicut, and Industrial Engineering Workshop, to the extent of Rs. 53,811. An expenditure of Rs. 1,82,090 was incurred under the head "Grants for the hand spinning movement" as against Rs. 89,716 in the previous year. There was an expenditure of Rs. 1,04,076 under the heads "Grants for the handloom, sericulture and small scale cottage and woollen industries" as against Rs. 80,365 in the previous year. The amount of Rs. 1,04,076 was set off by a similar amount under receipts. The reduction in expenditure under "Industrial scholarships" was due to the reduction in the number of scholars and rates of scholarships and to the fact that some scholarship-holders discontinued their studies before the completion of their course, and under 'School of Technology' to the decrease under 'Pay of officers' as during the previous year the leave salary of the permanent Principal of the school on other duty as acting Industrial Engineer was debited to this head. The reduction in expenditure under 'Leather Trades Institute' was due to the fact that during the previous year the expenditure relating to the demonstration of the preparation of coconut and palmyra jaggery in the Salem district and conduct of factory tests in regard to the suitability, for refining purposes, of jaggery manufactured from sweet coconut toddy, was debited to this head, while the reduction in expenditure under 'Kerala Soap Institute' was attributable to the restricted purchase of materials as the volume of orders for soaps received from the agents in the latter part of the year was less than anticipated. The reduction in expenditure under 'Miscellaneous Experiments' was due to the fact that the expenditure in respect of the 'Pottery section' was included under the head 'School of Arts and Crafts', while the reduction of expenditure under Grants-in-aid to Industrial Schools was due to the smaller provision sanctioned under building grants during the year and also to the non-utilization of the building grants by two industrial schools. The increase in expenditure under 'Direction' was due to the increased rate of pay of the officiating Director, the cost of return passage of the permanent Director, payment of contribution of Rs. 1,000 to the National Planning Committee and the higher expenditure under customs duty on stores received through the High Commissioner for India. The increase in expenditure under 'Industrial Schools' was mainly due to the purchase of machinery for the Industrial Schools at Bellary and Madura and to the larger amount spent under 'Apparatus and Materials' as a result of the larger orders received by the schools, whilst the increase in expenditure under 'School of Arts and Crafts' was due to the purchase

of stores and machinery required for the pottery section and wages and stipends relating to this section which was attached to the school during the year, and also to the disbursement of arrears of pay to certain members of the staff who were eligible for the old scales of pay in accordance with the Accountant-General's ruling, and to the travelling allowance of Sri V. R. Chitra for his tour to Northern India during the year. The increase in expenditure under 'Textile Institute' was due to the purchase of yarn testing appliances during the year. The increase under 'Industrial Engineering workshop' was due mainly to the manufacture of fifteen hand boring sets for the rural water-supply scheme and of six Pinto chekkus for the Triplicane Urban Co-operative Society, Limited.

Receipts.—There was an increase under receipts under Industrial schools, School of Arts and Crafts, Textile Institute, Industrial Engineering workshop, Sugarcane mills, Other receipts and Recovery of overpayments.

Net cost of the department.—The net cost of the department increased by Rs. 90,689 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 and Commerce for the year 1938-39.

	1937-38.			1938-39.			1937-38.			1938-39.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Receipts.												
Pumping and Boring	78,620	5	8	70,189	2	6	1,28,026	5	8	1,29,303	13	7
Industrial installations	2,346	10	0	2,189	8	0	3,14,390	3	0	3,15,841	1	4
Industrial schools	76,671	5	11	81,903	15	2	22,851	9	0	20,291	4	1
School of Arts and Crafts	4,706	2	6	5,348	11	0	91,203	7	4	1,06,275	8	11
Textile Institute	1,387	12	2	1,848	1	10	84,954	0	1	83,940	12	8
Sericulture	7,136	11	10	5,694	10	6	20,590	12	3	18,991	1	0
Kerala Soap Institute	2,02,014	4	11	1,85,882	15	6	45,930	3	11	54,539	1	7
Industrial Engineering Workshops	70,075	2	6	1,00,207	5	6	46,284	3	10	50,165	3	7
Sugarcane mills	70,918	0	0	2,710	0	0	32,920	5	1	33,135	13	10
Rents of buildings	18	0	0	46	8	0	1,95,295	14	3	1,79,498	2	4
Grant for handloom industry	56,119	0	0	77,660	4	0	11,343	10	5	11,495	15	0
Grant for Sericultural industry	15,484	8	6	16,376	0	7	71,189	10	11	92,342	11	2
Grant for small scale cottage and woolen industries.	8,761	12	6	10,040	0	2	21,921	3	7	20,737	14	7
Other receipts	5,344	15	8	7,394	8	10	1,31,843	15	0	1,22,056	7	0
Total	5,29,634	12	2	5,67,491	11	7	56,119	0	0	77,660	4	0
Charges.												
Recoveries of overpayments	518	9	3	11,796	8	8	15,484	8	6	16,376	0	7
Collection of payments for services rendered.	3,696	11	0	3,600	0	0	89,716	0	0	1,82,089	15	0
Receipts in England	..	..	..	140	5	4	13,78,065	0	10	15,14,651	2	9
Gain by exchange.. ..	..	..	..	0	8	4	12,443	0	1	22,544	13	3
Deduct Refunds	5,33,850	0	5	5,83,029	1	11	Total ..	..	..	15,14,651	2	9
Net Receipts	13,578	4	4	10,714	8	2	Expenditure in England on stores.	..	..	157	3	7
Collection of payments for services rendered.	518	9	3	11,796	8	8	Expenditure in England other than on stores.	..	..	14,08,252	2	11
Receipts in England	3,696	11	0	3,600	0	0	Loss or gain by exchange ..	..	..	15,50,984	1	6
Gain by exchange.. ..	..	..	..	140	5	4	Total ..	..	..	15,50,984	1	6
Deduct Refunds	..	..	..	0	8	4						
Net Receipts	5,33,850	0	5	5,83,029	1	11						
Collection of payments for services rendered.	13,578	4	4	10,714	8	2						
Receipts in England	5,20,271	12	1	5,72,314	9	9						
Gain by exchange.. ..	8,87,980	6	10	9,78,669	7	9						
Deduct Refunds	14,08,262	2	11	15,50,984	1	6						
Net cost of the department	..	..	..	..	..	..						
Total	..	..	..	..	..	..						

APPENDIX II. Statistics relating to Government and recognized Industrial Schools for 1938-39.

Serial number, name and place of the institution.

Serial number, name and place of the institution.	Number on rolls on 31st March.		Mechanical Engineering.		Electrical Engineering.		Wood working trades.		Rattan work.		Textiles, cotton.		Textiles, wool.		Other textile trades.		em- broidery and needle work.		subjects (spool- filed in remarks column).		Remarks	
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)		(22)
GOVERNMENT INSTITU- TIONS.																						
1 Government School of Technology, Madras.	1,150	1,145	139	30	391	64	..	..	..	..	..	..	..	..	..	..	..	..	615	116	Light Metal Casting 10 Railway Trade 15 School (Engineering and Drawing) 36 Preparatory Section. 5 Drawing Classes .. 10 Printing .. 22 Electric Wiring .. 18 Plumbing .. 18 Total .. 116	
2 School of Arts and Crafts, Madras.	249	258	..	..	..	..	56	7	..	..	..	..	..	..	..	..	..	..	202	57		
3 Government Textile Institute, Madras.	112	109	..	..	..	..	..	..	..	160	124	..	..	..	..	..	..	..	..	..		
4 Government Indus- trial School, Calicut.	53	99	48	3	..	..	25	1	..	..	..	..	..	..	..	..	..	..	25	Nil		
5 Government Trades School, Mangalore.	50	47	36	7	..	..	11	2	..	..	..	..	..	..	..	..	..	..	..	..		
6 Government Indus- trial School, Bellary.	74	24	8	..	..	..	20	1	..	..	..	..	..	..	..	..	..	..	..	..		
7 Government Indus- trial School, Madras.	100	109	..	..	..	..	22	1	..	..	..	..	..	..	..	..	..	..	87	51	Metal Work .. 4 Electric Wiring .. 11	

AIDED SCHOOLS (BOYS).

8 C.N.T. Institute, Vepery, Madras.	478	438	178	9	178	18	23	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	54	Electrical neering. 21 Electric Mechanic .. 18 Workshop Mechanic. 9 Oil Engine Driving .. 9 Tailoring.
9 Anjuman Industrial School, Madras.	93	83	..	..	..	..	62	11	..	..	..	..	..	..	..	..	..	1	..	..	..	14	2	Automobile Engineering.
10 Ors Aided Industrial School, Madras.	73	53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
11 Panakkur Mission Industrial School, Mysore, Madras.	48	54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
12 Gokulam Cottage Industrial School, Madras.	50	90	..	..	..	..	20	12	..	..	..	..	..	..	..	..	20	12	..	..	..	..	..	
13 A.M. Industrial School, Kalyani.	123	113	..	..	..	..	105	14	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
14 Anjuman Industrial School, Vellore.	83	86	..	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
15 Anjuman Industrial School, Meliyar.	63	61	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
16 Anjuman Industrial School, Tirupattur.	44	37	..	..	..	..	37	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
17 Don Bosco Industrial School, Vellore.	35	42	..	..	..	..	42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
18 St. Joseph's Industrial School, Indivanam.	78	64	..	..	..	..	57	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
19 Danish Mission Industrial School, Panruti.	62	72	..	..	..	..	39	5	..	..	33	3	..	..	..	..	..	..	..	..	..	..	..	
20 C.S.M. Agricultural School, Melrosepuram.	73	66	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
21 A.M. Industrial School, Vellore.	22	24	..	..	..	..	24	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
22 Kodambakkam Industrial School, Kodambakkam.	29	36	..	..	..	..	16	13	14	12	..	..	..	..	..	..	..	..	..	..	..	..	..	
23 Victory Memorial Blind School, Poombalke.	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
24 Lady Willington Leprosy Settlement, Tyrumani, Chingleput district.	16	49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
25 St. Joseph's Industrial School, Coimbatore.	156	98	..	..	..	..	98	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
26 P.S.G. & Sons Charity Industrial Institute, Peelamedu.	215	285	101	2	57	26	27	1	..	..	28	..	..	..	..	..	..	..	..	..	..	..	..	
27 U.L.C.M. Rural Reconstruction School, Guntur.	31	30	..	..	..	..	..	..	10	8	..	..	..	..	..	..	..	..	..	..	..	..	..	

* Not received.

APPENDIX II—cont.

Statistics relating to Government and recognized Industrial Schools for 1938-39—cont.

Serial number, name and place of the 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.	
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)		
(1)																					(22)	
ADDED SCHOOLS (BOYS)—cont.																						
28 American Mission Cabinet Making School, Guntur.	42	42	..	..	..	..	..	38	..	2	..	..	..	..	..	..	..	..	2	..	Smithy.	
29 Commonwealth Trust Engineering Works, Mangalore.	..	..	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
30 National Industrial School, Rajahmundry.	121	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
31 Sri Krishna Parishramayan Industrial School, Kavayitram.	27	32	..	..	..	..	..	32	2	..	..	..	..	..	..	..	..	..	..	..	..	
32 C.M.S. Industrial School, Vijayanagar.	20	22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22	3	Leather work.	
33 St. Joseph's Industrial School, Gundlupeta.	84	117	..	..	..	..	..	92	10	..	..	..	..	..	..	..	..	..	25	..	..	
34 Municipal Technical Institute, Masulipatam.	60	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	7	Electrician 9. Artisan 16.	
35 Pannimalai Trades School, Pannimalai, Madras.	54	55	13	2	..	..	..	24	2	..	..	..	..	..	..	..	..	..	18	3	Printing.	
36 C.S.M. Industrial School, Dindigul.	50	49	..	..	..	..	..	35	7	..	..	..	..	..	..	..	..	..	14	10	Blacksmithy 7. Tailoring 7.	
37 St. Joseph's Industrial School, Ottaseamund.	38	64	..	..	..	..	..	64	2	..	..	..	..	..	..	..	..	..	..	..	..	

38 District Board Industrial School, Sivagangai, Ramanad district.	30	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40	13	Agriculture.
39 St. Theresa's Industrial School, Salem.	44	45	..	..	..	..	..	..	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..
40 St. Francis Xavier's Industrial School, Tanjore.	103	104	..	..	..	..	..	..	65	9	..	..	..	..	39	9	..	..	..	..	..	..	..
41 St. Mary's Industrial School, Kumbakonam.	67	78	..	..	..	..	..	..	69	6	..	..	..	..	..	..	..	..	..	..	9	..	Smithy.
42 Municipal Industrial School, Kumbakonam.	29	16	..	..	..	..	..	..	11	..	..	5	..	..	..	..	..	..	..	..	..	..	..
43 Board Industrial School, Tanjore.	35	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
44 S.P.G. Art Industrial School, Nasareth.	127	118	..	..	..	..	..	..	74	6	..	..	..	..	..	..	..	..	..	..	44	2	Blacksmithy 19. Tailoring 25.
45 St. Joseph's Industrial School, Adalaisapuram.	75	53	..	..	..	..	..	..	22	1	..	..	30	3	..	..	..	..	..	..	..	..	..
46 C.M.S. Industrial School for the Blind, Palanickottai.	41	46	..	..	..	..	..	..	..	..	28	..	..	..	..	..	..	..	..	..	18	..	Mat Weaving 9. Gardening 6. Canework 3.
47 St. Ignatius Industrial School, Tuticorin.	31	25	..	..	..	..	..	..	22	5	3	..	..	..	..	..	..	..	..	..	..	..	..
48 St. Joseph's Industrial School, Tirichopoly.	108	106	..	..	..	..	..	..	48	9	..	..	..	..	..	..	..	..	..	..	58	3	Fitting 39. Motor Mechanics 13. Foundry 6. Black Smithy.
49 Methodist Mission Industrial School, Karur.	100	103	..	..	..	..	..	..	65	5	8	1	26	4	..	..	..	..	..	..	4	1	Black Smithy.
50 All Saints' Industrial School, Puthur.	28	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
51 Sarvodaya Agricultural and Industrial School, Mayanur.	40	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40	9	Agricultural 9.
52 St. Aloysius Industrial School, Viragapatam.	24	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	3	Turning 7. Smithy 1. Electricity 1. Motor 1. Painting 1.
53 St. Joseph's Industrial Institute, Tuticorin.	..	44	..	..	..	..	..	..	13	..	..	10	..	..	..	..	..	..	..	..	21	..	Toy Making 14. Tailoring 7.
54 The Bharadwaja Ashram, Peddaradubur, Bellary district.	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	8	Paper Making ..

APPENDIX II—cont.
Statistics relating to Government and recognized Industrial Schools for 1938-39—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).	
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1)	1938.	1939.	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.
AIDED SCHOOLS (BOYS)—cont.																				
55 Sri Krishna Ashramam Industrial School, Gunur.	..	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
56 V. S. Rajagopalan's Radio Institute, Madras.	..	28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28	21
57 Village Industries Institute, Gopalapuram, Malabar district.	..	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
58 London Mission Weaving School, Erode.	..	42	..	..	..	..	..	..	..	..	42	21	..	..	..	..	..	..	..	..
AIDED SCHOOLS (GIRLS).																				
59 C.S.M. Girls' Industrial School, Kilpatt.	..	95	..	..	..	..	..	..	..	..	..	..	..	..	..	..	95	48	..	..
60 Servadan Industrial School, Cherput.	..	101	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	..	..	..
61 St. Briget's Industrial School, Nungalambalam.	..	38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38	..	..	..
62 St. Anne's Industrial School, Kayapuram.	..	55	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55	7	..	..
63 St. Thomas Industrial School, Mysore.	..	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

64 C.R.M. Lace School, Chingleput.	..	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51	46	..	..
65 Methodist Mission Industrial School, Ikkradu.	..	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	65	..	..	..
66 St. Antony's Industrial School, St. Thomas' Mount.	..	52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52	..	..	..
67 Methodist Mission Industrial School, Dharampuram.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
68 Immaculate Conception Industrial School, Coimbatore.	..	36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36	..	..	..
69 St. Joseph's Orphanage Industrial School, Gunur.	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	4	..	..
70 St. Joseph's Industrial School, Madurai.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	2	..	..
71 Nazareth Convent Industrial School, Ootacamund.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	..	..	..
72 Lehigh Mission Women's Industrial School, Mayavaram.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	27	..	..	..
73 R.C. Lace School, Vadaikanallur.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	..	..	..
74 Hindu Girls School, Kidugulam.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	..	..	..
75 Holy Cross Convent Industrial School, Tudorn.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	54	..	..	..
76 Holy Cross Convent Industrial School, Trichinopoly.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	54	..	..	..
77 St. Joseph's Convent Industrial School, Bellary.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82	3	..	..
78 A.A.M. Women's Industrial School, Palmaner.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	67	6	..	..
79 Commonwealth Embroidery School, Calicut.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37	..	..	..
80 St. Vincent Girls' Industrial School, Calicut.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	..	..	..
81 Sacred Heart Convent Industrial School, Anglo.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22	..	..	..
82 O.M.L.M. Girls' Industrial School, Nayanur.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82	..	..	..

Statistics relating to Government and recognized Industrial Schools for the year 1938-39.

Serial number, name and place of institution.	Receipts from				Receipts and expenditure to the nearest rupee.												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	Number on rolls on 31st March 1899.	Total recurring cost (excluding expenditure on new buildings and equipment).	Fees etc.	Sales.	Total, columns (4) and (5).	Net recurring cost, column (8) minus column (6).	Net recurring cost per pupil, column (7) ÷ column (2).	Maintenance.	Scholarships.	Stipends.	Recurring grants from Department of Industries.	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 (14) minus column (13).	Expenditure on new buildings.	Building grant.	Non- recurring.
GOVERNMENT INST- TUTIONS.																	
1 Government School of Technology, Madras.	1,145	86,987	19,890	31,392	57,282	35,405	31	..	4,714	..	..	..	4,714	30,691	2,184	..	..
2 School of Arts and Crafts, Madras.	258	50,562	904	4,044	4,948	47,614	184	..	2,044	..	..	..	2,044	45,570	2,205	..	..
3 Government Textile Institute, Madras.	109	59,168	1,200	500	1,700	48,468	444	..	3,315	..	..	..	3,305	45,163	..	..	..
4 Government Industrial School, Calcutt.	99	26,506	270	18,792	18,992	7,514	86	..	3,188	..	..	..	3,188	4,326	..	..	..
5 Government Trade School, Mangalore.	47	12,399	22	3,368	3,390	9,009	183	..	3,229	..	..	..	3,229	5,780	175	..	..
6 Government Industrial School, Bellary.	74	30,119	..	336	336	29,813	402	..	..	..	..	..	..	29,813	..	..	..
7 Government Industrial School, Madras.	109	31,249	322	14,830	15,150	16,099	14	..	3,539	..	..	..	3,539	12,560	..	..	..
AIDED SCHOOLS (BOYS).																	
8 C.K.T. Institute, Vepery, Madras.	480	51,513	21,843	4,580	26,873	25,140	52	5,280	1,100	83	..	..	6,463	18,677	..	..	2,909
9 Anjuman Industrial School, Madras	98	28,827	..	5,359	5,359	21,488	219	5,400	618	..	..	..	6,018	15,470	..	..	..
10 Orr's Aided Industrial School, Madras.	53	2,262	..	..	..	3,352	61	1,676	..	..	..	..	1,676	1,676	..	..	..

AIDED SCHOOLS (BOYS).

8 C.N.T. Institute, Vepery, Madras.	480	51,513	21,843	4,530	26,373	25,140	52	5,280	1,100	83	..	6,463	18,677	..	2,900
9 Anjuman School, Madras	98	23,927	..	5,359	5,339	21,488	219	5,400	618	..	..	6,018	15,470	..	..
10 Orr's Assisted Industrial School, Madras.	53	2,352	..	..	..	3,352	61	1,676	..	..	..	1,676	1,676	..	..

11	Ramakrishna Industrial School, Mysore, Madras.	54	18,224	1,533	6,986	8,519	9,705	179	2,500	316	..	2,816	6,889	..	1,500
12	Gokulam Cottage Industrial School, Madras.	90	2,456	..	80	89	2,367	26	900	27	..	927	1,440	..	500
13	A.A.M. Industrial School, Karpadi.	113	2,01,521	..	74,925	74,925	1,26,596	1,120	3,500	246	2,927	..	6,673	1,19,923	..
14	Anjuman Industrial School, Vellore.	85	18,086	..	9,135	9,135	8,931	105	2,200	321	908	..	3,429	5,502	..
15	Anjuman Industrial School, Melvisharam.	61	9,018	..	1,582	1,532	7,486	12	1,550	276	..	..	1,826	5,660	..
16	Anjuman Industrial School, Tirupattur.	37	6,035	..	2,290	2,290	3,805	102	1,000	180	387	..	1,567	2,238	..
17	Dop. Baco Industrial School, Vellore.	42	5,780	..	1,760	1,760	4,020	95	700	124	..	..	824	3,196	..
18	St. Joseph's Industrial School, Hinduvanam.	64	44,038	..	12,942	12,942	32,096	501	2,150	250	902	..	3,302	28,794	..
19	Dewan Mission Industrial School, Faurdi.	72	18,386	..	2,950	2,950	15,446	220	2,800	80	..	..	2,830	12,616	..
20	C.S.M. Agricultural School, Melrossapuram.	66	7,452	..	836	836	6,616	100	850	156	1,937	..	2,943	3,673	..
21	A.M. Industrial School, Velscheri.	24	4,300	..	1,242	1,242	3,058	127	550	99	898	..	1,647	1,411	..
22	Harjan Industrial School, Kodambakram.	36	7,912	..	2,712	2,712	5,200	144	850	..	..	..	850	4,350	..
23	Victory Memorial Blind School, Poonamallee.	49	..	..	..	..	..	..	..	..	..	..	..	..	..
24	Lady Willingdon Lepet Settlement, Tirumani, Chingleput district.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	St. Joseph's Industrial School, Coimbatore.	98	1,15,038	48	80,012	80,060	34,968	254	2,850	365	8,205	..	11,440	23,528	..
26	P.S.G. & Sons Charity Industrial Institute, Peelamedu.	235	..	..	4,27,376	4	..	1,813	1,500	6,463	..	..	3	..	..
27	U.L.C.M. Rural Reconstruction School, Guntur.	30	7,038	..	2,563	2,563	4,475	149	850	36	938	..	1,824	2,651	..
28	American Mission Cabinet Making School, Guntur.	42	23,017	3	11,325	11,328	11,689	278	1,200	147	1,265	..	2,612	9,077	..
29	Commonwealth Trust Engineering Works, Mangalore.	11	852	..	..	..	852	77	380	22	..	..	402	450	..
30	National Industrial School, Rajahmundry.	78	4,363	..	1,344	1,344	3,019	38	1,000	..	..	..	1,000	2,019	..
31	Sri Krishna Parikramalayan Industrial School, Kavutharan.	32	3,114	..	202	202	2,912	91	370	20	..	..	380	2,622	..
32	C.M.S. Industrial School, Vidyasagar.	22	3,186	..	1,317	1,317	1,869	84	550	69	..	..	619	1,250	..
33	St. Joseph's Industrial School, Guntur.	117	15,912	..	5,744	5,744	10,168	86	1,800	177	250	..	2,227	7,341	..

Statistics relating to Government and recognized Industrial Schools for the year 1938-39—cont.

Serial number, name and place of institution.	Number on rolls on 31st March 1939.	Receipts from				Receipts and expenditure to the nearest rupee.										
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1)	(2)	Total recurring cost (excluding expenditure on new buildings and equipment).	Fees, etc.	Sales.	Total, columns (4) and (5).	Met recurring cost, column (8) minus column (6).	Met recurring cost per pupil, column (7) + column (8).	Maintenance.	Scholarships.	Recurring grants from Department of Industries.	Recurring grants from other departments or public bodies.	Total recurring grants (9), (10) and (12).	Balance of recurring cost met by managers' funds, column (7) minus column (13).	Expenditure on new buildings.	Building grant.	Equipment grant.
34 Municipal Technical Institute, Manipalpetam.	51	13,344	899	5,343	6,242	7,102	122	..	165	..	..	165	6,937	..	..	..
35 Pasumalai Trades School, Pasumalai, Madurai.	55	35,298	283	20,588	20,871	14,487	262	1,650	100	3,396	..	5,086	9,841	..	..	125
35 C.S.M. Industrial School, Dindigul.	49	17,530	..	3,635	3,635	18,895	281	1,500	118	3,408	..	5,026	8,869	..	..	100
37 St. Joseph's Industrial School, Ottacamund.	64	45,251	..	19,882	19,882	25,399	396	1,000	116	1,379	..	2,495	22,904	..	..	400
38 District Board Industrial School, Sivaganga.	40	9,719	..	453	453	9,266	231	1,200	2,151	..	..	3,351	5,915	..	..	569
39 St. Theresa's Industrial School, Salem.	45	8,967	..	2,697	2,697	6,270	137	1,200	77	..	..	1,277	4,993	..	..	349
40 St. Francis Xavier's Industrial School, Tanjore.	104	29,794	..	11,765	11,765	18,029	173	1,800	225	2,187	..	4,212	13,817	..	..	250
41 Municipal Industrial School, Kumbakonam.	16	2,569	..	573	573	1,996	124	1,000	54	..	..	1,054	942	..	..	150
42 St. Mary's Industrial School, Kumbakonam.	78	25,829	..	9,237	9,237	16,592	212	1,560	326	1,868	..	3,739	12,853	..	..	..
43 Board Industrial School, Tanjore.	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
44 S.P.G. Art Industrial School, Naserpet.	118	28,777	..	14,163	14,163	14,614	410	3,900	182	2,351	..	6,433	7,981	..	..	300

45 St. Joseph's Industrial School, Adairahaparan.	52	6,828	..	1,967	1,957	4,871	93	1,250	76	1,391	..	2,717	2,154	..	..
46 C.M.S. Industrial School for the Blind, Palamcottah.	46	7,002	..	3,906	3,906	3,196	69	1,450	495	..	..	1,945	1,251	..	500
47 St. Ignatius Industrial School, Tuticorin.	25	4,300	..	485	485	3,815	152	700	75	198	..	973	2,842	..	100
48 St. Joseph's Industrial School, Trincomopoly.	104	98,943	..	59,303	59,303	39,640	374	3,000	310	2,593	..	5,903	33,737	..	500
49 Methodist Mission Industrial School, Karur.	108	24,125	..	8,107	8,107	16,018	155	2,700	934	1,100	..	4,734	11,284	..	400
50 All Saints' Industrial School, Puthur.	30	9,115	..	3,571	3,571	5,544	184	900	39	750	..	1,689	3,855	..	100
51 Servindia Agricultural and Industrial School, Mayanur.	46	4,916	..	924	924	3,992	99	1,000	45	35	..	1,080	2,912	..	500
52 St. Aloysius Industrial School, Visagapatnam.	21	35,290	..	14,042	14,042	21,238	1,011	1,500	42	1,095	..	2,637	20,601	..	..
53 St. Joseph's Institute, for Home, Industries, Tuticorin.	44	6,402	..	99	99	6,303	143	1,000	..	929	..	1,929	4,374	..	..
54 Sri Krishna Thiruman Industrial School, Chidambaram.	24	5,310	..	4,100	4,100	1,210	50	750	18	..	..	768	442	..	..
55 V. S. Rajagopalan's Radio Institute, Madras.	28	6,865	5,436	..	5,436	1,429	51	..	..	..	..	..	..	..	..
56 Village Industries Institute, Gopalapuram, Kallur district.	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..
57 Bhadraraj Ashramam, Peddakadur, Bellary district.	8	325	..	..	..	..	..	25	..	..	..	..	..	..	300
58 London Mission Weaving School, Erode.	42	4,669	..	215	215	4,454	556	..	464	..	..	464	3,990	..	..
AIDED SCHOOLS (GIRLS).															
59 C.S.M. Industrial School, Kilpank.	95	7,351	737	2,957	3,694	3,657	38	980	431	..	..	1,411	2,246	..	..
60 Seva Sadan Industrial School, Chetput, Madras.	101	6,409	290	901	1,191	5,218	51	..	..	..	..	..	5,218	..	..
61 St. Bridget's Industrial School for Girls, Nungambakam, Madras.	38	10,988	..	847	847	10,141	26	1,600	..	..	..	1,600	8,541	..	500
62 St. Anne's Industrial School, Rayapuram.	55	5,833	..	455	455	5,378	97	1,000	33	..	..	1,033	4,800	..	200
63 St. Thomas' Industrial School, Mylapore.	31	7,939	..	899	899	7,040	227	624	100	..	..	724	6,316	..	..
64 C.S.M. Leo School, Chitampet.	51	2,432	..	477	477	1,955	38	500	37	..	..	537	1,418	..	..

APPENDIX III—cont.

Statistics relating to Government and recognized Industrial Schools for the year 1938-39—cont.

Serial number, name and place of institution.	Receipts from			Receipts and expenditure to the nearest rupee.																
	Number on rolls on 31st March 1939.	Total recurring cost (excluding and equipment).			Fees, etc.	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.			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.		Equipment grant.
		RS.	RS.	RS.			RS.	RS.	RS.			RS.	RS.	RS.				RS.	RS.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)				
AIDED SCHOOLS (GIRLS)—cont.																				
65 Methodist Mission Industrial School, Ikkan.	65	10,275	..	7,142	7,142	3,133	48	1,000	241	..	..	1,241	1,852	..	..	..	..	..	..	..
66 St. Anthony's Industrial School, St. Thomas' Mount.	48	918	..	837	837	81	1	500	..	..	..	500	418	..	..	..	..	..	..	..
67 Methodist Mission Industrial School, Dharampuram.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
68 Immaculate Conception Convent Industrial School, Coimbatore.	36	6,471	..	1,480	1,480	5,041	140	700	99	..	..	799	5,242	..	..	..	..	..	..	..
69 St. Joseph's Orphanage Industrial School, Guindy.	8	2,392	124	276	400	1,992	249	70	..	..	..	70	1,922	..	..	..	..	..	..	..
70 St. Joseph's Industrial School, Madurai.	32	3,139	..	..	..	3,139	38	500	35	..	..	535	2,604	..	..	..	..	..	..	48
71 Nasareth Convent Girls' Industrial School, Ootacamund.	24	7,050	..	1,792	1,792	5,258	219	700	74	..	..	774	4,464	..	..	..	..	..	..	..
72 Leipzig Mission Women's Industrial School, Mayavaram.	27	5,602	..	1,138	1,138	4,464	174	1,000	24	..	..	1,024	4,578	..	..	..	..	..	..	..
73 R.C. Lace School, Vadakkankulam.	52	1,656	..	20	20	1,636	95	500	183	..	..	683	953	..	..	..	..	..	..	..
74 Hindu Girls' School, Kudankulam.	17	483	..	203	209	274	16	100	..	..	..	100	174	..	..	..	..	..	..	..
75 Holy Cross Convent Industrial School, Tudicorin.	54	3,236	..	..	..	3,236	59	900	143	..	..	1,043	2,193	..	..	..	..	..	..	143
76 Holy Cross Convent Industrial School, Tiruchirappalli.	54	2,889	..	..	..	2,889	53	673	57	..	..	730	2,159	..	..	..	..	..	..	..
77 St. Joseph's Convent Industrial School, Bellary.	82	4,924	20	54	74	4,850	59	1,500	49	..	..	1,549	3,301	..	..	..	..	..	..	..
78 A.A.M. Women's Industrial School, Palanur.	67	8,104	135	152	227	7,817	116	2,068	86	..	..	2,144	5,673	..	..	..	..	..	..	..
79 The Commonwealth Embroidery School, Calicut.	37	3,402	..	1,406	1,406	1,996	53	490	58	..	..	548	1,448	..	..	..	..	..	..	..
80 St. Vincent Girls' Industrial School, Calicut.	33	4,334	..	243	243	4,091	27	700	47	..	..	747	3,344	..	..	..	..	..	..	..
81 Sacred Heart Convent Industrial School, Angengo.	22	2,427	..	..	..	2,425	110	400	84	..	..	484	1,941	..	..	..	..	..	..	..
82 O.E.I.M. Girls' Industrial School, Narandipet.	54	6,030	..	1,059	1,059	4,971	92	500	..	..	..	500	4,471	..	..	..	..	..	..	..

APPENDIX IV.

Statistics relating to recognized Industrial Schools for the year 1938-39.

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).					
1 C.N.T. Institute, Vepery, Madras.	(a) Mechanical engineering, (b) electrical engineering, (c) electric wiring, (d) workshop mechanics, (e) carpentry and rattan work, (f) carpet-weaving and dyeing and (g) tailoring. (h) engineering, scientific and mathematical instruments making. Automobile engineering	(a) 9, (b) 18, (c) 21, (d) 6, (e) 18, (f) 3, and (g) 9. (h) 11. (b) 1. All are employed	Six are employed ..	4,431 0 0	3,070 0 0
2 The Anjuman Industrial School, Madras.	(a) Carpentry and rattan work, (b) carpet-weaving and dyeing and (c) tailoring. Workshop theory and practice, mechanical engineering, scientific and mathematical instruments making.	.. .. .	.. .. .	3,769 0 0	6,156 0 0
3 Orr's Assisted Industrial School, Madras.	Automobile engineering	.. .. .	.. .. .	.. .. .	.. .. .
4 The Ramakrishna Mission Industrial School, Mylapore, Madras.	Bee-keeping, carpentry and ericulture	3	All are employed ..	7,200 0 0	6,086 1 6
5 Gokulam Cottage Industrial School, Madras.	(a) Cabinet-making and carpentry, (b) Blacksmithy and motor mechanics.	36	Twelve are employed ..	336 0 0	93 0 0
6 A.A.M. Industrial School, Katpadi ..	(a) Cabinet-making and carpentry, (b) Blacksmithy and motor mechanics.	(a) 14 and (b) 3. All working as apprentices.	..	2,270 0 0	1,792 3 0
7 The Anjuman Industrial School, Vellore.	Cabinet-making	6	One appointed ..	8,665 2 9	9,134 9 7
8 The Anjuman Industrial School, Melvisharam.	Do. .. .. .	.. .. .	.. .. .	.. .. .	.. .. .
9 The Anjuman Industrial School, Tirupattur.	Do.	2	One employed ..	2,251 10 0	2,229 10 0
10 Don Bosco Industrial School, Vellore ..	Carpentry and cabinet-making	Nil	Nil	2,400 0 0	1,759 14 0
11 St. Joseph's Industrial School, Tindivanam	Do.	7	All employed ..	15,800 0 0	12,932 0 0
12 Danish Mission Industrial School, Panruti.	(a) Carpentry and cabinet-making, (b) weaving, Agriculture, carpentry, poultry, mat-weaving and leafwork.	(a) and (b) 8	Do. ..	8,424 8 3	2,950 1 2
13 C.S.M. Agricultural School, Melrosepuram.	(a) Carpentry and cabinet-making, (b) weaving, tape-weaving, cloth-weaving, goat-rearing and leafwork.	7	Two employed ..	1,171 0 0	835 15 11
14 A.A.M. Industrial School, Velacheri ..	Cabinet-making	4	Nil	1,242 3 1	1,146 6 4
15 Kodambakkam Industrial School, Kodambakkam.	(a) Woodwork, (b) Rattan work and (c) Smithy.	30	Nil	3,025 13 0	2,712 10 10
16 Victory Memorial Blind School, Poona-mallee.	Cotton weaving and rattan work	.. .. .	.. .. .	.. .. .	.. .. .
17 Lady Willingdon Lepet Settlement, Tirumani.	Carpentry .. .. .	.. .. .	.. .. .	.. .. .	.. .. .
18 St. Joseph's Industrial School, Colmbatore.	Carpentry and fitting	10	Nine employed ..	82,000 0 0	80,012 8 10
19 P.S.G. & Sons Charity Industrial Institute, Pedamedu.	(a) Mechanical engineering, (b) carpentry, (c) electrician's course, (d) printing and weaving.	29	Fourteen employed ..	4,85,396 4 1	5,07,779 12 4
20 U.L.C.M. Rural Reconstruction School, Guntur.	Agriculture and allied trades	11	Two employed ..	.. .. .	.. .. .