

Report of the Department
of Industries. Madras.

1932 - March



K
X8.2118 N32
N32;1
30092



REPORT OF THE
DEPARTMENT OF INDUSTRIES
MADRAS

FOR THE
YEAR ENDING 31st MARCH 1932

MADRAS
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS

1932

D. Dis. No. 863-E/32.

OFFICE OF THE DIRECTOR OF INDUSTRIES,

Post Box No. 432,

Madras, dated 1st August 1932.

From

V. RAMAKRISHNA, Esq., M.A., B.Sc. (Edin.), I.C.S.,
Director of Industries, Madras.

To

THE SECRETARY TO GOVERNMENT,

DEVELOPMENT DEPARTMENT,

Madras.

SIR,

I forward herewith the Administration Report of the
Department of Industries for the year ended 31st March 1932.

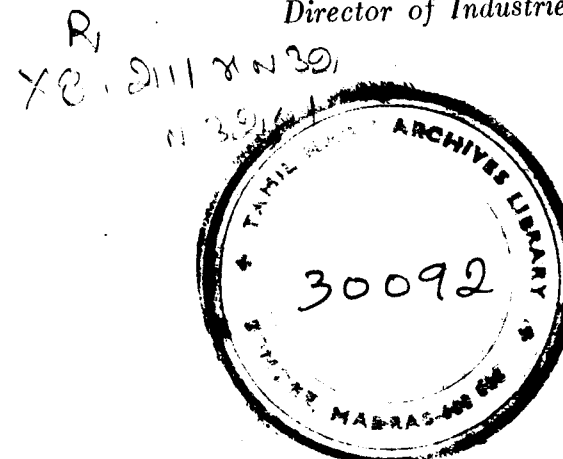
I have the honour to be,

Sir,

Your most obedient servant,

V. RAMAKRISHNA,

Director of Industries.



ADMINISTRATION REPORT OF THE DEPARTMENT OF
INDUSTRIES FOR THE YEAR ENDING 31st MARCH
1932.

Direction.—M.R.Ry. Diwan Bahadur A. Appadurai Pillai Avargal, M.A., I.S.O., was in charge of the Department till his retirement on 12th June 1931 from which date Mr. L. B. Green, M.B.E., Deputy Director, held full additional charge of the Department till I relieved him on the forenoon of the 11th November 1931. Mr. L. B. Green continued as Deputy Director throughout the year.

2. Tours.—M.R.Ry. Diwan Bahadur A. Appadurai Pillai Avargal was on tour for 63 days including 36 days' stay on the hills and visited Coonoor, Coimbatore, Salem, Kuppam, Katpadi and Bangalore. Mr. L. B. Green was on tour for 17 days and visited Madura, Tanjore, Bangalore, Calicut and Coonoor. I was on tour for 37 days and visited Waltair, Rajahmundry, Madura, Mangalore, Cannanore, Calicut, Shoranur, Olavakot, Coimbatore, Coonoor, Salem, Bellary, Hospet, Gadag, Tirupati, Palmaner and Punganur.

3. Exhibitions.—The policy of the department is to assist and encourage as far as possible agricultural and industrial exhibitions at various centres in the Presidency. In view, however, of the general financial stringency, the departmental participation has had to be restricted during the year to some of the important exhibitions held at Pasumalai, Nidamangalam, Tiruchengodu, Pennolam, Tanjore, Palghat, Calicut, Trivandrum and Madras. A representative variety of soaps manufactured at the Kerala Soap Institute was displayed at almost all these exhibitions, and wherever feasible, the working of pumping and boring machinery and of improved textile appliances, and of silk-worm rearing and reeling appliances was demonstrated for the benefit of agriculturists, handloom weavers and others interested. As in previous years, the department participated in the annual Park Fair Exhibition held in December 1931, and the exhibits on this occasion comprised of a handboring set, a high speed pumping set, a crude oil pumping set, a deep well kite motion hand-pump, models of machinery used in dyeing and printing, etc. In addition, an 'Arasu' rope making machine and paddy hackling machine presented to the department by a Japanese firm were also exhibited in the departmental stall.

The Milan International Samples Fair, the British Industries Fair, and the Leipzig International Spring Fair held in the year under report were brought to the notice of the Chambers of Commerce, some leading firms and individuals in the Presidency.

4. *Committees.*—The Director of Industries served on the following Committees:—

- Local Advisory Committee of the South Indian Railway.
- Local Advisory Committee of the Madras and Southern Mahratta Railway.
- Provincial Agricultural Research Committee.
- Provincial Cotton Committee.

Statistical Enquiry Committee appointed to advise Government on the constitution of a bureau of statistics.

5. The composition of the Board of Industries was as noted below at the close of the year 1931-32:—

- | | | |
|---|--|--|
| (1) Director of Industries—Chairman. | } Ex-officio. | |
| (2) Secretary to Government, Finance Department. | | |
| (3) G. L. Orchard, Esq., elected by the Madras Chamber of Commerce. | | |
| (4) M.R.Ry. Chandulal M. Kothari Avargal, B.A., LL.B., elected by the Southern India Chamber of Commerce. | } Elected by the Madras Legislative Council. | |
| (5) D. Q. Davidson, Esq., Representative of the Madras Trades Association. | | |
| (6) Yakub Hasan Sahib Bahadur, M.L.C. | | |
| (7) M.R.Ry. Sri Raja Venkataramayya Appa Rao Bahadur Garu, Zamindar of Mirzapuram. | | |
| (8) The Hon'ble Diwan Bahadur G. Narayanaswami Chetti Garu, C.I.E. | | |
| (9) M.R.Ry. Rao Bahadur M. K. Venkata Achariyar Avargal. | | |
| (10) M.R.Ry. A. M. M. Murugappa Chettiyar Avargal. | | |
| (11) Dr. R. Nagan Gowda Avargal. | | |
| (12) The Registrar of Co-operative Societies. | | |
| } Nominated by Government under section 3 (2) of the Act. | | |

with Mr. L. B. Green, M.B.E., Deputy Director of Industries as Secretary to the Board.

6. Of the applications for State Aid left over from last year, that from Mr. A. R. Pichumoni Ayyar was again placed before the Board and rejected unanimously as the applicant failed to furnish the particulars required of him. Mr. Buckner withdrew his application after the Board had by a majority recommended its grant, while Mr. Silva's application was rejected by Government although the Board had unanimously recommended it. The application from Babu Roya was granted by Government but he refused to take the loan, while Messrs. Boddu Pydenna were granted a loan of Rs. 40,000 and the loan disbursed on 28th September 1931.

7. Only one meeting of the Board was held during the year under review, i.e., on 29th July 1931 at which besides the application from Mr. A. R. Pichumoni Ayyar referred to above, the following were considered:—

(1) Application from M. V. P. Mohideen Wafer, Pettai, under section 6 (a) of the Act for a loan of Rs. 5,000 for developing the braid industry.

(2) Application from the Udipi Co-operative Agricultural and Industrial Society for a loan of Rs. 3,000 under section 6 (a) of the Act for developing their sugarcane crushing, coconut oil milling and other industries.

(3) Application from Messrs. Chinta Nandayya Brothers, Mori, for a loan of Rs. 10,000 under section 6 (a) of the Act for purposes of working capital for their cashewnut roasting and shelling industry.

(4) Application from M.R.Ry. V. T. Ramaswami Ayyar, Madras, for a loan of Rs. 25,000 under section 6 (a) of the Act for purchasing an oil mill in Madras.

(5) Application from the Krishna Jute and Cotton Mills Co., Ltd., Ellore, for a loan of Rs. 3 lakhs under section 6 (a) of the Act for purposes of working capital for the concern.

(6) Application from Hajee Abdul Khaliq, Proprietor, Azeem Hosiery Works, Royapetta, for a loan of Rs. 5,000 under section 6 (a) of the Act for developing his hosiery factory.

(7) Application from the Managing Director, Metal Industries, Ltd., Shoranur, for a loan of Rs. 30,000 and a subsidy of Rs. 10,000 under section 6, clauses (a) and (c), of the Act for developing the manufacture of edge tools.

(8) Application from P. Khatim, Kudroli, for a loan of Rs. 3,000 under section 6 (a) of the Act for developing his tanning industry.

Of the above, Nos. (1) and (2) were rejected unanimously by the Board as the applicants had failed to furnish the particulars required of them, No. (4) as it did not satisfy the provisions of section 9 of the Act and Nos. (3) and (8) as they did not satisfy the provisions of section 5 (1). No. (5) was supported only by a minority but Government concurred with the majority in the view that it did not fall under section 5 (1) of the Act. Government also rejected No. (6) on the same ground although the Board had unanimously recommended the grant of the loan. In the case of No. (7) the Board recommended a loan of Rs. 22,500 but it was possible for Government to sanction a loan of Rs. 8,000 only, arrangements for the disbursement of which were being made at the close of the year.

8. The affairs of the concerns which have received aid under the Act are briefly reviewed below:—

(i) *The Sri Lakshmi Silk Factory, Peddapuram.*—The entire amount due from the firm has been collected.

(ii) *The Kallakurchi Co-operative Agricultural and Industrial Society, Ltd.*—The society earned a net profit of Rs. 295-9-0 only, during the year ending with 30th June 1931 as against Rs. 1,402-3-0 in the previous year as none of its branches turned out any substantial work. The assets of the society stood at the close of the year at Rs. 94,249-14-0 and the liabilities at Rs. 93,320-15-0, leaving a surplus asset of Rs. 928-15-0. The society has paid the instalment of loan due for the year 1931-32.

(iii) *The Andal Mills, Gudiyattam.*—Government have ordered the recovery of the entire balance due from Mr. D. Rangaswami Nayudu and the Collector is taking steps to this end.

(iv) *Bellary Match Factory.*—The High Court have since ordered that the insurance company should pay Ramanna the sum of Rs. 22,902-4-2 for damages caused by fire to the machinery, buildings and stock in trade of the match factory, with interest thereon at 6 per cent per annum from the date of the order (28th October 1931) till the date of payment, and that the insurance company should, for and on behalf of the plaintiff (Ramanna), pay to the Government Solicitor the said sum and interest thereon. In pursuance of this order a sum of Rs. 19,727-14-10 has so far been paid to Government by the insurance company. The question of recovering the balance due out of the loan is now under consideration.

(v) *The Parvatipur Industries, Parvatipuram.*—The concern sustained a net loss of Rs. 2,991-1-4 on its working during the year ending with 31st December 1930, but the auditor makes out that besides this, there has been a further reduction in capital of Rs. 4,329-4-9 which is explained by the auditor to be due to the decrease in the value of assets over liabilities as compared with the state of affairs at the beginning of the year. The accounts are being examined. The firm paid the instalment of the loan on the due date.

(vi) *The Salem Dye Works Syndicate.*—The factory did not work during the year and the question of transferring the dye-house to a more suitable place, e.g., Mettur, has been engaging the attention of the department. The department is also making enquiries as to whether it would not be possible to interest some capitalist to finance the concern. The instalment of the loan was paid by the due date.

(vii) *The Tanjore Tile Works.*—The proprietor has paid the first instalment of the loan by the due date, but he has failed in spite of repeated reminders to select an auditor for auditing the accounts of his concern. I shall bring this matter to the notice of Government separately.

(viii) *Silk-reeling concern, Bastipuram.*—Owing to the failure of the proprietor to start reeling operations, the loan is proposed to be recovered and the Collector is taking the necessary steps thereto.

(ix) *The Ram Ram Safety Match Works, Tholampalayam.*—The proprietor has not utilized the proceeds of the loan in the directions stipulated by Government and is prepared to repay the entire amount if given some time. The question is being examined in consultation with the Government Solicitor and will be reported on to Government in due course. The first instalment fell due on the 14th May 1932 and as yet there is no intimation from the Treasury Officer that the amount was paid on the due date.

(x) *Messrs. Boddu Pydenna Sons, Vizianagram.*—The first instalment falls due only on 1st April 1933. As the insurance policies do not appear to have been renewed, steps are being taken towards this end by the department.

9. It was stated in the previous year's report that the question of amending the definition of the term "cottage industries" had been taken up with Government. In connexion with the definition given by Government, the Cottage Industries Committee had suggested that a strict adherence to it would preclude the grant of loans under the Act to several of the deserving cottage industries struggling for existence as it would not be possible completely to dissociate workers like the handloom weaver from the middlemen capitalists, and suggested that the term should, in future, be taken to refer to "industries carried on for the benefit of, and by, workers in their own homes." The department went a step further and suggested the addition of the words "or factories" at the end of the definition proposed by the Committee, in order to provide for cases where cottage workers work in workshops. The Government after carefully considering these suggestions held that there was no justification for altering or widening the definition already settled by them on sound lines, particularly as they had made certain concessions in other directions, viz., (a) amended rule 24 (d) of the rules framed under the State Aid to Industries Act, directing that, in the case of any industrial business or enterprise with a capital outlay not exceeding five hundred rupees, it shall not be necessary, unless the Director of Industries for special reasons otherwise directs, to insure the properties mortgaged to Government against loss or damage by fire, (b) arranged with the Government of India to exempt from payment of stamp duty, though not of registration charges, mortgage deeds securing the repayment of a loan advanced or to be advanced under the Madras State Aid to Industries Act to a cottage industrialist or the owner of a small concern the capital outlay of which does not exceed one thousand rupees, (c) agreed to the adoption of a simplified form of mortgage bond to suit the requirements of cottage industries and also (d) directed that in the case of applications for encumbrance certificates made by the Director of Industries in respect of any industrial business or enterprise with a capital outlay not exceeding one thousand rupees and of cottage industries, when the amount of loan applied for under the State Aid to Industries Act does not exceed rupees seven hundred and fifty, the Industries Department shall pay the fees therefor according to the ordinary rate prescribed in article 13 (2) of the table of fees regarding encumbrance certificates. It will be observed, however, that all these concessions are intended to facilitate such of the concerns as *have received or are about to receive* aid under the Act and they will not by themselves go far, unless more cottage and small scale industrialists are made eligible to receive the aid itself.

The Presidency continued to suffer throughout the year from the effects of the world wide economic depression and all producers of primary products felt severely the heavy fall in prices. It was

not therefore to be expected that any new industrial enterprise for aiding which, chiefly, the Act is mainly intended would be promoted or started during the period of the depression, and this probably accounts to a large extent for the paucity of applications for aid during the year.

GENERAL ASSISTANCE TO TRADE AND INDUSTRIES.

10. This work is carried out in the Bureau of Industrial and Commercial Information, the organization and objects of which have been fully described in previous administration reports. The number of enquiries received on industrial and commercial questions during the year under review was well maintained and evidence of the Bureau's continued usefulness is forthcoming not only in the number of persons who resort to it for advice and assistance but also by the number of letters of thanks received for services rendered and information supplied.

COMMERCIAL AND INDUSTRIAL INTELLIGENCE.

11. The Bureau works in close touch with the Director-General of Commercial Intelligence and Statistics, Calcutta, and to a less extent, either directly or indirectly, with the Indian Trade Commissioners in London and Hamburg. The Bureau also maintains close touch with His Majesty's Trade Commissioner at Calcutta and with the various foreign Consuls at Bombay, Calcutta and Madras with whom information is freely exchanged. It is through these authorities that information in regard to current developments and trend in world trade is obtained to some extent. The Director-General of Commercial Intelligence and Statistics, was, as usual, furnished with a number of reports as to the financial standing, business reputation and experience of export trade of firms and individuals who had expressed a desire for overseas trade introductions. In cases where such applications are received direct by the department, the communications are, in accordance with the established procedure, transferred for final disposal to the Director-General of Commercial Intelligence and Statistics with a report on the standing and experience of the firm. The Deputy Director continued to furnish the Director-General of Commercial Intelligence and Statistics with a short weekly review of trade and market conditions in respect of the main classes of produce.

12. The following enquiries will serve to illustrate the many and varied ways in which the Bureau is of practical use in supplying information and advice on industrial and commercial subjects:—

(1) A firm in London was supplied with the names of manufacturers in this Presidency of blue cloth which is in great demand in North African market.

(2) An enquirer in Madras has been furnished with a list of exporters of gum and benzoine in Singapore.

(3) The proprietor of a distillery in Bellary was advised of the methods of stopping leakages in wooden vats ordinarily used for storing country spirits.

(4) An important firm in Madras was informed of the number of factories, looms, labour, etc., engaged in the manufacture of gold thread in Surat.

(5) An important firm in this Presidency was furnished with details as to the names of the suppliers of light metal drums together with the quotations.

(6) The Director of Industries, Bombay, was furnished with the names of suppliers of barytes in this Presidency together with the quantities of the mineral they could supply.

(7) A firm in Madras was furnished with information regarding the manufacture of sealing-wax and candles.

(8) A firm in Salem was furnished with a note on the extraction of essential oil from Davanam.

(9) The Director-General of Commercial Intelligence and Statistics was furnished with the names of suppliers in this Presidency of printers' types in Tamil and Telugu.

(10) The Director-General of Commercial Intelligence and Statistics was furnished with the name of the manufacturer in the Presidency of Plaster of Paris from gypsum for making images.

(11) An enquirer in Madras was furnished with a note on incandescent gas mantle manufacture.

(12) The Director of Industries, Punjab, was furnished with the names of firms in the Presidency who manufacture coir covers for oxygen cylinders.

(13) The Imperial Council of Agricultural Research was furnished with a note on the position of the tobacco industry in this Presidency.

(14) The Chief Controller of Stores, Simla, was furnished with information about chrome tanning of hides and skins in this Presidency.

(15) An enquirer in Ramnad district was furnished with a note on the preparation of cocoa and vermicelli.

(16) The American Trade Commissioner in Bombay was furnished with information as to the production of cashewnut shell oil in the Presidency.

(17) The Director of Industries, United Provinces, was furnished with the names of cardboard box manufacturers in the Presidency.

(18) A firm in Madras was furnished with the results of analyses of their fertilizers.

(19) A firm in Toronto, Canada, was furnished with the names of producers of castor oil in the Presidency.

(20) An enquirer in Vizagapatam was furnished with information in regard to the availability of bentonite in India.

(21) The Director of Industries and Commerce in Kashmir was furnished with the names of a few reliable firms in this Presidency willing to deal in the products of Kashmir.

(22) A tile works in Ahmedabad was put in touch with the supplier in this Presidency of hard granite stone for grinding cylinders.

(23) A leather manufacturer in Trichinopoly was furnished with the names of the principal exporters of hides in Java.

(24) A list of the names of dealers in the Presidency of maroti, castor and mowha oils was furnished to an enquirer in Bangalore City.

(25) Arrangements were made for the supply of a fresh set of tea samples from certain tea estates in the Nilgiris for exhibition in the Economic Gallery of the Indian Museum at Calcutta.

13. *Statistics.*—The Department continued to compile statistics relating to industries, including statements of cotton, jute, paper and woollen mills, planting products, mines and minerals, as also an annual review of the working of the Indian Mines Act. The annual return relating to large industrial establishments in this Presidency coming under the operation of the Indian Factories Act, 1911, was, as usual, compiled. A fortnightly statement of wholesale prices of certain products at Madras and Coonoor continued to be supplied to the Director of Contracts, Army Headquarters, Simla, to enable him to exercise control over rates paid to the agents for military purchases. The Director-General of Commercial Intelligence and Statistics continued to be supplied with a fortnightly statement showing the wholesale prices of certain basic commodities at Madras. The accuracy of the statistics compiled by the department was maintained during the year.

ESTABLISHMENT OF AN EMPORIUM IN MADRAS.

14. Reference was made in the last year's report to the fact that consideration of a scheme for the establishment of an emporium in Madras and the appointment of an agent in London for the sale of Madras industrial products has had to be deferred owing to the financial stringency. Owing to the continued trade depression a modified scheme estimated to cost about Rs. 7,000 per annum was submitted to Government. Government, however, suggested that the Victoria Technical Institute, Egmore, could perhaps undertake to work the scheme. The Management of the Victoria Technical Institute stated that they were prepared to work an agency in conjunction with a London agent provided Government assured them of an annual grant of Rs. 3,000 for three years. The proposal was, however, made too late for Government to consider the scheme in connexion with the budget estimate for 1932-33.

15. *Ceramic industry.*—During the year the survey of the ceramic possibilities of the whole Presidency with the exception of Guntur, Ramnad, Tinnevely, Chittoor and the Nilgiris was completed. In order to enable the Ceramic Assistant to complete the survey of the remaining districts and to test the suitability of the clays for the manufacture of ceramic wares, Government sanctioned the continuance of the Ceramic Assistant and his establishment for a further period of one year. The samples collected by the Ceramic Assistant during his surveys were submitted to

various tests at the ceramic experimental station at Washermanpet with a view to ascertain their commercial value, with encouraging results. Some of them were also analysed chemically. A few samples of ceramic goods exhibited at the Park Fair attracted the attention of the public and a gold medal was awarded to the section.

The Ceramic Assistant visited some potteries at Panruti and instructed the potters in the manufacture of coloured glazes, supplied the Madras Biscuit Factory with a fireproof cement manufactured by him for stopping the leakage in the baking oven and assisted a leading engineering contractor of Madras in finding a suitable clay deposit near Madras for manufacturing roofing tiles.

GENERAL CONDITIONS OF THE IMPORTANT INDUSTRIES IN THE PRESIDENCY.

16. The trade and industrial depression which started with the Wall Street collapse in 1929, aggravated by the reparation and international political debt payments and the cornering of gold by some countries culminated in the abandonment of the Gold Standard by the United Kingdom in September 1931 followed by some other countries. It reduced the international trade in the last quarter of the year under review to less than half of what it was in the corresponding quarter of 1929-30, increased the number of unemployed persons to about 25 millions and spread poverty over the greater part of the world. As the fall in prices of primary products is much greater than that of manufactured articles, an agricultural Province like Madras, the vast bulk of whose population are primary producers, felt the effects of the depression very acutely. In the past, in parts of this Presidency especially the deltaic tracts the money-lender such as the Marwari tempted by the high rates of interest offered by the agriculturists placed a plentiful supply of short-term credit at their disposal which was invested either in unremunerative enterprises such as marriages and religious ceremonies or long-term investments such as land purchases. As the land values shared the same fate as agricultural products, most of the credits have been withdrawn by the money-lenders with the result that prices of some of the products have fallen to levels which are not warranted by the demand for and supply of those commodities. Unsettled political conditions also adversely affected trade.

17. The changed conditions in the world and the consequent restrictions on international trade make it imperative on our part to readjust production with a view to maintain price levels of agricultural products. Steps should be taken to produce such of the products for which there is a local market. This can be achieved partly by the restriction of cultivation and utilization of the land thus set free for growing commercial crops such as sugarcane with a view to meet the demands of the home market for cane sugar and partly by the utilization of the agricultural surpluses in the development of animal husbandry. Though this Presidency is amongst the most suitable parts of India for growing sugarcane,

79,120 tons of sugar was imported into the Presidency and 556,274 tons into India in 1931-32. There is no reason why a portion of the land now utilized for growing other products such as rice should not be diverted for growing sugarcane. Silk is another product which is imported into the country, though it can be produced in the country. In 1871-75 India produced about 13 lakhs of pounds of silk as against 15.8 lakhs of pounds produced by Japan. To-day India's production is a fraction of a per cent as against Japan's share of 65 per cent in the world's production of silk. Pig breeding, poultry and goat rearing may be taken up by the agriculturists with a view to convert their agricultural surpluses into money. The United Kingdom imports about £40 million worth of pig products and about 80,000 tons of egg powder. There is no reason why this Presidency should not develop these subsidiary industries and capture a portion of the English market.

Comparative figures in the report wherever given refer to the preceding year unless otherwise stated.

18. *New industrial undertakings.*—The new registrations during the year were 94 with an authorized capital of Rs. 1,50,15,002 and paid-up capital of Rs. 14,09,444 as against 115 with an authorized capital of Rs. 1,40,41,500 and paid-up capital of Rs. 18,17,533. Of the new registrations, nearly, 51 per cent were trading and industrial concerns and 29 per cent banking companies, the remainder consisting mostly of insurance and transport companies. The decrease in the registrations is a reflection of the general trade depression. Among the new registrations may be mentioned the Krishna Cotton Mills with an authorized capital of Rs. 10 lakhs, the Madras Engineering Company, Limited, with an authorized capital of Rs. 5 lakhs and the South Indian Pottery Trading Company, Limited, with an authorized capital of Rs. 1 lakh.

19. *Mining operations.*—The following prospecting licences and mining leases were granted during the calendar year 1931:—

Seventy-five prospecting licences for prospecting for barytes over an area of ...	acs. 2,325-98
Ten prospecting licences for prospecting for mica over an area of ...	269-58
One prospecting licence for prospecting for asbestos over an area of ...	30-70
One prospecting licence for prospecting for manganese ore over an area of ...	241-20
One prospecting licence for prospecting for lead ore over an area of ...	16-93
One prospecting licence for prospecting for steatite over an area of ...	64-00
One prospecting licence for prospecting for magnesite over an area of ...	702-23
Six mining leases for working mica over an area of ...	131-41
Two mining leases for working barytes over an area of ...	141-50

Mining continued to be carried on in the districts of Bellary, Cuddapah, Kurnool, the Nilgiris, Salem, Trichinopoly and Vizagapatam.

20. *Manganese.*—The mining of manganese was carried on in the districts of Bellary and Vizagapatam and the total quantity mined was 5,433 tons as against 16,723 tons in the previous year and 35,068½ tons in the year 1929. Owing to unfavourable market conditions, mining of manganese was restricted in the Bellary district, the quantity mined during the year being 44 tons as against 3,460 tons in the previous year.

Magnesite.—The output of magnesite in the Salem district showed a further contraction during the year from 15,563½ tons to 4,978 tons and the value of the mineral fell from Rs. 67,978 to Rs. 21,540. Out of the four magnesite mines in Salem district, only one worked during the year. The demand for Salem magnesite is steadily contracting, due partly no doubt to the world-wide trade depression and also to the high import duties imposed on the product in some foreign countries, particularly America. The imposition of a tariff of 10 per cent in the United Kingdom on magnesite other than of Empire origin is reported to have been of advantage to a limited extent, to the Salem magnesite industry and if as a result of the Conference at Ottawa preferential treatment is accorded among other products to Indian magnesite products entering the United Kingdom and other Empire countries, the development in India of the manufacture of deadburnt magnesite as also of 'fused' magnesite and metallic magnesium will be stimulated. Sales of various grades of the material within India show signs of improvement but are stated to be handicapped by high railway freights.

Mica.—The condition of mica mining in Nellore district was far from satisfactory during the year and the dullness of the market for the mineral became even more pronounced during the latter part of the year. The output during the year was 428¾ tons against 764½ tons.

Barytes.—The output of barytes in the Kurnool district decreased from 4,235 tons to 3,658 tons, while the output in Cuddapah district showed an increase of 1,046 tons over the previous year.

Asbestos.—There was no output of asbestos during the year. The asbestos mines in the Cuddapah district worked by the Mysore Asbestos Mines, Ltd., Bombay, were temporarily closed from July 1930 and they have not renewed operations, while the mining lease held by the Mysore Development Syndicate was cancelled and no work was done during the year.

Phosphatic nodules and gypsum.—One hundred and seven tons of phosphatic nodules and 3¼ tons of gypsum were raised during the year as against 31½ tons and 8¾ tons respectively in the previous year.

21. *Textile Industry.*—The area and yield of cotton in the Madras Presidency have been estimated at 2,255,200 acres and 428,100 bales of 400 lb. lint, being an increase of 183,802 acres in area and 47,210 bales in yield over the figures of the preceding year. The value and quantity of the exports of raw cotton have been declining as shown below:—

		Quantity.	LAKHS.
		TONS.	RS.
1929-30	... ..	41,122	452.44
1930-31	... ..	21,167	163.96
1931-32	... ..	12,264	72.90

The abnormal fall in exports was partly due to the increased demand from the Indian mills for Madras cotton which has a staple length of between $\frac{7}{8}$ and 1 inch—and partly to the fall in demand from foreign countries.

The price of cotton along with other commodities ruled low throughout the year. The season opened with Tinnevelles round about Rs. 145 per candy at Tuticorin but prices continued to drop until in September Rs. 90 was touched, which is the lowest price recorded for many years. Towards the end of the season, however, the imposition of an import duty of 6 pies per pound on foreign cotton combined with the depreciation of the rupee gave an impetus to commodity prices with the result that Tinnevelles were quoted at about Rs. 140 at the end of the year. The price of cotton started falling towards the end of the year.

Cotton mills.—There were 26 spinning and weaving mills at work with 796,120 spindles and 5,329 looms as against 23 mills with 753,520 spindles and 5,034 looms in the preceding year. Three mills were constructed during the year in Coimbatore district. The mill production of yarn rose by 10.75 million pounds or 13 per cent from 76.92 million pounds to 87.67 million pounds and of cloth advanced by 7.6 million yards or 11.5 per cent from 61.2 million yards to 68.8 million yards.

The daily average number of persons employed in the industry was 36,715 as against 34,284 in 1930-31. The protective duties and the swadeshi movement helped the cotton industry considerably. The Japanese competition became serious in the last quarter of the year after Japan went off the Gold Standard.

Hosiery mills.—There were twelve large factories working during the year as against 18 in the preceding year; five factories in Salem, four in Malabar, and one each in Madura, Mangalore and Ellore. The production in 1931-32 was 670,064 lb. or 171,984 dozens as against 498,040 lb. or 144,709 dozens in 1930-31. The average daily number of persons employed in this industry was 579 as against 562 in the previous year.

Cotton gins and presses.—The number of gins and presses at work during the year was 353 employing daily 19,826 persons on an average as against 372 gins and presses employing 19,786 persons in the preceding year. The provincial cotton crop has been estimated at 428,100 bales of 400 lb. lint as against the yield of 380,890 bales in the preceding year.

Jute mills.—There were four jute mills in the Presidency at Nellimarla, Chittivalasa, Ellore and Guntur. The number of looms and spindles were 941 and 20,760 respectively as against 941 and 20,394 respectively in the preceding year. The jute industry passed through a period of unprecedented trade depression. The average daily number of persons employed in the industry was 6,361 as against 6,211 in 1930-31.

22. *Tanning industry—General.*—In common with practically every other industry the tanning industry of the Presidency suffered severely during the period under review from the world-wide depression in trade. The exports declined by 1,658 tons to 14,560 tons or 10 per cent in weight and by 82.12 lakhs or 15 per cent in value to Rs. 476.29 lakhs. On many occasions during the year Madras tanners were practically the only purchasers of raw hides and skins but owing to keen competition amongst themselves several sustained heavy losses. The increase in tariffs in several countries has damaged the trade considerably. Direct exports to the United States of America fell from 950 bales of tanned hides valued at about Rs. 4 lakhs in 1930-31 to about 40 bales valued at Rs. .2 lakhs. In addition, English curriers exported well over 20 million square feet of lining leather to the United States during 1929 valued at about a crore of rupees, and a little less in 1930, a very large proportion of which was made from Madras tanned hides. This trade was also reduced to a small fraction of its previous volume thus reducing the demand for light kips very considerably.

Tanned hides.—Exports fell by 10 per cent by weight and 17 per cent by value to Rs. 194.76 lakhs. The value of tanned hides fell steadily until Great Britain went off the Gold Standard when prices rose for two to three months after which they again fell, being slightly less in March 1932 than in April 1931.

Tanned buff hides.—Prices and exports have followed a similar course to cow hides, the decrease being 8 per cent by weight and 14 per cent by value.

Tanned cow calf.—Prices of these were about 20 per cent lower at the end of the year than at the beginning, the reduction in exports being 12 per cent by weight and 14 per cent by value.

Tanned buff calf.—Exports fell by 20 per cent in weight and 50 per cent in value.

Tanned sheep-skins.—A slight decline took place in the value of these during the first six months except in prime qualities. From September to December a sharp rise took place followed by a quick

fall. The quantity exported was 7 per cent less whilst value declined by 20 per cent to $1\frac{1}{2}$ crores. Large quantities were held back in January 1932 sales to prevent a more serious slump in values.

Tanned goat.—Export figures show a fall of 15 per cent by weight but only 4 per cent in value to $1\frac{1}{2}$ crores. The recorded fall in value of only 4 per cent is difficult to believe as prices of tanned goat showed a more regular and steady fall than any other class of leather. There may, however, have been a slight increase in the quality of the skins tanned and exported owing to the absence of purchases of raw skins for export.

Chrome tanning industry.—The Indian demand for chrome tanned leather fell very considerably specially for the better qualities and during the latter half of the year the only demand was for the cheapest qualities.

Wattle bark.—Receipt of wattle bark mainly from Natal rose from 203,523 cwt. to 215,933 cwt. but the value declined from Rs. 13.98 lakhs to Rs. 13.01 lakhs as a result of the fall in price.

23. Oil milling industry—Groundnuts.—The area and the yield of groundnuts have been estimated at 2,707,500 acres and 1,257,600 tons respectively as against 3,571,987 acres and 1,764,940 tons respectively in the preceding year. The fall of 24 per cent in acreage was the result of the unprecedented fall in the price of groundnuts owing to over-production and competition of other oil seeds in 1930-31. The price of groundnut kernels per candy of 500 lb. started at Rs. 30 in the beginning of the year, touched Rs. 25 in June and rose to Rs. 34 in the middle of November and fell to Rs. 28 in the middle of December. Then the prices gradually rose to Rs. 43 by the end of the year. The export of groundnuts to foreign countries slightly increased from 457,204 tons to 495,911 tons but the value declined from Rs. 735.02 lakhs to 714.75 lakhs.

There were 164 groundnut decorticators working during the year employing on an average daily 7,997 persons as against 169 groundnut decorticators employing 4,051 persons in the preceding year.

Castor.—The area under castor is estimated at 324,300 acres as against 283,238 acres and the yield at 32,400 tons as against 28,020 tons produced in the previous year. The exports of castor seed by sea fell from 41,279 tons valued at Rs. 71.80 lakhs to 33,407 tons valued at Rs. 47.56 lakhs. These exports include part of the exports from the Nizam's Dominions and Mysore State.

Gingelly.—The area sown with gingelly is estimated at 757,200 acres as against 745,872 acres and represents an increase of $1\frac{1}{2}$ per cent. The yield has been estimated at 98,000 tons against 97,740 tons produced in the previous year. Exports of seed by sea fell from 84 tons valued at Rs. 15,347 to 10 tons valued at Rs. 1,845.

Oil milling.—There were 23 oil mills as against 27 in the preceding year. The average daily number of persons employed was 279 as against 900.

24. Rice mills.—There were 418 rice mills at work as against 437 mills in the previous year. The average daily number of persons employed was 10,803 as against 15,796. It will be observed that although the number of mills has not come down to any appreciable extent, the number of hands engaged shows a reduction by about 30 per cent. Most of the mills did not work to their full capacity as a result of the fall in demand for rice.

25. Engineering industries.—There were 72 engineering works including Electrical works and Railway workshops as against 74 in the previous year. The average daily number of persons employed was 20,500 as against 22,881. The decline in the number of the employed is a clear indication of the effects of the slump through which the industry passed during the year.

26. Cashewnut industry.—The production of cashewnut kernels is an important industry on the West and East Coasts, Mangalore being the chief centre of manufacture. The production of raw nuts in South Kanara is estimated at about 70,000 to 80,000 bags of 140 lb. each, while an equal quantity is produced in Malabar, Cochin and Travancore some of which is imported into Mangalore. The East Coast districts account for about 50,000 bags, while Goa and the coastal tracts of the Bombay Presidency probably account for 110,000 bags. As the present requirements of the industry in Mangalore alone are stated to be about 200,000 to 300,000 bags, the deficiency is made good by the importation of African nuts which come into the Mangalore market from December to April during the months when the Indian crop is exhausted and thus serve to keep the factories going throughout the year. The factories in Mangalore provide employment for about 4,000 persons mostly women and the annual wage bill amounts to about $4\frac{1}{2}$ lakhs of rupees. America is the principal market for kernels.

Cashew shells yield a valuable oil which is used in the manufacture of plastics.

27. Essential oils.—The Kangundi Industrial Works, Kuppam, and the South Indian Industrials also of Kuppam, continued to distill sandalwood oil. They entrusted the selling agency to the Mysore Government. This arrangement was made with a view to cut down competition. These concerns are also preparing other essential oils such as Patchouli oil, Rosha oil, etc. The demand for lemon grass oil and eucalyptus oil was poor and the prices were low.

28. Sugar industry.—The area under sugarcane is estimated at 116,530 acres as against 114,877 acres in the preceding year. Though Madras Presidency is among the most suitable parts of India for sugarcane cultivation with an average yield of 28 tons per acre, about 79,120 tons of sugar valued at Rs. 124.03 lakhs was imported in 1931-32 and 88,296 tons valued at 129.44 lakhs in 1930-31.

White sugar is manufactured in India to the extent of 125,000 tons in central factories and about 200,000 tons by indigenous methods with or without the use of centrifugals. The former quantity is the output of 29 central factories and refineries whilst the latter is mostly manufactured in the United Provinces and adjoining tracts by what is known as the 'Bel' process which consists of crushing the canes in small mills driven by bullocks or oil engines, evaporating the juice to rab in a battery of open pans placed one below the other on a common flue, and separating the sugar from the rab in hand or power-driven centrifugals. As the demand for molasses is limited in this Presidency, a small percentage of sugarcane juice may be mixed with the molasses and boiled and converted into jaggery for which there is a local market. With the improvements effected in the manufacture of sugar with the centrifugal it is possible to get 5 per cent sugar and 5 per cent jaggery from sugarcane. The sugar requirements of this Presidency can be met by bringing an additional extent of 35,000 acres under sugarcane cultivation and converting the produce of about 70,000 acres into sugar and jaggery according to the 'Bel' process of sugar manufacture.

Although the Tariff Board came to the conclusion that the indigenous method of manufacturing white sugar in India was uneconomic and should ultimately be replaced by central factories they recognized that it was out of the question to erect large sugar factories when there was no certainty of obtaining the cane required within a reasonable distance, and that small sugar factories and refineries such as are found in the United Provinces should come into existence in the transition period before central factories are established. In the Madras Presidency the scope for the setting up of large sugar factories is limited, and it is very necessary therefore that the alternative method of manufacturing sugar on a small scale on more or less small factory lines should be tried. The Raja of Bobbili purchased a centrifugal and manufactured white sugar successfully.

The cost of machinery for the manufacture of sugar according to the 'Bel' process varies with its capacity. A plant capable of handling the produce of about 70 acres in a working season of 100 days and producing about 100 tons of jaggery and 100 tons of sugar costs about Rs. 7,000 which is within the reach of a village capitalist. Each small factory will provide employment for about a hundred persons daily during the working season. The growing of 35,000 acres of sugarcane will provide employment for about 35,000 persons throughout the year and the manufacture of 98,000 tons of sugar for 98,000 persons for about 100 days in the year when agricultural operations are slack.

With the active co-operation of the Chief Engineer for Irrigation, the Director of Agriculture and myself have already launched a campaign for increasing sugarcane cultivation and manufacturing sugar with a view to make Madras Presidency self-supporting in the matter of its sugar supplies.

29. *Tile industry*.—There were 55 tile factories at work as against 56 in the previous year. Except three, the rest are situated on the West Coast. The average daily number of persons employed was 5,611 as against 6,628. Exports of tiles from this Presidency by sea fell from 7 million tiles valued at Rs. 3.70 lakhs to 5 million tiles valued at 2.75 lakhs of rupees.

30. *Saw mills*.—Seven saw mills were at work as against six in the previous year. The average daily number of persons employed was 752 as against 753. The timber industry fared no better during the year. Political conditions in Bombay to which place large quantities of Malabar timbers are usually exported and the general economic depression were the causes for the continuous slump in the timber trade.

31. *Soap industry*.—The imports of all classes of soap into the Presidency declined from 2,501 tons 4 cwt. valued at Rs. 23.10 lakhs to 2,088 tons 2 cwt. valued at Rs. 15.52 lakhs. This is due to the increase in local production. Several new factories have been started mostly by the students who passed out of the Kerala Soap Institute.

32. *Manure industry*.—The continued depression in the demand for planting products caused a progressive diminution in the demand for fertilizers, tea and rubber being entirely unable to afford a manuring programme while in the case of coffee the great increase in spraying has probably led to some diminution in the use of fertilizers. Spraying of coffee has led to a greatly increased demand for sulphate of copper which is one of the principal ingredients both of Bordeaux and Burgandy mixtures and with the advent of protection for the heavy chemical industry it is likely that this article will in future be manufactured on a large scale in India. Imports of manures fell from Rs. 32.48 lakhs to Rs. 15.92 lakhs.

33. *Chemical industries*.—As a result of the recommendations of the Tariff Board on the heavy chemical industry, the Heavy Chemical Industry Act was passed during the year. The Act provided for the imposition of import duties in respect of heavy chemicals other than magnesium chloride for a limited period in order to give the manufacturers an opportunity to take steps towards the reorganization of the industry on economic lines. The value of imports of the various articles comprised under the head "Chemicals and chemical preparation" rose from Rs. 31.79 lakhs to Rs. 34.15 lakhs.

34. *Cigar industry*.—There is little to add to the review made in the last year's report on the subject except to state that conditions appear to be getting worse and the demand for Indian cigars would appear to be becoming less and less. The prices for raw tobacco have ruled low. There were three tobacco factories as against four in the preceding year. The average daily number of persons employed was 2,514 as against 1,931.

35. *Tea-planting industry.*—There were 72 tea estates as against 73. The average daily number of persons employed was 2,792 as against 2,828. The area under tea in 1931 was 72,007 acres as against 70,568, production being 27,402,020 lb. as against 26,491,839 lb. Exports of tea fell from 48,574,502 lb. valued at Rs. 411.67 lakhs to 45,901,455 lb. valued at Rs. 391.01 lakhs. It is difficult to deny the seriousness of the situation that faced the tea trade. Prices have been on the downward grade for about a couple of years. The dismal outlook of the tea market is however hoped to be relieved to a partial extent at least by the British preference granted to Empire grown tea. The United Kingdom was the principal consumer of tea to the extent of 43 million pounds valued at Rs. 368.02 lakhs. The Indian Tea Cess Committee has been exceptionally active throughout India in propaganda for the increased consumption of tea and their efforts should be rewarded by a steadily increasing consumption in the country.

36. *Coffee-curing industry.*—The area in 1931 was 38,377 acres as against 37,583 acres. There were 15 coffee-curing works as against 14. The average daily number of persons employed was 4,194 as against 4,224. Exports of coffee fell from 287,414 cwt. valued at Rs. 188.34 lakhs to 153,180 cwt. valued at Rs. 92.92 lakhs. Crops generally were above average during the past season though not absolutely bumper owing to exceptionally heavy rain in August which had a bad effect in many districts. On the other hand prices have improved considerably and the demand for local consumption appears to be steadily increasing thereby to some extent making the Indian producer independent of outside markets.

37. *Rubber planting industry.*—The area under rubber cultivation in 1931 was 12,649 acres as against 13,560 acres in 1930 production being 706,296 lb. and 1,991,512 lb. This industry was very adversely affected by the continued world-wide trade depression. Although most estates ceased tapping during the year and went on to a care-taker basis there was still a certain amount of production in anticipation of the possibilities of an agreement between England and Holland in regard to restriction of output. Now that all hope of this has failed tapping has in many cases ceased.

38. *Pepper.*—Owing to unsatisfactory weather conditions the crop harvested in North Malabar showed a considerable falling off from the previous crop. Prices, on the other hand, have improved and having started at somewhere below Rs. 30 per cwt. steadily advanced to approximately Rs. 40 per cwt.

COTTAGE INDUSTRIES.

39. *Handloom weaving.*—The several kinds of goods produced on handlooms are dhoties, angavastrams, turbans, saris, lungis or kailis, Madras handkerchiefs, towels, bed-sheets, etc. The raw

material for the industry is mostly Indian mill-made yarn amounting to about 70 million pounds and imported yarn amounting to about 6 million pounds. Handspun yarn is also used to some extent. Most of the imports of artificial silk yarn amounting to 2.42 million pounds valued at Rs. 23.92 lakhs is consumed by the handloom weavers. Another raw material used in the industry is gold thread, the value of the imports of which into the Presidency during the year under review was Rs. 1.68 lakhs as against Rs. 12.2 lakhs in the previous year. The heavy decline in imports is due partly to the protective duty of 50 per cent imposed on it, partly to the use of Surat gold thread and, possibly, partly to the decline in the demand for goods woven with genuine lace.

The number of handlooms in the Presidency as enumerated at the 1931 Census was 193,474 as against 169,451 at 1921 Census, being an increase of 15 per cent including 17,693 looms employed in the weaving of artificial silk fabrics. It is, however, considered that the census figure is a considerable under-statement of the position and this is borne out by the fact that the Special Officer for the Survey of Cottage Industries estimated in 1928 when he conducted a survey that the number had increased by about 90,000 over the 1921 figure.

Madras has been fortunate enough to have an export trade in two classes of hand-woven goods, viz., Madras handkerchiefs and lungis or kailis. The former is chiefly exported to West Africa while the latter is used by the Indian labourers in the Strait Settlements, Federated Malay States, Ceylon and Java. Considering the unprecedented world depression shipments of the Madras handkerchiefs during the year were satisfactory, showing an increase by Rs. 1.15 lakhs to Rs. 22.57 lakhs.

Lungis.—The lungi trade continued to decline due to the return of a large number of labourers from Ceylon, Straits Settlements and Federated Malay States owing to the depression in the planting industries which provided employment to them. Exports of lungis and kailis fell from Rs. 97.62 lakhs in 1930-31 to Rs. 75.88 lakhs in 1931-32.

The condition of the industry during the year continued to be depressed. Want of organization and finance stood in the way of the handloom weaving industry deriving any appreciable benefit from the demand for Indian-made cloths. Steps will be taken to put a case for the protection and development of the handloom weaving industry before the Tariff Board in 1932-33.

40. *Coir industry.*—The export of coir manufactures showed an increase in quantity from 25,623 tons to 26,251 tons although there was a fall in value from Rs. 87.13 lakhs to Rs. 74.77 lakhs. Shipments to America were restricted owing to the adverse trade conditions there. During the year, South Africa, the United States and Canada imposed import duties on manufactured coir goods.

Despite the heavy business which was transacted in these commodities, the profits were negligible due to severe competition among manufacturers.

41. *Woollen—Pile carpets and rugs.*—The manufacture of carpets and rugs is carried on in Ellore, Masulipatam, Walajapet and Conjeeveram. Workers are mostly Muhammadans except in Conjeeveram where Sowrashtas are engaged in this industry. Even here they are assisted by Muhammadans in cleaning and dyeing the wool. Exports of carpets and rugs amounted to 1,009,530 lb. valued at Rs. 6.64 lakhs as against 1,006,180 lb. valued at Rs. 7.32 lakhs in the previous year.

42. *Jaggery—Sugarcane.*—Most of the sugarcane produced in this Presidency is converted into jaggery by the ryots.

Palmyra.—The chief centres of palmyra jaggery manufacture are the districts of West Godavari, Guntur, Tinnevely, Malabar and Coimbatore. The workers are Nadars in Tinnevely, Kalalis in West Godavari and Guntur, Sanars in Coimbatore and Tiyyas in Malabar. Jaggery produced is sold to sugar refineries in the Presidency whose agents are sent round to these areas for collecting the jaggery. After allowing for local consumption the quantity available for refining is not sufficient to keep the refineries going throughout the year. The question has been taken up by the department of introducing this industry in certain tracts where palmyras occur in compact areas, the production of jaggery from which while it will not add to any extent to the available supplies for refining purposes will at least provide the means of subsistence for a certain number of families in those areas. Cuddapah offered scope for the demonstration and the department has taken steps to introduce the industry in Idupulapaya and to teach the local people the process of manufacture of jaggery and other uses of palmyra. The question of exploitation of the other palmyra areas is also under consideration.

43. *Metal industries.*—These industries are carried on chiefly in Kalahasti, Dindigul, Palghat, Kumbakonam, Trichinopoly and Udipi. The articles produced are such as screw chembus, tumblers, trays, cups, spoons and bells and the raw materials used are copper and brass. As a result of the fall in purchasing power of the people these industries had a bad year.

44. *Beedi manufacture.*—This industry is carried on in Madras and in the districts of Madura, Malabar, North Arcot and Guntur. The workers are chiefly Muhammadans, their women assisting them in cutting the leaves and trimming them. At present the industry suffers from want of a sufficient supply of beedi leaves and tobacco which have to be imported from outside the Presidency. As a result of the movement to prefer beedis to cigarettes, the industry had a good year.

45. *Button manufacture.*—The demonstration of the treadle machine referred to in the last year's report was carried out at Samalkot and Parlakimedi and keen interest was evinced by the

local public. Samples of buttons manufactured out of bones during the demonstration are exhibited at the departmental museum. The thanks of this department are due to the Proprietor of the South India Ivory Finish Button Works, Royapuram, for his co-operation with the department in deputing one of his turners for the demonstration work.

KERALA SOAP INSTITUTE, CALICUT.

46. *Staff.*—M.R.Ry. A. K. Menon Avargal, B.A., F.C.S., continued as Superintendent of the Institute throughout the year under review.

47. *General.*—The most noteworthy event in the history of the Kerala Soap Institute was the appointment of the Institute during the year as soap-makers to Earl of Willingdon, Viceroy and Governor-General of India. His Excellency was also pleased to permit the Kerala Soap Institute to market the soap known as the Viceregal Lodge Soap under the name of "Willingdon Soap." Steps will be taken to market the new soap in 1932-33. The Superintendent was appointed a Member of the Indian Oil Crushing Industry Committee under the Imperial Council of Agricultural Research. He attended the first meeting at Simla and the second in Bombay.

48. *Production and sale.*—In spite of the general trade depression, the sales of toilet soaps increased from 22 tons 6 cwt. 74 lb. valued at Rs. 57,838 in 1929-30 to 30 tons 19 cwt. 106 lb. valued at Rs. 84,473 in 1930-31 and to 44 tons 1 cwt. 56 lb. valued at Rs. 1,20,336.

In pursuance of the policy of the Government not to compete with the products of indigenous industry, the production of washing soaps was restricted. Though the output of the Institute during the year was 278 tons 10 cwt. 23 lb. as against 280 tons 18 cwt. 4 lb. in the previous year, the sales showed a marked improvement increasing from Rs. 2,23,553 in 1930-31 to Rs. 2,41,698-3-2. The result of the year's working was a net profit of Rs. 12,436-6-1 after paying an interest of Rs. 19,884-6-0 on the capital invested by Government at 5.44 per cent and meeting the cost of the educational side of the institution which amounted to Rs. 9,674-8-3 as against a net loss of Rs. 16,380-8-0 in 1930-31 and Rs. 22,613-6-11 in 1929-30. The fall in the price of raw materials, the increase in the price of toilet soaps, the reduction in interest charges consequent on the surrender of the working capital of fifty thousand rupees, the economies effected in the use of raw materials such as fuel and the wider advertisement are mainly responsible for the profitable working of the concern.

Government Departments continued to place orders for Washwell and Coaltar as a direct result of the recommendation of the Director of Public Health.

49. *Sales organization.*—Mr. R. C. Dalal continued to act as agent for Malabar, Coimbatore, the Nilgiris and the State of Mysore including Bangalore. He was also permitted to work the South Kanara district and the business done by him in that area has been fairly satisfactory. The sales in Mysore and Bangalore have however been disappointing. Messrs. the Anglo-German Trading Company, Calicut, who were the agents for Travancore and Cochin gave up the agency during the year. The volume of business done by Mr. Adam Hajee Mohamed Sait, Madras, who continued as agent for Madras, Chingleput, North Arcot, South Arcot and Chittoor, showed improvement over the previous year. The sales of Mr. G. Palaniyappa Mudaliyar, the agent for Madura (excluding Kodaikanal), Ramnad, Tinnevely and Trichinopoly, are steadily increasing and he is evincing much interest to improve the sales. Mr. K. Raghavendra Rao, the agent for Tanjore, has done reasonably good business and fairly good orders have been received from Devar & Co., Colombo. Messrs. Rao Sahib P. V. Rangiah & Sons, agents for Ganjam, West Godavari and Kistna districts, were permitted to work the Nellore and Guntur districts also. They have placed several orders, and their sales in the above area are increasing. Messrs. P. Muncherji & Co., the agents for Bombay, appear to be doing their best to increase the business. Messrs. Fakir Walji & Sons, Karachi, act as representatives for Karachi and Northern India. They appear to be very active and businesslike and are making headway in an area where our soaps were practically unknown. It is proposed to appoint them as agents for further areas in Northern India. Messrs. Sri Ganesh Stores, Rangoon, have done reasonably well in Burma. Messrs. Popular Stores, Nagpur, effected good business and the question of appointing them as agents for the Central Provinces is under consideration. The following firms continued to work as stockists in their respective areas:—

Mr. A. Perraju Sarma, Rajahmundry.

Mr. Ati Rama Sarma, Vizagapatam.

Messrs. Krishna & Sons, Kurnool.

„ H. Ranganna Gowd & Bros., Bellary.

„ Sultan Khan Lohani & Sons, Cuddapah.

The Kodaikanal Co-operative Stores, Kodaikanal.

K. Viswanatham Chetti, Secunderabad.

The sales of soaps in the Nizam's Dominions, Mysore and Bangalore show a falling off. In other cases, there was a reasonably good sale. Messrs. Natesan & Co., Coimbatore, were appointed as stockists for Salem at the close of the year. The question of appointing a suitable agent for Bengal is under consideration.

Insecticidal soaps were sold both in India and outside. The question of opening trade with Africa in this special soap is being taken up with one of the prominent firms in Calcutta doing business on that Continent.

50. *Visits to important markets.*—During the year the Superintendent visited Simla, Delhi, Bombay, Poona, Madras, Trivandrum, Quilon, Alleppey, Cochin, Ernakulam, Coimbatore and Mangalore. He also visited and inspected local soap factories in Cannanore, Manjeri, Gudalur, Pattambi, Guruvayoor, Coimbatore and Coonoor and advised the owners how to improve their methods and products.

51. *Exhibition.*—The Institute as usual partook in several exhibitions. Medals and certificates of merit, etc., have been obtained in some cases as noted below:—

The Investiture Celebration and Exhibition at Trivandrum	Gold medal and certificate.
The Cattle and Pony Show and Agricultural and Industrial Exhibition, Tirupur.	Certificate of merit.
The Tenth Nellore District Co-operative Conference and Exhibition, Kavali	....
The Agricultural and Industrial Exhibition, Pudukkottai ..	Silver medal.
The Swadeshi Exhibition, Calicut (exhibited by one of our dealers).	Two silver medals and two certificates (one for Washwell and the other for Sandalwood).
The Park Fair Exhibition (exhibited by our Madras Agent, Adam Hajee Sait).	Gold medal.
Salem District Co-operative Conference	Certificate of merit.

The Institute took part also in the Health and Baby Week celebrations in the following places:—

Ponur, Bapatla, Cannanore, Calicut, Sattenapalle, Kovur, Peruvemba, Delhi, Coimbatore, Srivilliputhur, Chandragiri, Madanapalli, Sular, Vizagapatam, Vayalpad, Tirupattur, Ariyalur, Hindupur, Trichinopoly, Anantapur, Kalahasti, Govada, Tuticorin, Tanjore, Tirukkoyilur, Nellore, Pallipat and also in the Provincial Educational Conference, Palghat and Keraliya Nair Samajam Conference, Chavara.

Messrs. Fakir Walji & Sons, our representatives at Karachi, have been awarded some medals and certificates of merit at some of the exhibitions in Northern India, in which they took part.

52. *Training of apprentices.*—During the year sixteen students were trained in soap-making. Of these 11 underwent the ordinary one year's course, 2 the second year (advanced course) and 3 short term course. Two of the ex-students of the Institute were permitted to work in the Institute for a few days to clear some practical difficulties. Students all over India have taken advantage of the training given at the Institute in spite of the fee prescribed for the course. Several of the ex-students have got employment in soap factories in different parts of India while some others have started factories of their own.

53. *Laboratory.*—During the year under review 630 analyses of oils, soaps and other products were conducted in the laboratory of which 490 were of raw materials and soaps in different stages of manufacture. The remaining 140 analyses were of soaps, oils, perfumery, toilet, and other articles received from agents, private parties and ex-students and some collected by the Superintendent in the course of his tours. The laboratory also provided work in

the practical testing of oils and soaps for about six hours a week to the students undergoing the ordinary course and 10 to 12 hours for the others. A considerable number of enquiries in connexion with the manufacture of soap, refining of oils, etc., were dealt with during the year under review and the Institute is rendering considerable assistance to small and large scale industrialists in the particular direction.

54. *Research*.—As regards original work, mention may be made in particular of the extraction of belarray leaf oil, the extraction and examination of the essence of dhavanam and of the bleaching of dhupa fat. Studies were made in devising simple methods of estimating rancidity in oils and processes of refining on a cottage industry scale of some of the important South Indian oils such as coconut oil, sesame oil, groundnut oil, eluppa and castor oil. Large scale experiments on refining and deodorization of oils have not yet been started as the refining plant has not been erected. It is expected that the erection will be completed and experiments started during the current year. The following problems concerning cashewnut industry are being dealt with in the Institute:—

(1) Designing a proper roaster to produce good roasted kernels.

(2) The best method of securing oil from the shell.

(3) Using the oil as a basis for insecticidal soaps and moulding compositions.

The difficulties confronting the ginger curing industry were also studied and some experiments on improved methods of bleaching ginger were conducted.

55. *Visitors*.—As usual a large number of visitors went over the Institute and had the various processes explained to them during the year.

56. *Retrenchment*.—After considerable discussion the Retrenchment Committee agreed that the Institute might continue on the present lines until 31st March 1933, when the position should be thoroughly reviewed. By that time sufficient progress should have been made with the experiments on oils and fats to determine whether they are likely to produce satisfactory results of sufficient practical importance to warrant further retention as a Government Institute.

As the concern was over-capitalized I surrendered the working capital of Rs. 50,000 and the depreciation reserve of Rs. 29,329. I submitted proposals for the transfer of some of the buildings to the Government Industrial School, Calicut, which is located in rented buildings on a monthly rental of Rs. 300. Government sanctioned my proposal to locate the oil-refining plant in one of the Kerala Soap Institute buildings after making the necessary alterations and to debit the experimental side with the rent of the portion of the building allotted for the purpose. Government sanctioned also an annual subsidy of Rs. 14,500 to the Institute for

training apprentices. Steps will also be taken to reduce the cost of production and increase the sales of soaps by extensive as well as intensive advertisement. It is hoped that these measures will result in a greater profit in 1932-33.

57. *Experiments on oils and fats*.—Though the initiation of experiments on oils and fats was sanctioned in April 1930, it has not been possible to commence any large scale experiments owing to the delay in the receipt of the plant. It was proposed to build an extension in the Institute at a cost of Rs. 8,800. Government sanctioned my proposal to make certain minor alterations in the existing buildings of the Kerala Soap Institute at a cost of Rs. 2,500 and utilize them for housing the oil-refining plant. The alterations were completed before the close of the financial year. Machinery will be erected and I hope to start the experiments in 1932-33.

GOVERNMENT INDUSTRIAL INSTITUTE, MADRAS.

58. *Staff*.—M.R.Ry. S. Venkatarama Ayyar continued to be in charge of the Institute throughout the year.

Printers' ink.—The experiments during the year consisted principally in finding cheaper substitutes for raw materials, their treatment and the effect of their use on the quality of finished products. The local presses and the Superintendent, Government Press, were satisfied with the quality of the ink produced at the Institute. The former purchased 300 lb. of it and the Superintendent of Stationery placed an order with the Institute for the supply of 5,000 lb. for use in the Government Press.

59. *White lead*.—Pig lead was obtained, converted into thin wires, later as lead acetate and basic acetate of lead and finally to white lead. The samples were dried and powdered and also mixed with oil and made into paste. Three samples were made, tested and compared with the market products, but the further progress of the experiment was discontinued as a measure of retrenchment.

60. *Miscellaneous*.—A series of experiments were made for investigating the cause of corrosion in copper stills used for distilling mohwa flowers. A sample of maize corn was received to find out if a marketable quality of starch could be prepared. Samples of sealing-wax from the Jail department were tested. Samples of boot polishes and creams were prepared and compared with the samples from Bombay and the United Provinces. Enquiries regarding the manufacture of fluid inks, fruit preservation, extraction of essential oils from davana, utilization of citrus fruits, lacquers and their manufacture, jasmine oil extraction, match composition, vermicelli manufacture, manufacture of fire crackers, mantles, sugarcandy and the purification of barytes, etc., were dealt with and replies furnished.

61. *Retrenchment*.—The Retrenchment Committee recommended the closure of the Institute and suggested that the experimental work conducted at the Institute should be carried on, if necessary, at the Indian Institute of Science, Bangalore.

RESEARCH ENGINEER.

62. M.R.Ry. Rao Sahib C. S. Ramachandra Ayyar Avargul, B.A., continued as the Research Engineer.

Lampblack experiments.—This investigation is meant primarily to utilize the waste oil from garages and to stimulate the manufacture of printers' ink. Crude oil also has been used with satisfactory results. About 6 cwt. of lampblack was manufactured and more than a cwt. sold to private consumers. This was tested for use as pigment in paper mills, in paints and in printers' inks by different gentlemen in different parts of the country and the opinions expressed on the quality of the product are very encouraging. The results obtained justify the production of lampblack on a commercial scale.

Hot-air sizing machine.—As a result of improvements effected by the Research Engineer, the capacity of the experimental machine was increased by about three times that of the departmental sizing machine. The problem of rewinding the sized warp on to the weaver's beam has yet to be solved. Until it is done the handloom weaver cannot make use of the machine economically.

Miscellaneous.—Minor improvements were effected by the Research Engineer in the hand button making machine. He assisted the Director in the study of the indigenous methods of sugar manufacture.

TEXTILE SECTION.

63. *Staff.*—Mr. D. M. Amalsad, A.M.C.T., continued as Assistant Director of Industries (Textiles) and Principal, Government Textile Institute, Madras. From 1st May to 30th June 1931, the Assistant Director of Industries (Textiles) was also in charge of the Sericultural Branch, owing to the absence on leave of Mr. K. T. Achayya, Sericultural Expert.

64. *Textile demonstration—Weaving parties.*—During the year under report, there were four weaving parties at work in the districts. These parties gave practical demonstrations of the working of the departmental patent hand driven sizing machine at Coimbatore, Conjeeveram, Ichchapuram and Vizianagram and supplied machine-sized warps in long lengths for use on handlooms. A jacquard machine comprising 300 hooks and three lever dobbies was introduced amongst the weavers.

65. *Dyeing Party.*—The Dyeing Party demonstrated aerograph printing and improved methods of dyeing at Kuppam, Gudiyattam, Salem, Tiruchengodu, Suryampalaiyam, Kumaramangalam, Puddupalaiyam, Rasipuram, Kumbakonam, Tanjore, Vellipalaiyam, Manjakollai, Puruvacheri, Trichinopoly, Karur, Jayankondacholapuram. One of the demonstrators visited the Immaculate Conception Convent Industrial School, Coimbatore, and gave demonstrations in dyeing of yarns with indanthrene dyes. He also

visited the Wesleyan Mission Industrial School, Ikkadu, and carried out demonstrations in aerograph printing with rapid fast dyes.

As a result of the demonstrations conducted by the Dyeing Party, the following firms have taken to aerograph printing: (1) Satyaram Silk Works, Gudiyattam, (2) Messrs. K. P. Kavadinadi Chetti & Co., Salem, (3) Salem Dye Works Syndicate, Salem and (4) Messrs. O. C. Sheth & Co., Kumbakonam. Further one Mr. R. M. Krishnan of Rasipuram purchased a jigger for cloth dyeing.

As almost all the important weaving and dyeing centres in the Presidency had been visited by the district parties and demonstration of improved manipulative processes and appliances had proceeded far enough that no further propaganda work in that direction was any longer required, proposals for the abolition of all the district parties were submitted to Government.

During the year under report, Government sanctioned the introduction of a system of letting on hire textile appliances.

Textile Education.

66. *Textile Institute.*—On 31st March 1932, there were 77 students undergoing training in the Textile Institute—24 in the first year Supervisor course, 12 in the second year Supervisor course and 41 in the Artisan course. The candidates who sought admission to the institute hailed from 21 districts of the Presidency. Four students came from Travancore and Ceylon.

67. *Aided textile schools.*—Government were pleased to direct that the Inspector of Industrial Schools be relieved of all responsibility for weaving instruction and that the Assistant Director of Industries (Textiles) should take over that responsibility for weaving schools and textile sections of industrial schools which teach weaving, dyeing, cloth-printing, lace making, embroidery, needlework, dress-making, tailoring and knitting. Government had also previously ordered the appointment of the Lecturer in Textiles of the Textile Institute as Superintendent of Weaving Instruction in order that he may assist the Assistant Director of Industries (Textiles) in carrying out the inspections of these schools. Under instructions from the Assistant Director, the Superintendent of Weaving Instruction inspected the majority of aided textile schools during the year under report. The Assistant Director also inspected certain schools when he happened to tour in the districts. In addition to the Superintendent of Weaving Instruction, two demonstrators have also been posted to render practical assistance to these schools. During the year under report, these demonstrators gave practical assistance to the Leipzig Mission Industrial School, Mayavaram, in fitting up a sectional warping mill and demonstrating its working. Likewise, they assisted the Coles Industrial School, Kurnool, in fitting up a

Turkish towel loom, a bobbin winding machine, a pirn winding machine and a 100 hooks jacquard machine. In the Chengalvaraya Naicker's Technical Institute, Vepery, Madras, the demonstrators erected a jacquard machine and a barrel dobby. A jacquard machine has also been fitted up and worked in the Danish Mission Industrial School, Panruti. The authorities of the aided industrial schools dealing with textiles have communicated their sense of appreciation of the technical supervision and practical assistance rendered to them by the staff of the Textile Branch. A sum of Rs. 28,723 was sanctioned as maintenance grants to the above institutions while equipment grants sanctioned to them amounted to Rs. 1,407.

68. *Retrenchment*.—Proposals for the abolition of two weaving parties and one dyeing party were submitted. The savings resulting from the above retrenchment would be about Rs. 17,000 per annum.

SERICULTURE.

69. *Staff*.—Mr. K. T. Achayya held the appointment of the Sericultural Expert during the year except for a period of two months from 1st May to 30th June 1931 when he was on leave; Mr. D. M. Amalsad, Assistant Director of Industries (Textiles), was in charge of the office of the Sericultural Expert in addition to his own duties during the period. The Sericultural Expert toured for 90 days and visited all the silk-rearing centres in the Presidency.

70. The district work of the section is done through the Kollegal rearing party. Hitherto the party used to undertake microscopic work for the rearers at their own homes. A welcome change has however been brought about on account of the confidence created in the efficacy of disease-free layings. The rearers themselves now bring their seed cocoons and hand them over to the party for testing in the office where greater facilities exist and where work can be done in a speedier way.

The party supervised the work of the rearers who purchased disease-free layings, two aided graineurs stationed at Kamakere and Chilukavadi, the domestic reeling plant at Bastipuram, the steam filature at Mudikundam and the silk-throwing plant at Kollegal. They supplied mulberry cuttings and disease-free layings to the district centres at all seasons of the year.

The party tested during the year 199,769 layings as against 189,843 tested during the previous year. But the number of tests conducted for the benefit of individual rearers in the villages during the year was very much less than that of the previous year as the production and supply of seed cocoons from the Government and private farms outside Kollegal had gradually increased to such an extent that the Peripatetic Party could only concentrate upon testing work at headquarters, and distribution of seeds and inspection of rearings in villages.

71. Seven consignments of seed cocoons were sent from the Hosur Farm out of which only two were used for seed purposes while the remaining five were disposed of as reeled silk for reeling cocoons. Besides this, two consignments of seed cocoons produced by private rearers at Hosur were also received, out of which one was converted into disease-free laying and distributed, and the other was disposed of as reeled silk.

Seed is now sold on credit and much difficulty is experienced in recovering the dues. The question of devising a scheme by which collection can be made easily is under consideration.

72. The Kollegal rearers have a prejudice against the use of seed cocoons or seeds produced locally. This is not peculiar to them alone. A change of seed cocoons from locality to locality is usual in all sericultural countries. The bulk of the seed and seed cocoons used to come from the Mysore villages. As the cultivation of mulberry in the districts is extending and the production of seed cocoons is also increasing, the time is not far off when Kollegal will get all her requirements of seed cocoons from the Government and private farms of this Presidency. Since these cocoons will pass through the Peripatetic Party stationed at Kollegal, the bulk of them will be examined and the rearers who now lose two to three crops annually out of every six on account of using non-tested seeds will be benefited very much.

73. *The aided grainages*.—Neither of the aided grainages at Chilukavadi and Kamakere did any useful work during the year. The disease-free layings distributed by Mr. Nagarajayya at Chilukavadi was negligible whilst Appaswami of Kamakere distributed 18,265 disease-free layings. Since the works of Nagarajayya was found unsatisfactory the question of withdrawing recognition was under consideration.

74. *Silk reeling*.—There are two filatures of which one is a steam filature of forty basins and the other a domestic plant of five basins. The steam filature worked satisfactorily, but the domestic plant which had to sell its silk locally had to close down on account of the trade depression.

75. *Sericultural Co-operative Society*.—As the Sericultural Co-operative Society at Doddindevadi started three years ago did not work satisfactorily it was closed down during the year.

76. *Silk-throwing Factory*.—The factory which was erected by the department at Kollegal for Mr. C. K. Nagayya, President, Union Board, continued to work satisfactorily during the year. As there was considerable demand for twisted silk the factory worked at a profit.

77. *Silk Farm, Coonoor*.—One crop of univoltine worms and two crops of hybrid worms were successfully reared. Since it has not been found possible to fix the character of the hybrid worms in Coonoor on account of traces of the fungus disease on the mulberry leaves which breaks out during the rainy season in spite of nicotine spraying, the activities of the farm will be confined to

the raising of a single univoltine crop which does better in the hills than on the plains and two or three hybrid crops during the months of January to May. These hybrid cocoons will be sent to the Government Farms at Hosur and Palmaner where the characters will be fixed. Since there is always the possibility of hybrid cocoons degenerating after a time fresh supplies of seed will be made from the Coonoor Farm.

78. *Silk Farm, Hosur*.—Nine successful rearings were conducted during the year and 431,180 cocoons were produced. If all the cocoons had been converted into seed it would have given more than a lakh and a half disease-free seed. As the supply was not regulated with reference to the demand from Kollegal only 30,665 disease-free layings were distributed and the rest of the cocoons had to be reeled into silk. This farm created an interest in sericulture in the neighbouring villages and 32 acres of land was brought under mulberry cultivation. All these people were taught rearing of silk worms and reeling of silk by the moth-tester, and the silk-reeling demonstrator stationed there. Mulberry cuttings were supplied free of cost to them from the farm plantation.

79. *Silk Farm, Palmaner*.—Palmaner Farm commenced rearing work and the first batch of 29,712 seed cocoons was sent to Kollegal for conversion into disease-free layings. The seed from this farm was very much appreciated by Kollegal rearers and there is every hope that this farm will prove as useful as the Hosur Farm. Since the whole of the Madanapalle plateau is suitable for sericulture the location of this demonstration farm in a central place like Palmaner is likely to stimulate the development of sericulture.

80. *District Sericultural work*.—The sericulture work which was under progress during last year was consolidated and extended during the year. One more centre—Ellore—was added, and an assistant demonstrator of sericulture stationed there. Mulberry was raised as an irrigated crop in the villages of Chatapparra and Ponnaje and two successful rearings were conducted. The cultivation of mulberry as an irrigated crop in the plains and the months during which rearings can be conducted will be studied at the Textile Institute, Madras. The five assistant demonstrators of sericulture were stationed in the following centres to supervise the work:—(1) Vadakangulam, (2) Penukonda, (3) Chingleput, (4) Ellore, and (5) Kuppam. The sericultural house at the R.C. Lace School, Vadakangulam, and the erection of the five silk-reeling basins there for which grants were given by the department were completed during the year.

A silk-reeling machine was installed during the year at the Agricultural and Industrial Settlement, Melrosapuram, near Chingleput.

ENGINEERING SECTION.

81. *General*.—The work of the Engineering Branch consists mainly of the conduct of boring and pumping operations, the systematic inspection and maintenance under the compounding fee system of pumping installations and industrial machinery already at work, the purchase, erection and maintenance of pumping plants suitable for irrigation as well as for industrial machinery, the investigation of applications for loans under the Agriculturists' Loans Act and of certain applications under the State Aid to Industries Act, and the designing of labour-saving devices for use in cottage and small-scale industries and the organization of the demonstration of the same.

82. *Staff*.—Mr. L. S. Pinto held the appointment of Industrial Engineer during the year. He was assisted by five Assistant Industrial Engineers, one in charge of the Industrial Engineering Workshop at Madras and one each in charge of Bezwada, Bellary, Tanjore and Coimbatore divisions, the Industrial Engineer holding direct charge of the Madras subdivision consisting of the Madras and Chingleput districts. As a measure of retrenchment Government accepted the recommendation of the Retrenchment Committee to abolish the Bellary division, which was created in 1929. Effect was given to the Government Order on 22nd March 1932, as a result of which the Bellary and Nellore subdivisions comprising the districts of Bellary, Kurnool and Nellore were added to the Bezwada division and Cuddapah subdivision comprising the districts of Cuddapah and Anantapur was added to the Coimbatore division along with the district of Chittoor.

83. *Pumping and boring*.—The main object of the pumping and boring operations carried on by the department is to render assistance to the agriculturists and the industrialists in the matter of their obtaining requisite supplies of water for irrigation or industrial use.

During the year under review, a scheme of localization of pumping and boring machinery and plants was introduced with a view to securing greater efficiency and control over expenditure. Under this arrangement, the entire stock of pumping and boring tools which was formerly centralized in Madras was distributed among the several divisions. The Assistant Industrial Engineers were vested with powers in regard to their maintenance and working. They were also empowered to have direct dealings with the workshop in the matter of placing indents with it and of accepting bills for jobs executed by it, and to purchase their requirements in the matter of all raw materials that do not require fabrication at the workshop direct from suppliers at the accepted tender rates. The working of this scheme was found satisfactory.

84. *Boring.*—The department maintained 20 power drills, one air compressor drill, and 106 hand-boring sets. Of the latter, 102 sets were engaged in active work, and the remainder were in the form of loose tools and accessories ready for assembly whenever required. 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 1931.	Applications received during 1931-32.	Applications disposed of during the year.	Applications pending on 1st April 1932.	Total number of feet bored.	Number of borings put down.	Number of successful borings.
Bezwada	57	167	165	59	14,232	217	161
Coimbatore	5	130	120	15	9,671	231	187
Tanjore	7	85	78	14	9,608	124	105
Madras	11	41	44	8	3,657	87	71
Total	80	423	407	96	37,168	659	524

The total number of borings put down and the depth bored during the year were 659 and 37,168 feet respectively as against 691 and 43,476 feet respectively in the previous year. The decrease is due to the general economic depression.

85. *Artesian borings.*—At the close of last year the department had to its credit 34 artesian boreholes including the champion borehole at Valayamadevi in Vriddhachalam taluk of the South Arcot district, which is yielding a continuous supply of 1,000 gallons per minute. During the year under review, 13 artesian springs were added. Of these, 9 were in the Bezwada Division discharging fresh water at rates varying from 25 to 250 gallons per minute at ground level, the height of discharge ranging from 5 to 25 feet above ground level and 4 in the Tanjore division discharging from 5 to 200 gallons per minute, the height of discharge ranging from 2 to 3 feet above ground level.

86. *Experimental boring operations at Elur, Salem district.*—The ground boring put down at Elur by means of a power drill for the rural reconstruction centre free of hire and other charges as per orders of Government has gone down to a depth of 356 feet and water stands at 30 feet below ground level. With a view to making the borehole supply available for use, it was decided to connect the borehole with the well near by, so as to allow the water in the borehole to flow into the well. Arrangements will be made to deepen the well and excavate the portion of ground separating the borehole from the well. The stratum beneath the top soil being rock, the deepening and excavation work has to be carried out

purely by blasting with the aid of the air compressor drill maintained by the department. An expenditure of Rs. 493-10-6 was incurred during the year in connexion with the working of the drill, the total expenditure so far incurred on this account being Rs. 1,034-15-6.

87. *Pumping sets.*—The department maintains a number of pumping plants for loaning to ryots to pump water to their crops during periods of drought or for well sinking. There were 41 pumping plants at the end of the year of which six had become unserviceable. The number of applications received for these plants during the year under report was 76. The following statement shows the number of applications registered and disposed of during the year in the various divisions:—

Division.	Number of applications pending on 1st April 1931.	Number of applications registered during the year.	Number disposed of during the year.	Number pending on 1st April 1932.
Bezwada	..	19	14	5
Coimbatore	3	22	24	1
Tanjore	1	7	8	..
Madras	..	28	28	..
Total	4	76	74	6

88. *New investigations.*—There were at the beginning of the year 32 applications for information and advice; 125 were received during the year; of these, 135 applications were disposed of.

89. *Assistance to agriculturists and industrialists—New erections.*—The department undertakes the erection of machinery and plant on payment of a nominal fee of 2 per cent on the capital cost of machinery installed. The number of plants erected during the year was 52 as detailed below:—

Division.	Pending on 1st April 1931.	Received during the year.	Disposed of during the year.	Pending on 1st April 1932.	Remarks.
Bezwada	1	20	14	7	10 pumping and 4 industrial plants.
Coimbatore	4	17	19	2	11 pumping, 7 industrial and 1 combined plant.
Tanjore	3	13	16	..	6 pumping, 8 industrial and 2 combined plants.
Madras	2	2	3	1	2 pumping, and 1 industrial plant.
Total	10	52	52	10	

The capital invested in the above plants including the cost of the buildings amounted to Rs. 82,799-8-3. It may be of interest to

record the horse-power of the largest and the smallest plants erected during the year in each division.

Division.	Largest plant. B.H.P.	Smallest plant. B.H.P.
Bezwada	6½	2
Coimbatore	70	3
Tanjore	31	5
Madras	14	8½

The acreage brought under cultivation and the probable enhanced income accruing therefrom as a result of the erection of these plants are shown below:—

Division.	Acreage brought under cultivation.	Probable enhanced income accruing therefrom. Rs.
Bezwada	10	1,000
Coimbatore	120	24,000
Tanjore	150	10,000
Madras	20	2,000

90. *Compounding system.*—Under this system, owners of private installations are entitled to have their plants inspected and overhauled three times a year for a fixed fee of Rs. 10 per annum, and also at other times if special requisitions are received for which, however, a small additional fee is charged. The number of plants compounded during the year under review was 634 as against 686 in 1930-31, 691 in 1929-30 and 597 in 1928-29. The following statement shows the number of plants under maintenance in the four divisions:—

Division.	Industrial plants.	Pumping plants.	Combined plants.	Total.
Bezwada	85	54	6	145
Coimbatore	50	110	33	193
Tanjore	117	71	44	232
Madras	15	45	4	64
Total	267	280	87	634

The largest and the smallest plant compounded in the divisions were as follows:—

Division.	Largest size of plant. B.H.P.	Smallest size of plant. B.H.P.	Total approximate horse-power compounded.
Bezwada	25 N.H.P.	½	3,022½
Coimbatore	68-70	3	2,840
Tanjore	200	1½	4,736
Madras	45	3	886½

91. *Sugarcane crushing mills.*—The department is in possession of six sets of power-driven sugarcane crushing mills which are hired to the public for crushing their sugarcane. These sets serve

to demonstrate the advantages of power cane-crushing mills over bullock-driven appliances. There was as usual heavy demand for the use of these mills by the sugarcane-growers. In fact, the demand exceeded the supply as in previous years and, despite every endeavour made to serve the applicants, several of them had to be disappointed. The monthly hire for a mill is Rs. 50 and for a combined mill and engine Rs. 100. A sugarcane crushing mill and an engine were lent to the Raja of Bobbili for manufacturing sugar with a centrifugal.

92. *Sugarcane crushing demonstration at Munagapaka, Vizagapatam district.*—The free demonstration of sugarcane-crushing at Munagapaka was sanctioned by Government for another season. The mill was ready for work about the end of January 1932, but the ryots did not supply canes for crushing till the second week of February. The total quantity of cane crushed was 406.3 tons of canes and 49.1 tons of jaggery was manufactured. The total expenses of the demonstration amounted to Rs. 423-7-4. The cane-growers evinced greater interest in the work this year than in the previous year as was evident from the eagerness with which they voluntarily offered to pay a nominal fee of 2 annas per pan of juice boiled in addition to the free supply of labour. The fee realized was Rs. 81-6-0.

93. *Services rendered to co-operative societies.*—Assistance was rendered by the department to several co-operative societies on a variety of engineering matters. The following are instances where services were rendered to co-operative societies:—

(a) A boring set was lent to the Hospet Agricultural Co-operative Society to conduct a boring.

(b) Two sugarcane mills with engines were lent to the society for work at Chittavadigai, Muthalpuram and Belgada. The society was entirely satisfied with the work of the mills.

(c) One sugarcane mill was lent to the Udipi Co-operative Agricultural and Industrial Society for work at Kalyanpur.

94. *Services rendered to departments of Government.*—During the year under review the value of services rendered to the Agricultural, Revenue, Public Works, Jail, Forest, Police, Educational, Medical, Fisheries and Labour departments in the various divisions amounted to Rs. 18,182-1-1 as detailed below as against Rs. 12,503-4-4 in 1930-31:—

Division.	Value of services rendered. RS. A. P.
Bezwada	2,965 14 5
Coimbatore	2,666 2 0
Tanjore	12,318 0 8
Madras	232 0 0
Total	18,182 1 1

95. *Loans for purchase of pumping plants.*—During the year under review 67 applications were disposed of, of which 63 were either withdrawn or rejected and 4 loans of an aggregate amount of Rs. 13,750 were sanctioned. The amount actually disbursed during the year was Rs. 31,759-12-6. All the four loans sanctioned during the year were from the Coimbatore division.

96. *Industrial Engineering Workshop.*—In the departmental workshop located in Washermanpet, the machinery employed by the pumping, boring and other branches of the department is maintained and repaired. Work is also executed for private owners of compounded installations. Experimental work is conducted and tests are carried out of new boring tools and departmental plants manufactured or repaired at the workshop. The workshop employs a few apprentices who attend classes in the Government School of Technology at Madras in order to supplement their practical training by a theoretical course of study. To meet the growing demand from the public, arrangements were being made at the close of the year to entertain apprentices on a large scale.

97. The following table gives the total number and value of work orders executed in the workshop for various departments and for private persons during the year under review:—

Serial number and details of work done under different heads.	Number of jobs executed.	Amount realized.		
		RS.	A	P.
1. Pumping and boring	600	58,423	0	0
2. Inter-departmental	35	1,459	0	0
3. Other Government departments ..	4			
4. Workshop maintenance	53	4,202	0	0
5. Capital works	1	341	0	0
6. Private parties	77	8,312	0	0
Total	770	72,737	0	0

98. Though there was a fall of Rs. 3,944 from Rs. 47,827 in 1930-31 to Rs. 43,883 in 1931-32 in the overhead charges and an increase of about Rs. 2,000 in the value of work done for private parties the working of the concern resulted in a loss of Rs. 22,714 as against a loss of Rs. 17,592 in 1930-31. The loss is mainly due to the heavy fall in the value of work done for the Pumping and Boring section from Rs. 1,13,191 in 1930-31 to Rs. 58,423 in 1931-32 as a result of the repair and utilization of all repairable tools consistent with economy and efficiency. During the year lower rates of centage were adopted in some cases under the orders of Government. Though these changes resulted in a loss to the workshop, they have benefited the Pumping and Boring section considerably. The expenditure of the Pumping and Boring section under plant and machinery during the year was Rs. 66,371 as against the Budget Estimate of Rs. 1,20,000 and revised estimate of Rs. 75,000 and the actual expenditure of Rs. 2,28,654 in 1930-31 and Rs. 1,58,664 in 1929-30.

99. Most of the centage rates in force were introduced in 1925 and the question of their revision was under consideration at the close of the year. The question of reduction of overhead charges of the workshop with a view to make it self-supporting was also under consideration at the close of the year.

100. The concern had accumulated at the end of the year 1930-31 a total depreciation reserve of Rs. 39,737-4-1. Of this amount Rs. 30,000 was invested with Government before the close of the year under review and arrangements were made to invest the balance at a very early date. The cash position of the workshop at the end of the year was quite satisfactory.

The following are some of the important works executed in the workshop during the year:—

(1) Eight Pinto Chekkus which continued to be popular were made to order during the year. With a view to increase the usefulness of these machines by allowing the purchasers easy terms of payment proposals were submitted to Government to sell them on hire-purchase system. The Government have deferred consideration of the proposals for the next year.

(2) The engines and the pumps of the following firms were tested at the workshops at the instance of Messrs. Burmah Shell Oil Storage and Distributing Company of India, Madras:—

Messrs. Heatley and Gresham, Madras.

„ Parry & Co., Madras.

„ Limaye Brothers, Madras.

(3) Thirty iron stands or frames to special design for fixing steel yards were made and supplied to different fish-curing yards as per instructions from the Director of Fisheries, Madras.

(4) Several spare parts such as copper rollers, gear wheels, etc., were made and supplied to the Research Engineer from time to time.

(5) Boring tools were manufactured and supplied to H.E.H. the Nizam's Government, Messrs. Gannon Dunkerly & Co., Emigration Commissioner for Malaya, and some other private agencies.

(6) Repair work and supply of spare parts were undertaken for several pumping plant owners.

During the year under review, the Assistant Industrial Engineer, Madras, who was formerly assisting the Industrial Engineer generally in all matters relating to the Pumping and Boring section, besides being in immediate charge of the workshop, was relieved of all work connected with the Pumping and Boring section, and placed in sole charge of the workshop with effect from 13th June 1931, his pay being debited in full to the accounts of the workshop. The Industrial Engineer continued to exercise as hitherto general supervision over the workshop as over all the other engineering activities of the department. It was reported to Government that

the new system worked satisfactorily and the question of confirmation of the arrangement was under the consideration of Government at the close of the year.

INDUSTRIAL EDUCATION.

101. Mr. W. Fyfe continued as Inspector of Industrial Schools during the year except for a period of one month from 1st May 1931 when he was on leave, and Mr. L. B. Green, Deputy Director of Industries, held charge of the office in addition to his own duties. He also continued to act as Secretary to the Board of Visitors to the Government Industrial Institute, Madura, as a member of the Board of Examiners of the Government Fisheries Training Institute at Calicut and as official visitor to eleven central jails and the Senior Certified School at Chingleput.

102. *State technical scholarships.*—The following Madras scholars were undergoing training in the United Kingdom at the end of the year in the subjects specified against their names:—

Names.	Subject of study.
(1) P. Govindakrishnayya.	Electrical Engineering with special reference to hydro-electric development.
(2) S. A. Saletore ...	Technology of oils and fats with practical training in the crushing of oil-seeds.
(3) A. Yoganadaswami ...	Paper manufacture.
(4) M. S. Viswanathan ...	Hydro-electric Engineering.
(5) Md. Ubaidullah Khan Durrani ...	Do.
(6) D. D. Dawson ...	General Oceanography with special reference to pisciculture.

Nos. (1), (2) and (5) are expected to return to India towards the end of the year 1932 after the completion of their training. Nos. (4) and (5) have each been given an extension of one year thus extending the total period of their training to four years, while the tenure of No. (3) has been extended by another six months. As a measure of economy in expenditure no fresh scholarship was awarded during the year.

103. *Scholarships tenable at the Victoria Jubilee Technical Institute, Bombay.*—Owing to financial stringency the award of fresh scholarships during the year was held in abeyance and the number of scholarships tenable at this Institute has been reduced to ten. Four scholars completed their courses of study during the year, three in Sanitary Engineering and Plumbing, and one in Technical and Applied Chemistry. The number of scholars under training in the Institute at the end of the year was 7 as shown below:—

Sanitary Engineering and Plumbing	...	...	2
Technical and Applied Chemistry	...	...	3
Textile Manufacture	...	...	2

A sum of Rs. 2,200 was contributed by the Government to the Institute during the year.

104. *Scholarships tenable at the Benares Hindu University.*—Only one scholarship was awarded during the year for the study of electrical engineering at the Engineering College attached to the Benares Hindu University. Consequent on the opening of an electrical engineering section in the Engineering College, Guindy, it has been decided that no more scholarships should be awarded in future for the study of this subject at Benares. There are at present six scholars under training and they are reported to be doing well.

105. *Post-graduate scholarships.*—Three new scholarships tenable at the Indian Institute of Science, Bangalore, were awarded during the year under review. Of these, one was admitted into the General and Inorganic Chemistry department, another into the Organic Chemistry department, and the third into the Bio-Chemistry department. The number of scholars under training in the Institute at the end of the year was 15 as shown below:—

Department of Electric Technology	...	...	6
" General and Inorganic Chemistry.	...	...	4
" Bio-chemistry	...	...	4
" Organic Chemistry	...	...	1

As a measure of retrenchment the Government have ordered that the number of scholarships tenable at this Institute should be limited to ten in future years.

106. *Scholarships tenable at the Indian School of Mines, Dhanbad.*—One scholarship tenable for a period of four years at the Indian School of Mines was awarded during the year for Mining Engineering and Geology. There are now four Madras students under training in the school and the first student who was admitted in the year 1928 is expected to complete his training towards the end of 1932.

107. *Scholarship at the Jamshedpur Technical Institute.*—In accordance with an arrangement with the Tata Iron and Steel Company, Ltd., Jamshedpur, three students were selected every year since November 1927 to undergo a combined theoretical and practical course extending over a period of three years in the metallurgy of iron and steel at the Technical Institute attached to their works at Jamshedpur. In return for the reservation, in the Technical Institute, of three seats every year for Madras students, an annual subsidy of Rs. 6,000 was paid to the company since 1927-28. On the recommendation of the Technical Education Committee appointed in 1931 by the company to consider the future development of the Jamshedpur Technical Institute, the Managing Agents decided to withdraw their obligations to the Provincial Governments in the matter of acceptance of specified

number of their students as a condition of obtaining grants from them. Having regard to the altered conditions and in view also of the existing financial stringency, the Government decided to discontinue the contribution of Rs. 6,000 to the Institute from 1930-31. Of the twelve students selected since the inauguration of this scheme, six have completed their training.

108. *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 1931 to pupils learning trades in various recognized industrial schools in the Presidency. A bonus of Rs. 38 was also granted to such of the pupils as had satisfactorily completed the course of study during the year.

109. *Government School of Technology, Madras*.—This institution which was hitherto known as "Madras Trades School" was renamed "Government School of Technology" with effect from 1st April 1932.

Staff.—M.R.Ry. N. M. Adyanthaya, B.Sc., (Edin.) continued as Principal during the year.

Admissions.—The number of new admissions was 422 as against 263 in the previous year, of which 164 were admitted to the Electrical Engineering section and 85 to the Mechanical Engineering section. The strength of the school on the 31st March 1932 was 778 as against 580 in the previous year. The cost per student was Rs. 78 as against Rs. 110 in the previous year.

Examinations.—The Government were pleased to order the award of diplomas of L.M.E. and L.E.E. to the students who have successfully completed the Mechanical and Electrical Engineering courses. The diploma examinations were conducted by Messrs. R. M. Stevenson of Messrs. Massey & Co., and Major Bowers of the Madras Port Trust. Eight students were successful in Mechanical Engineering and twelve in Electrical Engineering. The wiring examination for Wiremen's Competency Certificate was conducted by Messrs. C. E. Cutting, Manager, General Electrical Company, Ltd., and P. V. Chari, Electric Engineer, Public Works Department, and 58 appeared and 29 passed. Printing and other examinations were conducted by Messrs. N. Carter, Superintendent, Diocesan Press, O. Newman and R. S. Mackey of the Madras and Southern Mahratta Railway Co., and D. B. Dustoor of Messrs. Richardson and Cruddas and 30 passed. The school continued to be the centre for the examinations of the City and Guilds of London Institute for which examinations 77 candidates appeared and 43 passed.

Preparatory section.—The Preparatory section attached to the school continued to function on a temporary basis. The number of new admissions was 50 and the total strength on the 31st

March 1932 stood at 116. Seventeen students completed their three years' preparatory course and most of them have joined the various workshops.

Perambur Railway Branch School.—The branch school attached to the Madras and Southern Mahratta Railway Company has also had a satisfactory year. The number of new admissions during the year was 69 and the strength of the school at the end of the year was 154 as against 152 in the previous year. Of the 32 students who presented themselves for the final examinations 23 were declared to have passed, the majority of them being retained in the railway workshops.

110. *Government Industrial Institute, Madura*.—M.R.Ry. A. Patnaick, Assistant Superintendent, held additional charge of the office of Superintendent till 1st June 1931, when he was relieved by M.R.Ry. P. Govinda Menon, acting Superintendent, who continued to be in charge of the Institute during the remaining portion of the year.

Admissions.—Sixty-six candidates offered themselves for admission into the Institute, of whom 24 were selected for the probationary course. The strength of the various classes at the end of the year stood at 83 as against 90 in the previous year. The fall in the strength is due to the closure of the motor section during the year as a measure of retrenchment.

Examinations.—The annual and final examinations were conducted by Mr. J. H. Dickson, Superintendent, Pasumalai Trade School, and Mr. Campbell, Chief Engineer, Madura Mills Company. Of the 101 students who appeared for examinations, 74 were declared to have passed. Seven final year students in the metal-work and carpentry section and four in the motor section who successfully completed their training were awarded certificates.

Workshops.—The value of work turned out in the workshop was Rs. 28,214 as against Rs. 27,728 in the previous year.

During the year the only item of capital expenditure incurred was in respect of the purchase and erection of a Redmond lathe costing Rs. 3,600. The stock was completely verified by an officer unconnected with the Institute and the surplus stores and other articles were disposed of by auction.

Hostel.—The hostel attached to the Institute was working satisfactorily, its strength being 63. Three separate messes are run, the vegetarian mess being under the management of the warden and the others managed by the boys themselves.

Retrenchment.—The question of the desirability or otherwise of retaining the Institute in view of its high cost of maintenance was considered by the Retrenchment Committee during the year, and it was decided that the Institute should be retained in view of the fact that facilities for the training of apprentices in mechanical workshops do not exist in the south of the Presidency elsewhere than in the Government Industrial Institute, Madura. The

Committee considered that the maintenance of the commercial system of accounts should be abandoned and that the net cost of running the Institute should be reduced to Rs. 17,500 per annum. Detailed proposals for the re-organization of the Institute in consonance with the recommendations of the Retrenchment Committee were submitted during the year.

111. *New Government Schools.*—The Government Industrial Schools at Calicut and Bellary and the Trades School at Mangalore which were started during 1929 were functioning satisfactorily. These schools are now in the third year of their existence and are on a temporary basis. During the year the Retrenchment Committee examined the working of these schools and recommended that the net recurring cost should be restricted to Rs. 45,000 per annum. The motor-driving classes attached to these schools were closed during the year and the staff sanctioned therefor was disbanded. Proposals for retrenchment in other directions were also submitted to Government reducing the net recurring cost to Rs. 35,900.

The strength of these schools at the end of March last, was 69 in Bellary, 92 in Calicut and 91 in Mangalore.

The receipts earned by the schools by the sale of manufactured articles were as follows:—

	RS.
Bellary	3,254
Calicut	5,450
Mangalore	207

112. *Aided industrial schools.*—During the year the Assistant Director of Industries (Textiles) was made responsible for the inspection of the schools teaching textile subjects while the Inspector of Industrial Schools continued to supervise the remaining schools.

The following new institutions were recognized during the year:—

- (1) St. Joseph's Industrial School, Ootacamund.
- (2) St. Therese's Institute Industrial School, Salem.
- (3) American Mission Cabinet-making School, Guntur.

The recognition accorded to the A.B.M. Industrial School, Ongole, and the Y.M.C.A. Industrial School, Areakode, was withdrawn during the year.

On the 31st March 1932, in addition to the institutions managed by the department direct, the total number of schools recognized by the department was 68. All these except five were in receipt of grants-in-aid and all of them were inspected during the year under review. At the end of the year there were 6,015 pupils under training in these schools as against 5,349 in the previous

year. Of these, 2,684 were Indian Christians, 1,794 non-Brahman (Hindus), 586 Brahmans, 337 Muhammadans, 314 depressed classes, 158 Europeans and Anglo-Indians, 75 criminal tribes, 66 aborigines and hill tribes, 1 Buddhist, 2 Parsis, and 18 others. A sum of Rs. 1,05,250 was distributed in the form of maintenance (including capitation) grant representing an average of Rs. 17-8-0 per pupil per annum for the Presidency as against Rs. 20 in the previous year. A further sum of Rs. 13,863 was distributed as equipment grant to a few schools, while a sum of Rs. 34,105 was distributed as building grant among three institutions. Owing to the financial stringency, it was not possible to render adequate assistance to all deserving institutions. The condition of the majority of the schools, however, continued to be satisfactory.

The teachers training sections attached to the St. Joseph's Industrial School at Tindivanam, the C.S.M. Girls Industrial School, Madras, and the American Mission Girls Industrial School at Palmaner continued to function satisfactorily.

LEATHER TRADES INSTITUTE.

113. *Staff.*—M.R.Ry. P. K. Rajamanikkam Nayudu Garu, F.C.S., continued as Superintendent of the Institute throughout the year and M.R.Ry. K. Seshachallam Chowdhuri Garu, M.A., M.Sc., as Leather Research Chemist.

Visits to tanneries.—The Superintendent visited various tanneries around Madras and in the south of the Presidency and gave advice in regard to the work on hand. Some experiments were conducted in the tanneries of private tanners with a view to introducing therein improved methods of tanning.

Experiments.—Experiments on a small scale were conducted on the use of *Anogeissus latifolia* leaves and twigs. A further supply of leaves is awaited for the conduct of further experiments. The results of the experiments on the use of various deliming agents on avaram tanning were not very encouraging and further experiments on the same will be conducted. Experiments in the use of different tanning extracts in the tannage of skins were also conducted with and without avaram bark as a mixture.

Considerable success was achieved in the experiments on the bleaching of crocodile, lizard and snake skins. Experiments were conducted to find out the effect of using synthetic tans like "tannic media" with different proportions of avaram. At the request of a tanner, experiments were conducted on pickled sheep skins for export to Australia. Different recipes were tried in various proportions and the processes were explained to the tanner.

Past students.—Help and advice were rendered to past students and practical experiments were conducted in their tanneries with a view to enable them to equip their tanneries with up-to-date machinery.

General.—The proposal to open class to provide instruction in the manufacture of leather goods and brushes could not be given effect to as no students came forward to take advantage of the proposed training.

114. *Leather Research Chemist.*—The Leather Research Chemist continued his usual research work and general chemical work for the department.

Analyses.—Analyses forms an important part of the work of the Leather Research Chemist. Samples of water from tanneries, tanning materials, tan liquors, leathers, chrome liquors, and other materials were analysed during the year. The waters analysed consisted of those that were sent by the tanners for analyses and those that were sent for periodical analyses. The greater part of the tanning materials analysed were for sellers or buyers, the purpose of the analyses being to find out the tanning contents of the materials. Besides these, samples of avaram bark were analysed for the Forest Utilization Officer. The leather samples analysed were mainly either russet leather from the Superintendent, Central Jail, Vellore, or samples to be tested for adulteration.

Study of Anogeissus Latifolia as a tanning material.—Preliminary experiments on the study of *Anogeissus latifolia* as a tanning material were made. Experiments were conducted with a view to evolve a simple method for determining the adulteration of leather with epsom salts.

The study of syntans which are used to a great extent in Madras tanneries has been begun.

Miscellaneous work.—Samples of clay sent by the Ceramic Assistant were analysed. Samples of manures from the South Indian Trading Company, Madras, were also analysed.

The results of the experiments on coir retting carried out at Topputurai were published as a departmental bulletin. The experiments on the methods of tapping palmyra trees for sweet toddy, the preparation of jaggery therefrom, and the making of baskets, mats and other articles from palmyra leaves were demonstrated in Cuddapah district.

115. *Investigation into stains on skins and hides.*—Major A. Guthrie, M.B.E., V.D., was on special duty for stains on leather investigation throughout the year. The chemical assistant attached to this work was on deputation at the Indian Institute of Science, Bangalore, up to 28th September 1931 for training in bacteriological work.

Tours.—The Special Officer made three tours during the year. The first tour was to Dindigul and Trichinopoly when a special study was made of stains met with in prime tanneries. The second tour included Coimbatore, Erode, Salem, Bangalore, Vaniyambadi,

Pernampet and the West Coast where the conditions under which West Coast hides and skins are salted and stored were investigated. The third was to Trichinopoly and Aduthurai. At Aduthurai the cause of a peculiar colour on the skins produced in the tannery was investigated.

Publications, etc.—In December the Special Officer read a paper on "Stains on Madras Tanned Hides and Skins" to local members of the International Society of Leather Trades Chemists. This paper was again read at Periamet and at Trichinopoly. Very interesting discussions followed the reading of the paper at each meeting and in one case at any rate a tanner was able to get rid of a stain that had been prevalent in his tannery for years.

A pamphlet on the removal of salt stains by pickling and de-pickling was prepared during the year under review.

On account of the large number of questions asked and interest taken regarding the nature of the impurities in tannery waters, at the meetings held, a bulletin on South Indian Tannery Waters was prepared by the Special Officer, and will be published as a departmental bulletin.

Types of stains.—During the year, work was chiefly concentrated on four types of stains: (1) salt stains, (2) grain damages, (3) water stains and (4) mould damages, as these are most common and serious, but several investigations on unusual stains were also carried out.

Salt stains.—Experiments on the eradication of salt stains were conducted with encouraging results. These experiments are extremely slow in producing results as it is only after two or even three months storage that salt stains show up badly, and experiments of shorter duration than this are useless.

A method by which salt stains could be removed during the tanning process was made simple enough to be worked as routine in South Indian tanneries, where no means of chemical control exist and a pamphlet giving details of the process will be published.

Grain damages.—The cause of a grain defect known as "chipped grain" has been worked out, and micro-photographs of the defect taken in order to illustrate a pamphlet or bulletin on this subject.

Water stains.—Investigations into the cause of these stains and their prevention has been continued. In certain tanneries good results have been obtained but in others success has not been procured showing that there are still some unknown factors for further study.

Mould damages.—A large number of experiments were carried out to see if any of the well-known antiseptics are more suitable than formalin to prevent growth in case of very slow drying. So far none have proved of greater value.

SCHOOL OF ARTS AND CRAFTS.

116. *Staff.*—M.H.Ry. D. P. Roy Chowdhury was in charge of the school during the year except for one month from 19th December 1931 when he was on leave when M.R.Ry. N. K. Dewal, Vice-Principal, was in charge of the school.

Strength and attendance.—The number of students on the rolls on 31st March 1932 was 279 of whom 3 were ladies as against 263 in the previous year. The average attendance was 225 or 85 per cent as against 159 or 73 per cent in the previous year.

Departments of the school.—Enamelling on gold and silver and other metals, which was started last year at the instance of Mr. N. K. Dewal, the Vice-Principal, was improved to a very great extent and was much appreciated by the public. New methods of lacquering furniture, etc., have been introduced in the lacquer work section and the progress is very satisfactory. Similarly, cotton printing by means of blocks was started during the year with a view to produce works similar to those executed by the costly waxing processes. The course of study in drawing and design class was reduced from five to three years. The fine arts section is attracting students from other parts of India and the students of this section exhibited some of their works at the Fine Arts Exhibition and were awarded gold and silver medals. Special mention may be made of a private exhibition held at the Principal's residence in November last when Their Excellencies Sir George and Lady Stanley and a large number of distinguished ladies and gentlemen visited the exhibition. The visitors were much impressed with the exhibits and made several purchases.

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.	Per cent.
1929-30	...	...	177	122	69
1930-31	...	...	88	44	50
1931-32	...	...	34	20	59

One of the students who appeared for the Painting examination, higher grade, stood first in the examination and was awarded a gold medal. The system of holding annual class examinations for the purpose of promoting students from one class to another introduced during the year is proving very successful.

Library and museum.—A few books were added to the library and a number of newly manufactured articles were placed in the museum. A number of pictures were also presented to the school by the late Mr. C. W. E. Cotton.

Official visitors.—Of the four official visitors, two visited the school in November 1931. One of the official visitors, the late Mr. C. W. E. Cotton, F.I.E., I.C.S., died during the year. He took a keen interest in the working of the school and his valuable advice and suggestions were always welcome. By his death the school sustained a great loss.

Retrenchment.—The part-time ladies drawing class was abolished with effect from 1st January 1932. The following posts were also abolished:—

- (1) Vice-Principal.
- (2) Head Clerk and Accountant.
- (3) One teacher in the engraving section.
- (4) One teacher in the woodwork section.
- (5) Three peons.

Further, a clerk's post on Rs. 65—85 was converted into one on Rs. 40—65 and the number of scholarships was reduced from 29 to 15. As a result of these economies, the net recurring cost of the school will be reduced to about Rs. 34,000 as suggested by the Retrenchment Committee.

PROGRAMME OF WORK FOR 1932-33.

I. Engineering Section.

117. (a) Further development of the pumping and boring section.

(b) Demonstration and propaganda in connexion with the manufacture of sugar with centrifugal machinery.

(c) Designing appliances for the utilization of waste products such as a domestic hearth for burning paddy or groundnut husk and a roaster for extracting oil from cashew shells.

(d) Experiments with wind mills and wing rotors for irrigation purposes.

II. Education Section.

(a) Revision of the Code of Regulations for Industrial Schools to suit changed conditions.

(b) Institution of short courses in metal spinning and manufacture of school slates at the Government Industrial School, Bellary.

(c) Institution of day classes in cabinet making and electric wiring at the Government Trades School, Mangalore.

III. Textile Section.

- (a) Development of handloom weaving industry.
 (b) Evolution of multiple spindle spinning machine for eri silk.
 (c) Improvements in multi-coloured block printing.
 (d) Study of the manufacture of gold thread.

IV. Sericultural Section.

- (a) Development of ericulture in the districts where castor is grown.
 (b) Extension of mulberry cultivation in suitable areas of the Presidency.
 (c) Increasing the provision of disease-free seed.
 (d) Continuance of the hybridization work.
 (e) Deputation of the Sericultural Expert to Japan for studying the organization and development of sericulture in that country.

V. Research Engineer.

Improvement of the hand-sizing machine and the lampblack plant.

VI. Madras Industrial Institute.

Completion of the experiments in the manufacture of printers' inks.

VII. Kerala Soap Institute, Calicut.

- (a) Experiments in refining and deodorizing oils.
 (b) Putting on the market the "Willingdon" toilet soap.
 (c) Introduction of new saleable brands of soaps.

VIII. Leather Trades Institute, Madras.

- (a) Study of *Anogeissus latifolia* as a tanning material.
 (b) Study of syntans.
 (c) Investigations into stains.

RECEIPTS AND EXPENDITURE.

118. The following statement compares the receipts and expenditure of the department during the years 1930-31 and 1931-32. Details are exhibited in appendix.

Item.	1930-31.	1931-32.	Decrease.
	RS.	RS.	RS.
Expenditure ...	14,21,534	11,08,293	3,13,241
Receipts ...	1,23,944	1,01,077	22,867
Net cost ...	12,97,590	10,07,216	2,90,374

Expenditure.—The expenditure in 1930-31 was Rs. 12,97,590 including the sum of Rs. 1,13,952, the liabilities of the Engineering section carried over from the previous year. The decrease in expenditure of Rs. 1,76,422 in 1931-32 was mainly due to a fall in expenditure of Rs. 63,248 under District Engineering consequent on the restriction of purchase of materials, and a greater utilization of old pipes and tools after repairing them, and the introduction of open tender system for the purchase of materials, of Rs. 71,200 under Grants-in-aid to Industrial Schools resulting from restricting building and equipment grants, and of Rs. 20,583 under losses on Government commercial undertakings as the Kerala Soap Institute, Calicut, made a net profit of Rs. 12,436 instead of a loss.

Receipts.—Owing to adverse seasonal conditions the receipts from the Pumping and Boring section decreased while the Government Industrial Institute, Madura, and the Industrial Engineering Workshop, Madras, worked at a loss as in the previous year.

Statement showing the Receipts and Charges of the Department of Industries for the year 1931-32.

Receipts.

	Rs.	A.	P.
1. Weaving branch (Textiles)	269	13	10
2. Industrial schools	20,204	7	3
3. School of Arts and Crafts	5,970	5	0
4. Pumping and Boring receipts	53,589	12	3
5. Industrial installation receipts	4,163	10	0
6. Sericulture receipts	689	5	7
7. Sugarcane crushing plant receipts	362	8	0
8. Rent of buildings	176	8	0
9. Other receipts	2,219	8	7
10. Recoveries of overpayments	849	1	3
11. Collection of payments for services rendered	475	5	0
Total	88,970	4	9

Profits from Government Commercial undertakings—

Kerala Soap Institute, Calicut	12,436	6	1
Recoveries of indirect charges from Government Commercial undertakings—			
Kerala Soap Institute, Calicut	4,463	5	0
Government Industrial Institute, Madras	3,257	0	0
Government Industrial Engineering Workshop, Madras	3,520	2	0
Grand Total	1,12,647	1	10
Deduct Refunds	11,570	0	2
Net receipts	1,01,077	1	8
Net cost of the department	10,07,215	8	1

Total	11,179	3	4
Total	2,141	10	4
Total	1,960	9	8
Total	10,50,638	5	10

50

Loss on Government Commercial undertakings—

(i) Industrial Engineering Workshop	22,713	10	9
(ii) Industrial Institute, Madras	5,177	3	11
Total	27,890	14	8
Loss by exchange	246	11	0
Expenditure in England	35,830	0	0
Total	11,14,625	15	6

Deduct—

Recoveries of investments in Government Commercial undertakings	6,333	5	9
Total	11,08,292	9	9

N.B.—The figures under expenditure are purely provisional as they are subject to modification in the March final accounts.

APPENDIX I

Statistics relating to Government and recognized Industrial Schools for 1931-32.

Serial number, name and place of institution.	Number on rolls on 31st March		Metal working or Engineering trades.	Engine tending.	Wood-working trades.	Rattan work.	Textiles cotton.	Textiles wool.	Other textiles trades.	Lace Embroidery and needle work.	Other subjects (specified in remarks column).		Particulars as to career of students passed out in last two years.	Remarks.									
	1931.	1932.									Number passed out.	Number on rolls.											
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	
GOVERNMENT INSTITUTIONS.																							
1. Government Industrial Institute, Madras.	90	98	88	7																		(a) * 59 Freehand and Technical drawing. 58 Engraving. 24 Goldsmiths' work. 22 Special painting. (b) 100 Drawing. 48 Plumbing. 77 Electric wiring. 154 Railway apprentices. 98 Printing. 286 Electrical Engineering. 106 Preparatory Trades School. Motor mechanics course.	
2. School of Arts and Crafts, Madras.	203	265	34																(a) 163.				
3. Government School of Technology, Madras.	821	1,037	169	8															(b) 868	119			
4. Government Textile Institute, Madras.	60	77																					
5. Government Industrial School, Bellary.	42	69	33																				
6. Government Industrial School, Calicut.	87	92	38																				
7. Government Trades School, Mangalore.	94	91	36																	43	10		

51

Statistics relating to Government and recognized Industrial Schools for 1931-32—cont.

Statistics relating to Government and recognized Industrial Schools for 1931-32—*cont.*

[illegible][illegible]

[illegible]

APPENDIX II.

Statistics relating to Government and recognised Industrial Schools for the year 1931-32.

Statistics relating to Government and recognised institutions	Serial number, name and place of institution.	Receipts and expenditure to the nearest rupee.	Remarks.													
Number on rolls on 31st March 1932.	Total recurring cost (excluding expenditure on new buildings and equipment).	Receipts from	Total columns (4) and (5).	Recurring grants from Department of Industries.	Recurring grant from other Departments or public bodies (specify in remarks column).	Total recurring grant. Add columns (8), (10), (11) and (12).	Balance of recurring cost met by managers funds column (14) minus column (13).	Non-recurring.	Building grant.							
(1)	(2)	Rs.	Paise.	Rs.	Paise.	Rs.	Paise.	Rs.	Paise.	(17)						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
GOVERNMENT INSTITUTIONS.	98	58,463	..	..	..	58,463	597	..	..	..	..	..	58,463	6	..	..
1. Government Industrial Institute, Madras.	265	46,538	206	5,391	5,597	40,941	154	..	5,095	..	..	5,095	35,846	1,048	..	..
2. School of Arts and Crafts, Madras.	778	72,476	11,726	..	11,726	60,750	78	..	4,060	..	..	4,060	56,690	7,479	..	..
3. Government School of Technology, Madras.	77	40,386	..	..	..	40,386	524	..	4,183	..	..	4,183	36,203	..	..	..
4. Government Institute, Madras.	69	34,985	..	..	..	34,985	507	..	5,126	..	..	5,126	29,859	..	..	..
5. Government Industrial School, Bellary.	92	35,928	648	..	..	35,280	383	..	7,584	..	..	7,584	27,696	..	..	..
6. Government Industrial School, Calicut.	91	16,640	225	208	..	16,207	178	..	180	..	..	180	16,027	..	..	..
7. Government Trade School, Mangalore.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
AIDED SCHOOLS (BOYS).	111	1,41,177	..	..	1,31,788	1,31,788	9,389	85	4,300	232	..	4,857	9,389	..	..	..
1. A.A.M. Industrial School, Katpadi.	62	13,947	..	..	8,748	8,748	5,199	84	2,130	374	..	2,675	5,179	20	..	39
2. Anjuman Industrial School, Vellore.	43	7,034	..	..	1,655	1,655	5,379	125	1,500	319	..	1,587	3,436	1,943	..	..
3. Anjuman Industrial School, Melvisharam.	23	1,296	..	..	90	90	1,206	52	500	36	..	..	536	670	..	..
4. Anjuman Industrial School, Tirupattur.	23	7,104	..	..	3,300	3,300	3,804	165	800	..	..	..	800	3,004	..	..
5. Don Bosco Industrial School, Vellore.	83	30,872	..	..	16,123	16,123	14,719	178	5,800	499	2,160	8,145	16,604	1,855	2,324	..
6. St. Joseph's Industrial School, Tindivanam.	116	45,233	..	..	34,171	34,171	11,062	95	4,000	723	..	8,783	13,506	2,444	..	..
7. D.M. Industrial School, Paruti.	70	6,581	..	..	1,236	1,236	5,345	76	1,200	147	..	4,240	5,587	242	..	..
8. C.S.M. Agricultural School, Melrosapuram.	7	3,207	..	..	2,286	2,286	921	131	300	116	..	..	416	505	..	..
9. A.A.M. Industrial School, Saidapet.	30	5,509	..	..	1,363	1,363	4,146	138	..	771	..	..	771	3,375	..	..
10. Victory Memorial School for the blind, Poonamalle.	182	83,133	..	..	72,534	72,534	10,599	58	3,400	..	..	2,929	6,329	4,270	..	..
11. St. Joseph's Industrial School, Coimbatore.	67	4,534	..	..	1,224	1,224	3,310	49	1,200	66	..	2,001	3,267	43	..	..
12. L.M. Weaving School, Erode.	76	73,993	..	..	59,768	59,768	14,225	187	1,000	283	..	..	1,283	12,942	47,297	16,000
13. P.S.G. & Sons' Charity Industrial School, Peelamedu.	27	3,949	..	..	2,616	2,616	1,333	49	550	234	1,254	..	2,038	705	..	..
14. Raja's Industrial School, Parakkimedi.	34	17,614	260	..	4,821	5,085	12,529	368	1,400	..	..	..	1,400	11,129	..	..
15. C.B.M. Industrial School, Samalkot.	48	10,270	..	..	1,348	1,348	8,922	186	1,200	..	..	8,838	10,038	1,116	518	..
16. U.L.C.M. Lam Rural School, Gunter.	25	5,454	..	..	1,142	1,142	4,312	172	400	..	..	3,911	4,311	1	..	..
17. American Mission School, Gunter.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
.. Cabinet-making School, Gunter.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

APPENDIX II—cont.

Statistics relating to Government and recognized Industrial Schools for the year 1931-32—cont.

Serial number, name and place of institution.	Receipts from					Receipts and expenditure to the nearest rupee.										Remarks.		
	Number on rolls on 31st March 1932.		Total recurring cost excluding expenditure on new buildings and equipment.		Fees.	Salaries.	(6) Total of columns (4) and (5).	(7) Net recurring cost—Column (3) minus column (6).	(8) Net recurring cost per pupil—Column (7) ÷ column (8).	Recurring grants from Department of Industries.			(12) Recurring grants from other Departments or public bodies (specified in remarks column).	(13) Total recurring grant. Add columns (9), (10), (11) and (12).	(14) Balance of recurring cost met by manager's funds—Column (7) minus column (13).		Non-recurring.	
	(2)	(3)	(9) Maintenance.	(10) Scholarships.						(11) Stipends.	(15) Expenditure on new buildings.	(16) Building grant.						
																	(4)	(5)
18. Commonwealth Trust Engineering Classes, Mangalore.	8	1,000	15	..	..	15	985	123	330	76	..	984	1,390	..	405	..	..	
19. Sri Krishna Parishamajayam, Kavayaram.	16	2,410	..	..	..	..	2,410	151	600	495	..	1,315	2,410	..	..	..	..	
20. St. Joseph's Industrial School, Gunadala.	62	18,020	..	3,880	3,880	14,140	228	3,000	630	..	4,560	8,190	6,950	1,584	..	..	Endowment.	
21. Andhra Jatheeya Kalsala, Masulipatnam.	46	9,186	43	3,908	3,908	5,235	114	1,000	459	..	3,909	5,368	..	133	..	..	..	
22. Cole's Vocational Middle School, Kurnool.	75	10,810	..	591	591	10,219	136	3,000	..	..	7,219	10,219	..	..	..	..	..	
23. C.N.T. Institute, Vepery.	454	51,043	22,102	8,168	8,168	20,773	46	9,000	1,145	..	9,158	19,303	11,040	..	..	..	Donations.	
24. Anjuman Industrial School, Madras.	102	28,911	..	7,538	7,538	21,373	210	6,000	300	..	4,033	10,333	..	..	..	..	..	
25. Orr's Assisted Industrial School, Madras.	23	5,550	..	..	..	5,550	243	2,700	..	..	2,880	5,550	..	..	..	..	..	
26. Ramakrishna Mission Industrial School, Mysore.	20	7,835	..	1,132	1,132	6,703	335	2,000	78	..	..	2,078	4,625	12,199	6,000	..	..	
27. Sri Ram Motor School, Madras.	104	12,825	..	..	..	..	12,825	123	..	200	..	12,525	12,825	..	..	..	..	
28. Madras Penitentiary Cabinet-making Classes, Madras.	66	20,261	..	17,179	17,179	3,082	47	..	..	..	..	..	..	3,082	..	..	..	
29. Pasumalai Trades School, Pasumalai.	70	52,055	..	42,882	42,882	9,153	131	2,100	96	..	8,083	10,279	1,096	..	..	..	Mission.	
30. C.S.M. Industrial School, Dindigul.	51	15,445	..	7,661	7,661	7,784	153	1,400	60	..	3,041	4,501	3,283	..	..	..	Do.	
31. St. Joseph's Industrial School, Ottacamund.	34	9,261	..	442	442	8,819	259	..	..	..	..	29,000	30,000	21,181	36,995	..	..	
32. St. Theresa's Institute Industrial School, Salem.	18	1,180	..	200	200	980	54	400	..	..	..	..	400	580	2,000	..	..	
33. St. Francis Xavier's Industrial School, Tanjore.	95	20,346	..	9,983	9,983	10,363	109	3,000	356	..	..	..	3,356	7,007	..	..	..	
34. St. Mary's Industrial School, Kumbakonam.	69	32,712	..	17,426	17,426	15,286	222	3,000	335	..	..	..	3,335	11,951	..	..	..	
35. Municipal Industrial School, Kumbakonam.	20	3,922	..	412	412	3,510	176	1,471	490	..	1,445	3,406	104	..	..	..	..	
36. Borstal School, Tanjore.	172	16,767	..	..	..	16,767	98	..	..	..	..	7,509	12,192	16,767	50	..	..	
37. S.P.G. Art Industrial School, Nazareth.	116	19,151	..	4,296	4,296	14,855	128	..	..	..	..	1,565	2,787	1	..	..	Mission contribution.	
38. St. Joseph's Industrial School, Adaikalapuram.	47	6,090	..	3,304	3,304	2,786	59	1,170	52	..	..	..	2,459	2,243	..	..	..	
39. C.M.S. Industrial School for the Blind, Palanootah.	56	8,140	..	3,438	3,438	4,702	85	1,900	559	..	..	..	836	3,047	251	..	..	
40. St. Ignatius' Industrial School, Tuticorin.	30	5,843	..	1,980	1,980	3,863	129	800	36	..	..	..	1,893	12,015	..	..	..	
41. St. Joseph's Industrial School, Trichinopoly.	61	37,455	..	23,547	23,547	13,908	228	1,500	393	..	..	6,090	12,500	5,460	..	..	..	
42. Wesleyan Mission Industrial School, Karur.	83	39,961	2,718	19,283	22,001	17,960	216	2,750	3,660	..	..	..	2,113	4,766	..	..	..	
43. All Saints' Industrial School, Puthur.	34	10,251	..	3,372	3,372	6,879	202	2,000	113	..	..	..	..	..	..	..	..	
44. St. Aloysius' Industrial School, Viragapatam.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Total	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

APPENDIX II—cont. Statistics relating to Government and recognized Industrial Schools for the year 1931-32—cont.

Serial number, name and place of institution.	Number on rolls on 31st March 1932.	Receipts from		Receipts and expenditure to the nearest rupee.										Remarks.	(17)		
		Fees	Bales	(6) Total, columns (4) and (5).	(7) Net recurring cost—(Column (8) minus column (6)).	(8) Net recurring cost per pupil—Column (7) ÷ column (2).	Recurring grants from Department of Industries.			(12) Recurring grant from other departments or public bodies (specify in remarks column).	(13) Total recurring grant—Add columns (9), (10), (11) and (12).	(14) Balance of recurring cost met by manager's funds—Column (7) minus column (13).	Non-recurring.				
							(9) Maintenance.	(10) Scholarships.	(11) Stipends.				(15) Expenditure on new building.			(16) Building grant.	
(1)	(2)	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	Endowment.
AIDED SCHOOLS (GIRLS).																	
45 D.M. Industrial School, Keelur.	35	6,166	..	4,786	1,380	39	600	212	..	569	1,381	—	1	..	..	..	..
46 St. Joseph's Convent Industrial School, Bellary.	82	2,862	..	733	2,129	26	700	..	..	1,429	2,129	..	..	..	..	..	..
47 C.S.M. Lace School, Chingleput.	71	3,731	..	1,191	2,540	36	500	315	..	1,726	2,541	—	1	..	..	..	..
48 Wesleyan Mission Industrial School, Ikka.	151	47,536	..	41,326	6,210	41	1,500	400	..	4,311	6,211	—	1	..	..	..	..
49 St. Antony's Industrial School for Girls, St. Thomas Mount.	43	4,610	..	1,174	3,436	80	250	..	..	3,186	3,436	..	..	..	..	..	..
50 A.A.M. Women's Industrial Home, Palnagar.	78	19,978	229	4,510	15,239	195	1,640	531	..	12,926	15,097	142	..	..	..	..	..
51 L.M. Girls' Industrial School, Erode.	69	1,261	..	..	1,261	18	450	..	..	769	1,219	42	..	..	..	..	..
52 Immaculate Conception Convent, Coimbatore.	53	5,454	..	2,098	3,356	63	750	..	..	2,616	3,366	—	10	..	..	..	..

		Recognition Withdrawal															
A.B.M. Girls' Industrial School, Ongole.	24	3,970	24	793	817	3,153	131	500	48	..	2,570	3,118	35	..	..	..	..
54. St. Joseph's Orphanage Industrial School, Guntur.	54	7,962	149	995	1,144	6,818	126	1,060	1,176	..	4,583	6,819	—	1	..	..	..
55. C.S.M. Girls' Industrial School, Kilpauk.	28	6,727	71	..	71	6,656	238	2,500	..	..	3,877	6,377	279	..	..	..	..
56. Madras Seva Sadan, Chetput.	36	3,816	..	2,801	2,801	1,015	28	500	..	..	515	1,015	..	..	..	..	..
57. St. Bridget's Industrial School, Nungambakam.	131	8,069	..	4,609	4,609	3,460	26	800	430	..	2,188	3,418	42	..	..	..	..
58. St. Joseph's Convent Industrial School, Madurai.	44	4,738	..	3,938	3,938	800	18	800	..	..	..	800	..	..	..	..	..
59. Commonwealth Embroidery School, Calicut.	37	6,979	..	1,900	1,900	5,079	137	400	107	..	4,571	5,078	1	..	..	..	..
60. O.E.L.M. Girls' Industrial School, Gudur.	52	8,484	..	1,493	1,493	6,991	131	600	140	..	5,838	6,578	413	..	..	..	..
61. Nazareth Convent Girls' Industrial School, Oo'acandum.	13	1,700	..	1,450	1,450	250	19	200	..	..	50	250	..	..	..	..	..
62. St. Mary's Convent Industrial School, Kotagiri.	51	11,704	..	5,325	5,325	6,379	125	1,750	242	..	4,351	6,343	36	..	..	..	..
63. Leipzig Mission Women's Industrial Home, Mayavaram.	64	2,871	..	451	451	2,420	38	688	227	..	1,505	2,420	..	..	..	..	..
64. B.C. Lace School, Vadakangulam.	41	3,047	..	640	640	2,407	59	400	346	..	1,647	2,393	14	..	..	..	..
65. Hindu Girls' Industrial School, Kudangulam.	82	8,523	..	4,132	4,132	4,391	54	1,000	..	..	3,276	4,276	115	..	..	..	..
66. Holy Cross Convent Industrial School, Tuticorin.	30	1,241	..	876	876	365	12	300	24	..	..	324	41	..	..	..	..
67. Wesleyan Mission Lace School, Karur.	67	6,139	..	3,011	3,011	3,128	47	700	334	..	1,959	2,993	135	..	..	..	..
68. Holy Cross Convent Industrial School, Trichinopoly.	27	1,562	..	78	78	1,484	55	400	242	..	805	1,447	37	..	..	..	..
69. Sacred Heart Convent Industrial School, Anjengo.																	

APPENDIX III.

Statistics relating to recognised Industrial Schools for the year 1931-32.

Serial number and name of the institution. (1)	Subjects in which instruction is provided. (2)	Number of students who passed out in each subject. (3)	Particulars as to the after-career of passed students. (4)	Approximate total annual value of work turned out. (5)
ARMED SERVICES (BORN).				
1. A.A.M. Industrial School, Katpadi ..	(a) Carpentry, cabinet-making and (b) motor mechanics.	....	....	RS. A. P.
2. Anjuman Industrial School, Vellore..	(a) Cabinet-making and (b) freehand outline drawing.	(a) 2 and (b) 2	All are employed as instructors.	8,096 0 0
3. Anjuman Industrial School, Melvisaram.	Cabinet-making	2	Employed in the school ..	2,315 0 0
4. Anjuman Industrial School, Tirupattur.	Cabinet-making and drawing ..	....	....	715 0 0
5. Don Foso Industrial School, Vellore..	Carpentry and cabinet-making ..	....	....	3,483 0 0
6. St. Joseph's Industrial School, Tindivanam.	(a) Carpentry, cabinet-making and (b) smithy and fitting.	(a) 8 and (b) 6	(a) Six employed as carpenters and the other two have joined the training section and (b) six employed by the school managers.	17,953 0 0
7. Danish Mission Industrial School, Paruti.	(a) Cabinet-making, (b) cotton weaving, (c) dyeing and (d) motor-car driving.	(b) 2	(b) One joined the Government Textile Institute, Madras, and one is waiting for admission to the Textile Institute.	38,641 0 0
8. C.S.M. Agricultural School, Melrosapuram.	Agriculture and allied trades ..	5	Two joined the Training School, Vellore, and two are teachers.	1,553 0 0
9. A.A.M. Industrial School, Saidapet.	Cabinet-making .. .. .	....	....	..
10. Victory Memorial School for the Blind, Poonamallee.	Weaving and rattan work ..	....	....	2,073 0 0
11. St. Joseph's Industrial School, Coimbatore.	Carpentry and fitting	19	Employed as carpenters and fitters.	75,000 0 0
12. Lutheran Mission Weaving School, Erode.	Weaving, aerograph, printing and dyeing.	12	Most of the boys go to teachers' training.	1,519 0 0
13. P.S.G. & Sons Charity Industrial School, Peelamedu.	Mechanical engineering, oil engine tending, carpentry and trades.	....	....	59,185 0 0
14. Raja's Industrial School, Parakkimedi.	Carpentry and cabinet-making ..	....	....	3,471 0 0
15. C.B.M. Industrial School, Samalkot.	Cabinet-making	2 .. .. .	....	..
16. U.L.C.M. Lam Rural School, Guntur.	Agriculture and allied trades including weaving.	6	All are employed in the school farm.	1,557 0 0
17. American Mission Cabinet-making School, Guntur.	Carpentry and Cabinet-making ..	....	....	..
18. Commonwealth Trust Engineering Classes, Mangalore.	Mechanical drawing and workshop mathematics.	....	....	..
19. Sri Krishna Parissamalayam, Kavarattam.	(a) Carpentry, (b) freehand and mechanical drawing.	....	....	450 0 0
20. St. Joseph's Industrial School, Gunadala.	(a) Carpentry and cabinet-making and (b) black-smithy.	(a) 5	All employed as carpenters in Secunderabad.	3,880 0 0
21. Andhra Jatheeya Kalasala, Masulipatam.	Mechanical Engineering, trades and carpet weaving.	....	....	7,702 0 0
22. Coles Vocational Middle School, Kurnool.	Tailoring, weaving, carpentry and gardening.	....	....	991 0 0
23. C.N.T. Institute, Vepery	(a) Cabinet-making, (b) mechanical engineering and metal work, (c) weaving, (d) oil-engine driving, (e) motor-car driving (f) electrical engineering and wiring, (g) printing and proof reading, and (h) fitting, turning and black-smithy.	(b) 15, (d) 19, (e) 11, (f) 36 and (h) 6.	(b) Four in the Madras and Southern Mahratta Railway Company as draftsman, three in the Department of Industries, (d) nine employed in villages, (e) six in buses and three in private cars (f) ten in Madras Electric Installation, five in private work and (h) three employed in workshops.	4,871 0 0
24. Anjuman Industrial School, Madras..	Carpentry, carpet-weaving and tailoring.	....	....	5,821 0 0
25. Orr's Assisted Industrial School, Madras.	Scientific instrument-making and jewellery.	2 .. .. .	....	..
26. Ramakrishna Mission Industrial School, Mylapore.	(a) Mechanical engineering, trade and (b) carpentry.	5	All are employed ..	1,377 0 0
27. Sri Ram Motor School, Madras ..	Motor-driving and mechanism ..	....	....	..
28. Madras Penitentiary School	Cabinet-making .. .. .	....	....	17,139 0 0

APPENDIX III—cont.
Statistics relating to recognized Industrial Schools for the year 1981-82—cont.

(1) Serial number and name of institution.	(2) Subjects in which instruction is provided.	(3) Number of students who passed out in each subject.	(4) Particulars as to the after-career of passed students.	(5) Approximate total annual value of work earned out.
ADDED SCHOOLS (BORS)—cont				
29 Pasumalai Trade School, Pasumalai..	(a) Carpentry, (b) printing, (c) black-smithy, (d) motor-car driving and (e) engine tending.	(a) 8, (b) 2 and (c) 3.	Eight are employed as car-penters, two are employed as printers and three employed as motor drivers.	Rs. A. P. 53,111 0 0
30. C.S.M. Industrial School, Dindigul..	Carpentry and cabinet-making	4	....	9,000 0 0
31. St. Joseph's Industrial School, Ootacamund.	Do.	....	....	480 0 0
32. St. Theresa's Industrial School, Salem.	Do.	....	....	200 0 0
33. St. Francis Xavier's Industrial School, Tanjore	Cabinet-making and weaving.	4 and 6	Four are employed in Rail-way Workshops. Three are employed in the factory section of the Institute.	5,500 0 0
34. St. Mary's Industrial School, Kumbakonam.	(a) Cabinet-making and (b) smithy	(a) 7 and (b) 2	All are employed ..	15,514 0 0
35. Municipal Industrial School, Kumbakonam.	Weaving, carpentry and cabinet-making	8	....	676 0 0
36 Borstal School, Tanjore	Cabinet-making, weaving and tailoring.	....	....	21,237 0 0
37. S.P.G. Art Industrial School, Nazareth.	(a) Carpentry and cabinet-making (b) blacksmithy, (c) motor-car driving and (d) tailoring.	(a) 7, (b) 3 and (d) 1.	....	11,826 0 0
38 St Joseph's Industrial School, Adakkalapuram.	Carpentry and weaving ..	....	....	1,477 0 0
39. G.M.S. Industrial School for the Blind, Palamcottah.	Weaving and rattan-work	46	....	647 0 0
40. St. Ignatius Industrial School, Tuticorin.	Carpentry and cabinet-making	....	....	2,150 0 0
41. St. Joseph's Industrial School, Trichinopoly.	(a) Metal work and trades and (b) cabinet-making.	2	....	18,244 0 0

66

42. Wesleyan Mission Industrial School, Karur.	(a) Carpentry, (b) black-smithy, (c) oil engine and motor-car driving, (d) rattan work and (e) weaving.	(a) 7 and (c) 2	....	13,185 0 0
43 All Saints Industrial School, Puthur.	Cabinet-making, black-smithy and rattan-work.	2	One is employed in the Rail-way Workshop and the other has joined Hindivaram School, Training section.	4,340 0 0
44. St. Aloysius Industrial School, Vizagapatam.	Motor-car driving	....	....	..
GIRLS' SCHOOLS (ADDED).				
45 Daniah Mission Industrial School, Keelur.	Needle-work, embroidery and lace-making.	10	....	8,418 0 0
46. St. Joseph's Convent Industrial School, Bellary.	Lace-making, embroidery and general needle crafts.	....	....	933 0 0
47. C.S.M. Lace School, Chingleput	Lace-making ..	11	....	2,348 0 0
48 Wesleyan Mission Industrial School, Ikkadu.	Lace-making, embroidery, weaving and general needle-work.	....	....	46,626 0 0
49. St. Anthony's Industrial School for Girls, St. Thomas' Mount.	Embroidery, needle-work and dress-making.	....	....	1,625 0 0
50. A.A.M. Women's Industrial Home, Palmaner.	Lace-making, embroidery, general needle crafts and dress-making.	....	....	5,844 0 0
51. London Mission Girls' Industrial School, Erode.	Mat-making, basket-work and weaving.	6	All have gone for training ..	..
52. Immaculate Conception Convent Industrial School, Coimbatore.	Embroidery, general needle crafts and dress-making	1	....	2,400 0 0
53. St. Joseph's Orphanage Industrial School, Guntur.	Dress-making and general needle crafts.	7	Two are teaching, three are undergoing teacher's training and two are not employed.	1,121 0 0
54. C.S.M. Girls' Industrial School, Kilpauk.	(a) Lace-making, (b) embroidery and (c) general needle crafts.	(b) 22 and (c) 13	Six students are employed as teachers.	2,193 0 0
55. Madras Seva Sadan, Chetput	Do.	....	....	..
56 St. Bridget's Girls' Industrial School, Nungambakam.	Do.	....	....	..
57. St. Joseph's Convent Industrial School, Madura.	Embroidery and general needle crafts.	24	....	4,839 0 0
58. Commonwealth Embroidery School, Calicut.	Embroidery, lace-making and needle-work.	6	These students are usually entertained in embroidery department.	4,110 0 0

67

APPENDIX III—cont.
Statistics relating to recognized Industrial Schools for the year 1931-32—cont.

(1) Serial number and name of institution.	(2) Subjects in which instruction is provided.	(3) Number of students who passed out in each subject.	(4) Particulars as to the after-career of passed students.	(5) Approximate total annual value of work turned out.
GIRLS' SCHOOLS (AIDED)—cont.				
59 O.E.L.M. Girls' Industrial School, Gudur.	Lace-making	Nil.	....	Rs. A. P. 1,850 0 0
60. Nazareth Convent Girls' Industrial School, Ootacamund.	Dress-making, embroidery and general needle crafts.	Nil.	....	4,280 0 0
61. St. Marys' Convent Girls' Industrial School, Kotagiri.	Do.	21	As the school has only been working for 15 months no pupils have yet become qualified workers.	1,700 0 0
62. Leipzig Mission Women's Industrial Home, Mayavaram.	Cotton-weaving and mat-making.	1	Employed in the school ..	4,775 0 0
63. R.C. Lace School, Vadakangulam ..	Lace-making, embroidery, general needle-work and sericulture.	....	....	1,024 0 0
64. Hindu Girls' Industrial School, Kudangulam.	Lace-making	14	Some of the girls get married while others take up lace-making and get wages for their work.	837 0 0
65. Holy Cross Convent Industrial School, Tuticorin.	Lace-making, embroidery and dress-making.	Nil.	....	4,122 0 0
66. Wesleyan Mission Lace School, Karur.	Lace-making, embroidery and general needle-work.	3	....	1,114 0 0
67. Holy Cross Convent Industrial School, Trichinopoly.	Embroidery and general needle crafts ..	....	....	..
68. Sacred Heart Convent Industrial School, Anjengo.	Lace-making, embroidery and dress-making.	1	....	26 0 0

Total number of pupils passed out in the year.